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Sinhgad Institutes

National Conference On Information, Communication and Energy Systems and Technologies (ICEST)

Organised by

Department of Electronics and Telecommunication Engineering,
SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

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THE INSTITUTION OF ELECTRONICS AND TELECOMMUNICATION ENGINEERS
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INDIA

Sinhgad Institutes

National Conference on Information, Communication and Energy Systems and Technologies (ICEST)

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Convener

Mrs. R. M. Thadi, HOD, E &TC Dept., SKNSITS, Lonavala

hodentc.sknsits@sinhgad.edu

Mob: +91-9822665429

Coordinator

Mr. J .R. Shaikh

jrs.sknsits@sinhgad.edu

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Sinhgad Technical Education Society (STES) was set up in August 1993, under the able and dynamic leadership of Prof. M.N. Navale with an objective of providing quality education in the field of Engineering, Dentistry, Management, Computer, Pharmacy, Architecture, Hotel Management and the basic school education from kinder garden onwards. There are 100+ institutes under the aegis of STES offering full-fledged school education, diploma, Graduation, Post Graduation courses and Ph.D. programs in various branches of Engineering, Science and Management at nine educational campuses ideally located in pollution free lush green and picturesque environment conducive for learning. This year STES is celebrating 25 years of its academic excellence.

About SKNSITS

SKN Sinhgad Institute of Technology and Science situated at a beautiful location of Lonavala campus of Sinhgad, established in 2011 is a part of a well-known educational trust Sinhgad Technical Education Society having registered office in Pune. SKN Sinhgad Institute of Technology and Science is affiliated to the Savitribai Phule Pune University SPPU. SKNSITS is engrossed for its highest academic excellence and committed to provide quality education.

Besides conventional teaching, college puts special emphasis on e-based learning, subject-oriented value addition programs, experimental and industry oriented project work along with Entrepreneur ship development cell, Student training program, AMCAT, research club activities. The College has an established system of feedback from the students, parents and industry. Every student is closely monitored by the system of Local Guardian scheme.

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We as E&TC Family believes in serious academic pursuit and encourages radical and original thinking which paves the way for creativity and innovative ideas.

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Conference Topic

The original and unpublished research research/review papers are invited in the conference on following topics (but not limited to)

1. Control and Transmission

· Power Electronics & Energy Efficient Drive
· Smart Grid
· Control Theory and application
· Reliability and continuity of supply

2. Application of Advance Computing & Informatics in Electrical Engineering

· Data mining, cloud computing &IOT

- Machine learning and optimization
- Information and cyber security
- Social media, multimedia and web analytics
- Artificial intelligence

3. Application of Electrical Engineering Manufacturing

- Additive Manufacturing
- Mechatronics
- Robotics
- Rapid prototyping
- Manufacturing and process automation

4. Application of Wireless & Embedded in Electrical Engineering

- Instrumentation for communication
- Emerging trends and development in VLSI
- Optimization using neural network
- Microwave system and application
- Signal and image processing

CONTENTS

Real Time Discovery Platform

Madhuri G Mali[1], Shashwat Darp[2], Ujwal Chaudhari[2], Yogita Bhandari[2], Hariom Tomar[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India
[2]Department of Computer Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Twitter may be a platform which can contain opinions, thoughts, facts and alternative info. Within it, several and varied communities square measure originated by users with common interests, or with similar ways in which to feel a part of the community. This paper presents a doable combined approach between Social Network Analysis and Sentiment Analysis. Specifically, we've got tried to associate a sentiment to the nodes of the graphs showing the social connections, and this could highlight the potential correlations. the thought behind it's that, on the one hand, the constellation will contextualize so, in part, unmask some incorrect results of the Sentiment Analysis; on the opposite hand, the polarity of the sensation on the network will highlight the role of linguistics connections within the hierarchy of the communities that square measure gift within the network. During this work, we tend to illustrate the approach to the difficulty, alongside the system design and, then, we tend to discuss our 1st results.

I. INTRODUCTION

Sentiment Analysis (SA) is one in all the foremost wide studied applications of tongue process (NLP) and Machine Learning (ML). This field has mature enormously with the appearance of the online a pair of.0. the web has provided a platform for folks to precise their views, emotions and sentiments towards merchandise, folks and life normally. Thus, the web is currently a massive resource of opinion made matter knowledge. The goal of Sentiment Analysis is to harness this knowledge so as to get vital data concerning most popular, that might facilitate build smarter business choices, political campaigns and higher product consumption. Sentiment Analysis focuses on distinctive whether or not a given piece of text is subjective or objective and if it's subjective, then whether or not it's negative or positive.

Sentiment analysis deals with the process treatment of opinion, sentiment, and sound judgment of texts. Sentiment analysis starts with a tiny low question: "What others think?", and at last convert into billions of greenbacks of business deal. once the good success of Web-2.0, sentiment analysis became a exigent and commercially supported analysis field.

II. LITERATURE REVIEW

1) Sentiment Analysis and Opinion Mining
AUTHOR: Bing Liu[1]
Pervasive real-life applications area unit entirely a neighbourhood of the explanation why sentiment analysis is also a popular analysis draw back. It's together extraordinarily troublesome as a informatics analysis topic, and covers many novel sub issues as we have a tendency to area unit aiming to see later. to boot, there was little or no analysis before the year 2000 in either informatics or in linguistics. a neighbourhood of the explanation is that before then

there was little or no opinion text out there in digital forms. Since the year 2000, the sphere has matured speedily to become one in each of the foremost active analysis areas in informatics. It's together wide researched in processing, Web mining, and data retrieval. In fact, it's unfold from computing to management sciences

2) Thumbs up? Sentiment Classification victimization Machine Learning Techniques
AUTHORS: Bo Pang and Lillian Lee,[2] Shivakumar Vaithyanathan
The problem of classifying documents not by topic, but by overall sentiment, e.g., crucial whether or not or not a review is positive or negative. Victimization film reviews as data, we have a tendency to discover that commonplace machine learning techniques definitively surpass human-produced baselines. However, the three machine learning methods we have a tendency to tend to used (Naive mathematician, most entropy classification, and support vector machines) do not perform additionally on sentiment classification as on ancient topic-based categorization. we have a tendency to tend to conclude by examining factors that build the sentiment classification downside harder.

3). Adding Redundant options for CRFs-based Sentence Sentiment Classification
AUTHORS: Jun Zhao, Kang Liu, Gen Wang[4]
Author presents a totally distinctive methodology supported CRFs in response to the two special characteristics of "contextual dependency" and "label redundancy" in sentence sentiment classification. we've got an inclination to try to capture the discourse constraints on sentence sentiment victimization CRFs. Through introducing redundant labels into the primary sentimental label set and organizing all labels into a hierarchy, our methodology can add redundant choices into work for capturing the label redundancy. The experimental results prove that our methodology outperforms the normal ways that like NB, SVM, MaxEnt and commonplace chain CRFs. compared with the cascaded model, our methodology can effectively alleviate the error propagation among fully totally different layers and acquire higher performance in each layer.

4) "Examining the role of linguistic knowledge sources in the automatic identification and classification of reviews, AUTHORS: V. Ng, S. Das gupta, and S. M. N. Arifin, [3]

Merchants commerce product on net generally raise their customers to share their opinions and active experiences on product they have purchased. sadly, reading through all shopper reviews is hard, significantly for modern things, the quantity of reviews is also up to plenty of or even thousands. This makes it robust for a possible customer to scan them to create degree educated decision. The OpinionMiner system designed during this work aims to mine shopper reviews of a product and extract high detailed product entities thereon reviewers specific their opinions. Opinion expressions area unit renowned and opinion orientations for each recognized product entity area unit classified as positive or negative. Fully totally different from previous approaches that used rule-based or math's techniques, we have a tendency to propose a novel machine learning approach designed below the framework of linguistic method HMMs. The approach naturally integrates multiple necessary linguistic choices into automatic learning. Throughout this paper, we've got an inclination to explain the look and main parts of the system. The analysis of the planned methodology is given supported method net product reviews from Amazon and different publically accessible datasets.

5) "Sentiment analysis ofblogs by combining lexical knowledge with text classification AUTHORS: Melville, W. Gryc, and R. D. Lawrence[5]
To help users quickly understand the foremost necessary opinions from massive on-line reviews, it's a necessity to automatically reveal the latent structure of the aspects, sentiment polarities, and conjointly the association between them. However, there is little or no work offered to try and do this effectively. throughout this paper, we've got an inclination to propose a hierarchic facet sentiment model (HASM) to urge a hierarchic structure of aspect-based sentiments from unlabeled on-line reviews. In HASM, the whole structure may well be a tree. each node itself could be a two-level tree, whose root represents a side and conjointly the youngsters represent the sentiment polarities associated with it. both sides or sentiment polarity is sculptured as a distribution of

words. To automatically extract every the structure and parameters of the tree, we've got an inclination to use a theorem datum model, algorithmic Chinese building methodology (rCRP), as a result of the previous and together infer the aspect-sentiment tree from the review texts. Experiments on a pair of real datasets show that our model is corresponding to 2 totally different hierarchic topic models in terms of quantitative measures of topic trees. shown that our model achieves higher sentence-level classification accuracy than previously planned facet sentiment joint models.

III. EXISTING SYSTEM

The classical approach to Social Network Analysis permits to check the topology of a network through the connections that develop among it, giving rise to a hierarchy of communities among the most topic. what is more, bound kinds of social networks, like Twitter, permit to trace relationships additionally in those cases during which information isn't mutual: merely a node could be a follower of another node. the quantity of followers defines partially the recognition of a node among the network, however it's not capable to indicate if this quality is positive or negative.

IV. PROPOSED SYSTEM

Presents a potential combined approach between Social Network Analysis and Sentiment Analysis. specially, we've tried to and this might highlight the potential correlations. the concept behind it's that, on some incorrect results of the Sentiment Analysis; on the opposite hand, the polarity of the sensation on the network will highlight the role of linguistics connections in other hierarchy of the communities that are gift within the network.

Sentiment analysis may be a useful gizmo for any organization or cluster that public sentiment or angle

towards them is vital for his or her success - whichever method that success is outlined.

On social network, blogs, and on-line forums legion folks are busily discussing and reviewing businesses, companies, and organizations. and people opinions are being 'listened to' and analysed.

The results from sentiment analysis facilitate businesses perceive the conversations and discussions happening regarding them, and helps them react and take action consequently. They can quickly establish any negative sentiments being expressed, and switch poor client experiences into superb ones.

V. SYSTEM ARCHITECTURE
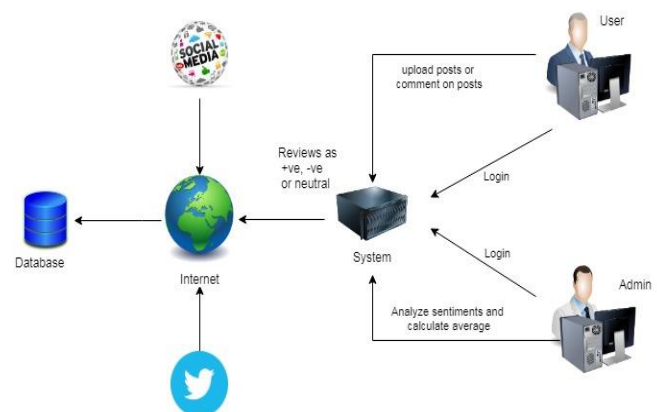
Figure 1. Architecture of the system

By being attentive to and analysing comments on social network, government departments will gauge public sentiment towards their department and therefore the services they supply, and use the results to enhance services like parking and leisure facilities, native policing, and therefore the condition of roads.

Universities will use sentiment analysis to investigate student feedback and comments garnered either from their own surveys, or from on-line sources like social media. they will then use the results to spot and address any areas of student discontentment, furthermore as establish and rest on those areas wherever students are expressing positive sentiments.

VI. CONCLUSION & FUTURE SCOPE

The rise of social network has fuelled interest in sentiment classification. Promptly and properly classifying sentiment from the text has become a vital task for people and corporations. within the development of prediction models to classify the reviews, a lot of reliable approaches area unit expected to cut back the misclassifications. during this study, the results of assorted hybrid ways area unit by trial and error evaluated on datasets of various size to be used in sentiment mining. Among the ways used, hybrid ensemble technique (HEM1) is very strong in nature for balanced information models I, II and III, that is studied through numerous quality parameters. The analysis additionally shows that the compound combination of unigram, written word and written word performs higher for pretty much all the prediction ways. To handle imbalance information distribution in real time applications, it's ascertained from the results that victimisation SVMs for sophistication prediction will be influenced by the information imbalance, though SVMs will change itself well to a point of knowledge imbalance. To deal with the matter, rebalancing the information is chosen as a promising direction, however each underneath sampling and over sampling have limitations.

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Object Detection Using AI

Madhuri Mali[1], Moumita Biswas[2], Mrunal Pungle[2], Neha Dhamele[2], Mahesh Gupta[2]

[1]Assisstant Professor, Department of Computer Engineering (SKNSITS), Savitribai Phule Pune University, Lonavala, Maharashtra, India

[2]U.G. Student, Department of Computer Engineering (SKNSITS), Savitribai Phule Pune University, Lonavala, Maharashtra, India

ABSTRACT

Motivated by the recent success of supervised and weakly supervised common object discovery, in this work we move forward one step further to tackle common object discovery in a fully unsupervised way. Generally, object co-localization aims at simultaneously localizing objects of the same class across a group of images. Traditional object localization/ detection usually trains specific object detectors which require bounding box annotations of object instances, or at least image-level labels to indicate the presence/absence of objects in an image. Given the collection of images without any annotations, we proposed fully unsupervised method is to simultaneously discover images that contain common objects and also localize common objects in corresponding images. Without requiring knowing the total number of common objects, we formulate this unsupervised object discovery as a sub-graph mining problem from a weighted graph of object proposals, where nodes correspond to object proposals and edges represent the similarities between neighbouring proposals. The positive images and common objects are jointly discovered by finding sub-graphs of strongly connected nodes, with each sub-graph capturing one object pattern.

Keywords: Object Detection, Object Tracking, Object Identification, Edge Detection, CNN(convolutional neural networks),RNN.

I. INTRODUCTION

When we're shown an image, our brain instantly recognizes the objects contained in it. On the other hand, it takes lot of time and training data for the machine to identify these objects. But with recent advances in hardware and deep learning, this computer vision field has become a whole lot easier and more intuitive. We are constantly in search of methods to have 'detection' or 'recognition' system as powerful as human being.

Weakly supervised Object localisation(WSOL), has drawn much attention recently. It aims at localising common objects across images using the annotations to indicate the presence/absence of the objects of interest. In this project we focus on simultaneously discovering and localizing common objects in real world images, which shares the same type of output as WSOL, but does requires the annotation of presence/absence of objects. in addition, we tackle this problem in more challenging scenario where,

1) Multiple common object classes are contained in the given collection of images, which means this is totally unsupervised problem;

2) Multiple objects or even no objects are contained in some of the images.

The project aims to incorporate state-of-art technique for the object detection with a goal of achieving high

accuracy with a real-time performance. The major challenge in many of object detection systems is the dependency on other computer vision techniques for helping the deep learning-based approach, which leads to slow and non-optimal performance. In this project, we use the completely deep learning based approach to solve the problem of object detection in an end-to-end fashion.

II. LITERATURE SURVEY

1.Paper name: Object Detection Using Image Processing
Author: Fares Jalled, ´ Moscow Institute of Physics & Technology
In this paper ,they have develop the OpenCV-Python code using Haar Cascade algorithm for object and face detection. Currently, UAVs are used for detecting and attacking infiltrated ground targets. The main drawback for this type of UAVs is that sometimes objects are not properly detected, which thereby causes object to hit the UAV. This project aims to avoid such unwanted collisions and damages of the UAV. UAV is also used for the surveillance that uses Voila-jones algorithm to detect and track the humans. This algorithm uses the cascade object detector function and vision.

2.Paper name: Edge Preserving and Multi-Scale Contextual Neural Network for Salient Object Detection.
Author: Xiang Wang , Huimin Ma , Member IEEE, Xiaozhi Chen, and Shaodi You.
In this paper, we propose a novel edge preserving and multi-scale contextual neural network for salient object detection. The proposed framework is aiming to the address in two limits of the existing CNN based methods. First,the region-based CNN methods lack sufficient context to accurately locate salient object since they deal with each region independently. Second, pixel-based CNN methods suffer from blurry boundaries due to the presence of the convolutional and pooling layers. Motivated by these, we first

propose the end-to-end edge-preserved neural network based on Fast R-CNN framework (named RegionNet) to efficiently generate saliency map with the sharp object boundaries.The proposed framework achieves both clear detection boundary and multiscale contextual robustness simultaneously for first time, and thus achieves an optimized performance. Experiments on six RGB and two RGB-D benchmark datasets demonstrate that proposed method achieves state-of-the-art performance.

3.Paper name: 3D Object Proposals using Stereo Imagery for Accurate Object Class Detection.
Author: In this paper, we propose a novel 3D object detection approach that exploits stereo imagery and contextual information specific to the domain of autonomous driving. We propose a 3D object proposal method that goes beyond 2D bounding boxes and is capable of generating highquality 3D bounding box proposals. We make use of 3D information estimated from a stereo camera pair by placing 3D candidate boxes on the ground plane and scoring them via 3D point cloud features. In particular, our scoring function encodes several depth informed features such as point densities inside a candidate box, free space, visibility, as well as object size priors and height above the ground plane. The inference process is very efficient as all the features can be computed in constant time via 3D integral images.

4.Paper name: Scalable Object Detection using Deep Neural Networks
Author: Christian Szegedy,Dumitru Erhan,Alexander Toshkov Toshev
Deep convolutional neural networks have recently achieved state-of-art performance on the number of image recognition benchmarks, including ImageNet Large-Scale Visual Recognition Challenge (ILSVRC-2012). The winning model on an localization sub-task was the network that predicts a single bounding box and a confidence score for each object category in image. Such a model captures the whole-image context around the objects but cannot handle multiple

instances of same object in image without naively replicating the number of outputs for each of instance. In this work, we propose the saliency-inspired neural network model for detection, which predicts the set of class-agnostic bounding boxes along with a single score for each box, corresponding to likelihood of containing any object of the interest. The model naturally handles the variable number of instances for each class and allows for the cross-class generalization at highest levels of network. We are able to obtain competitive recognition performance on VOC2007 and ILSVRC2012, while using only top few predicted locations in each image and a small number of neural network evaluations.

5.Paper name: Rich feature hierarchies for accurate object detection and semantic segmentation

Author: Ross Girshick1 Jeff Donahue1,2 Trevor Darrell1,2 Jitendra Malik1 1UC Berkeley and 2 ICSI.

In this paper, we propose a simple and scalable detection algorithm that improves mean average precision (mAP) by more than 30% relative to the previous best result on VOC 2012—achieving a mAP of 53.3%. Our approach combines two key insights: (1) one can apply high-capacity convolutional neural networks (CNNs) to bottom-up region proposals in order to localize and segment objects and (2) when labeled training data is scarce, supervised pre-training for an auxiliary task, followed by domain-specific fine-tuning, yields a significant performance boost. Since we combine region proposals with CNNs, we call our method R-CNN: Regions with CNN features.

III. EXISTING SYSTEM

Localizing and detecting objects in images are among the most widely studied computer vision problems. They are quite challenging due to intra-class variation, inter-class diversity, and noisy annotations, especially in wild images. Thus, a large body of fully/strongly annotated data is crucial to train detectors to achieve satisfactory performance. However, manually labeling the presence of objects and even their locations in images is time-consuming, expensive and laborious.

IV. SURVEY OF PROPOSED SYSTEM

Common object discovery plays an important role in computer vision tasks, such as object detection/localization image co-segmentation/saliency. The main paradigm of these tasks is similar: the inputs are usually real-world images with incomplete labels or sometimes even without any supervision information, then the key step is to discover the most frequently occurring pattern by methods such as local feature matching, sub-graph mining, etc. Based on the results of pattern discovery, the outputs differ according to the targets of tasks, for example, detection/localization draws bounding boxes around objects, co-saliency and co segmentation predict pixel-wise labels.

ADVANTAGES OF PROPOSED SYSTEM:

- Our proposed framework can also be easily applied in the problem of image/instance retrieval.
- To evaluate the proposed method, we conduct extensive experiments under multiple settings and compare with many representative studies.

V. SYSTEM ARCHITECTURE

R-CNN: *Regions with CNN features*
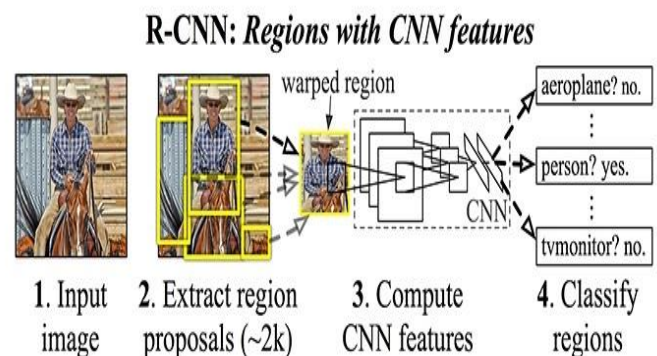
Figure 1. System Architecture

VI. CONCLUSION

We propose a framework for common object discovery and localization in wild images. Like most previous methods which are based on the assumption that there is only one object contained in each positive image, inspired by min-cut/max-flow algorithms, we then present a constrained sub-graph mining algorithm to optimize the two model. We can classify and detect the object by using neural network correctly.

To analyze images and extract high level information, image enhancement, motion detection, object tracking and behavior understanding researches are studied. In this paper, we have studied and presented different methods of moving object detection, used in video surveillance. We have studied detection techniques into various categories, here, we also discussed the related issues, to moving object detection technique. The drawback of the temporal differencing is that it fails to extract all relevant pixels of foreground object especially when the object has uniform texture or moves slowly. When the foreground object stops moving, temporal differencing method fails in detecting the change between consecutive frames and loses the track of the object. This article gives valuable insight into this important research topic and encourages the new research in the area of moving object detection as well as in the field of computer vision. In kernel tracking approach, various estimating methods are used to find corresponding region to target the object. Now a day, the most preferred and popular kernel tracking techniques are based on Mean-shift tracking and particle filter. Contour tracking can be divided into the state space method and energy function minimization method according to the way of evolving of contours.

Future scope

These proposed whole-body objects tracking algorithm successfully tracks objects in consecutive frames. Our tests in the sample application show that using nearest neighbour matching scheme gives promising results and no complicated methods are necessary for the whole-body tracking of objects. Also, in handling simple object occlusions, histogram-based correspondence matching approach recognizes the identities of objects entered into the occlusion successfully after a split. However, due to nature of the heuristic we use, occlusion handling algorithm would fail in distinguishing occluding objects if they are of same size and colour. Also, in crowded scenes handling occlusions becomes infeasible with such approach, thus the pixel-based method, like optical flow is required to identify object segments accurately.

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[3]. Xiaozhi Chen∗ , Kaustav Kundu∗ , Yukun Zhu, Huimin Ma, Sanja Fidler and Raquel Urtasun.

[4]. Ross Girshick1 Jeff Donahue1,2 Trevor Darrell1,2 Jitendra Malik1 1UC Berkeley and 2 ICSI {rbg,jdonahue,trevor,malik}@eecs.berkeley.edu.

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IoT Based Home Automation and Smart Security System

Anmol Bagul, Vaibhav Chavan, Ankit Dabi, Sanket Gate

Computer Science, SPPU/SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Internet of Things is network of all devices that can be accessed through the internet. These devices can be remotely accessed and controlled using existing network infrastructure, thus allowing a direct integration of computing system with physical world. Home automation achieved great popularity in the past decade and increased comfort and quality of life. We represent a new smart security through IoT based camera authentication. The purpose of this security system is only verified personnel can access or enter the system.

This paper represent the design and implementation of a low cost yet scalable, flexible and secure IoT based home automation system. The main focus of technology is in controlling the household equipment's like light, fan, door etc. automatically.

Keywords: Internet of Things (IoT), Home Automation, Smart Security System, Wi-Fi Module, Authentication.

I. INTRODUCTION

Technology is never ending process. The recent scenario shows that in this century of digitization people are fond of automatic devices which are often referred to as smart devices. Homes of 21st century will become more and more self-controlled and automated due to the comfort it provides especially when an employed in a private home. Home automation system is growing rapidly, they are used to provide comfort, convenience, quality of life and security for resident but these system are expensive to install for the small business and middle class home owners. So we are building home automation and smart security system at low cost.

In recent years, wireless sensors and actuators networks have gained high momentum, receiving significant attention from academia, industry and standard development organizations. The main concept of IOT is that it can create a virtual connection between a hub or a network and electronic and electrical objects.

1.1 Internet of Things

The Internet of Things (IoT) is a system of physical things embedded with sensors, software, electronics and connectivity to allow it to perform better by exchanging information with other connected devices.

In simple terms, it is a network in which physical objects can exchange data internally or with other connected machines. IoT is a vision that is being built today with an expectation of massive expansion by 2020 as connections move past computers to power billions of other devices, such as home thermostats and parking meters.

1.2 Home Automation

Home automation gives you access to control devices in your home from a mobile device anywhere in the world.

A home automation system is a technological solution that enables automating the bulk of electronic, electrical and technology-based tasks within a home.

It uses a combination of hardware and software technologies that enable control and management over appliances and devices within a home.

Home automation is also known as domestics, and a home with an automation system is also known as a smart home.

1.3 Smart Security

In smart security we are using face detection for entering the home automation system, only verified persons can access the system.When camera captures the face of a person then the system will check if the person face is registered in the database. If the person is present in database then the system will grant access to the person and if the person is not present in the database the system will capture the picture of the person and it will send the picture to owner. Then the owner can decide to grant the access to the person or not.

1.4 Hardware Components

For the cost effective home automation system we are using Raspberry Pi 3 module for hardware to smartphone connectivity. PIR sensor for motion detection and Thermal sensor for temperature sensing in the room. Also we are using a door camera for the smart security system. Also we are using relay board for the connectivity of the Raspberry Pi and the main power supply of home.

1.5 Connectivity

In this paper we are presenting a system can be connected through Bluetooth and Wi-Fi enabled devices as well as through web based application. The smart security system is also connected to database for face detection and also classification of the person wants to enter the home.

II. METHODS AND MATERIAL

2.1 System Architecture

In this system, we are using Raspberry Pi and establish the internet connection for the purpose of automation using IoT by accessing the IP address. Figure 2 represents the block diagram of smartphone based home automation system using IoT.
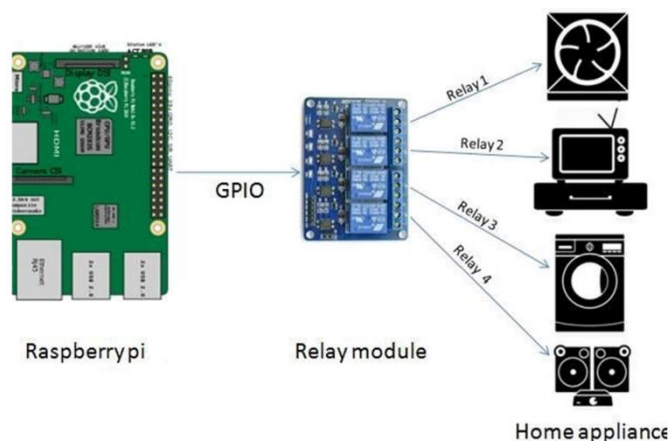
Figure 1. Block Diagram of Home Automation System

All the home appliances are connected with Raspberry Pi. Mobile phone and Raspberry Pi are connected through Wi-Fi. Raspberry Pi is used as the board controller to connect the appliances via input and output port. We can use cloud server for controlling and monitoring the home appliances from anywhere. PHP coding is used for controlling home appliances. Copy the saved program in SD card and inserting it in Raspberry Pi and then run the program. While the program is executing, enter the IP address in the URL to open the webpage. It establishes the connection between the smart phone and the Raspberry Pi board.

2.2 Network Architecture
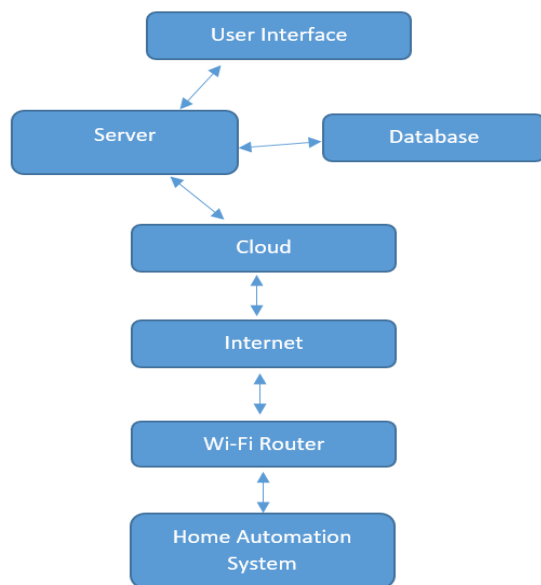
Figure 2. Network Architecture

The main ingredient for any IOT based operation is a server. The centralized sever acts as the heart of all the IOT rooted operation. In this paper the cloud server is used for data storage, sensor feedback and control. A virtual connection between the server and the IOT devices needs to be created. There are several ways to make an internet connection from which we have used point-to-point web socket. A programming language known as the PHP is used to create the point-to-point web socket and a web application for communication with IOT device and taking logical decision. Through this point-to-point web socket an internet connection is made between the home automation system and the server. Due to this connection IOT devices will now be able to send and receive data to the cloud server. All the received data of the server is stored in a database present along with the server. The user may go through all the data stored in the database of the server anytime from anywhere with the help of a web browser or with the assistance of an android application embedded in an android device synchronised with the main server and the IOT devices. To provide optimum security to this whole system a unique login id and password is provided to each user at the time of installation. Any user can only go through the data of his/her devices connected with the main server with the help of the login id and password and can change the status of his/her any IOT devices connected with the main server but the admin can access the data of all the devices connected and can change the status of any devices connected to the main server.

2.3 Hardware

A. Raspberry Pi

Raspberry Pi is a low cost credit card size computer that plugs into a computer monitor or TV and uses a standard keyboard and mouse. Most importantly it's open source hardware. Computing Programmable Language like python and scratch under Linux platform. Raspberry Pi 2 model B has CPU 900MHZ quad-core ARM cortx-A7 processor. The Ethernet adaptor is connected to an additional USB port. In model A and A+ the USB port is connected directly to the Silicon on Chip (SoC).

Raspberry Pi3 is the third generation Raspberry pi. It replaced the Raspberry pi 2 model B in February 2016. Compared to the Raspberry pi 2 it has:

- A 1.2GHZ 64-bit quad-core ARMv8 CPU
- 802.11n Wireless LAN
- Bluetooth 4.1
- Bluetooth Low Energy(BLE)

B. Relay circuit

Relays are switches that open and close circuits electromechanically or electronically. Relays control one electrical circuit by opening and closing contact in another circuit. When a relay contact is Normally Closed (NC), there is a closed contact when the relay is not energized. It is an electromagnetic switch operated by relatively small electric current that can turn on or off much larger electric current the heart of a relay is an electromagnet (a coil of wire that becomes a temporary magnet when electrically flows through it).Solid-state relays control power circuits

with no moving parts, instead using a semiconductor device to perform switching. Relays with calibrated operating characteristics and sometimes multiple operating coils are used to protect electrical circuits from overload or faults, in modern electric power systems these functions are performed by digital instruments still called "protective relays".

Two channel relay diagram is shown in figure 4.This is a 5V, 10A 2-Channel Relay interface board. It can be controlled various appliances, and other equipment with large current. It can be controlled directly with 3.3V or 5V logic signals from a microcontroller (ARM, 8051, PIC).

2.4 Software
A. Python
Python is a widely used high-level programming language for general-purpose programming, created by Guido Van Rossum and first released in 1991. An interpreted language, Python has a design philosophy which emphasizes code readability (notably using whitespace indentation to delimit code blocks rather than curly braces or keywords), and a syntax which allows programmers to express concepts in fewer lines of code than possible in languages such as C++ or Java. The language provides constructs intended to enable writing clear programs on both a small and large scale.

B. Java

Java is a general-purpose computer-programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to "bytecode" that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture.

III. RESULTS AND DISCUSSION

The IOT system we have developed needs installing smart sensor units and setting up a server. After installing the smart sensor units, the user needs to install the software to his/her laptop or smart android phone. After proper installation of the provided software the user needs to sign-up on the home automation server. Once the user is registered, a unique user id and a password is provided to the users of each house in which the sensor units are installed. After the user id and the unique password are obtained user can login from our android application. When user start the android application first a login page will appear as shown in figure below.
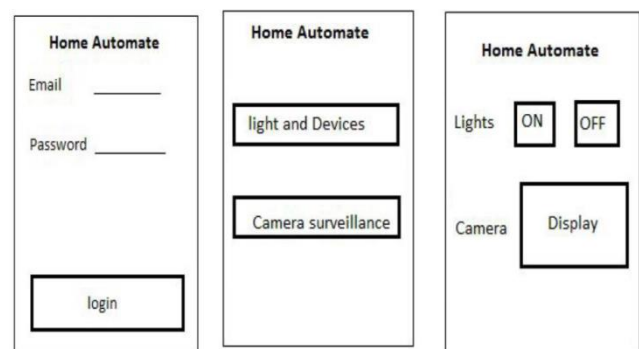
Figure 3. Application Prototype

Above figure shows the prototype design of android application development. The initial design had to be kept in mind the functional and non-functional requirements.

IV. CONCLUSION

In this paper we have introduced design and implementation of a low cost, flexible and wireless solution for home automation system. The system is secured for access from any user or intruder, only valid and verified users can get access into the system. This adds a protection from unauthorized users. This system can be used as a test bed for any appliances that requires on-off switching applications with internet connection using cloud services.

The system uses have automatic which works using sensors and as well as manual mode which can accessed by authorized user from anywhere in the world.

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Human and Gesture Recognition

Avinash Singh, Ananta Wakde, Shashank, Prafulla Ahire

Compute Dept., SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

In this paper, we present a face and gesture-based human-computer interaction (HCI) system. We combine head pose and hand gesture to control the system. We can identify the positions of the eyes and mouth, and use the face centre to estimate the pose of the head. The user does not need to keep gestures in an upright position and the system segments and normalizes the gestures automatically. The user can control multiple devices, including robots simultaneously through a wireless network. Hand gesture recognition system received great attention in the recent few years because of its ability to interact with machine efficiently through human-computer interaction. In this paper, a survey of recent hand gesture recognition systems is presented. Key issues of hand gesture recognition system are presented with challenges of gesture system. Review methods of recent postures and gestures recognition system presented as well. Summary of research results of hand gesture methods, databases, and comparison between main gesture recognition phases are also given. Advantages and drawbacks of the discussed systems are explained finally.

Keywords: Human Computer Interaction (HCI), Face & Gesture Recognition, Neural Network.

I. INTRODUCTION

Human computer interaction (HCI) relies on multiple modalities such as speech, faces or gestures. Faces and gestures are one of the main nonverbal communication mechanisms between humans and computers. Therefore, a real-time processing of faces and gestures is important for HCI. Moreover, in recent years the field of computer vision has been progressed rapidly and the efforts have been made to apply research results in the real-world scenarios. When applying research findings, hardware cost becomes an important issue.

The HCI system can be used towards robot tour guidance, recreational, home and health-care applications. In museums, the traditional keyboard and mouse setup can be replaced with a robot tour guidance system. The robot can detect which exhibitions the visitors are interested in and introduce them directly. This not only makes exhibitions more interesting, but also reduces the tour guidance personnel training cost for the museums. For recreational usage, users can substitute wired controllers with hand gestures and enjoy the hands-free control of electronic devices. In household uses, we can combine head movement with simple hand gestures to control air conditioners, lighting, and other home appliances. It may also be used to aid patients in all kinds of situations when their body mobility is limited. In this paper, we use a video camera and a PC to develop a face and gesture based HCI system. The proposed HCI system not only can detect face features in head-tilted situations, but also can recognize hand gestures correctly anywhere in the whole image. It is also robust to busy backgrounds and different clothing situations, extracting hand regions,

and recognizing hand gestures efficiently using a trained neural network. In applications, we apply the proposed HCI system to a real-life scenario. We give commands wirelessly to trigger the head movement of the robot. Figure 1 shows the diagram of the proposed HCI system.
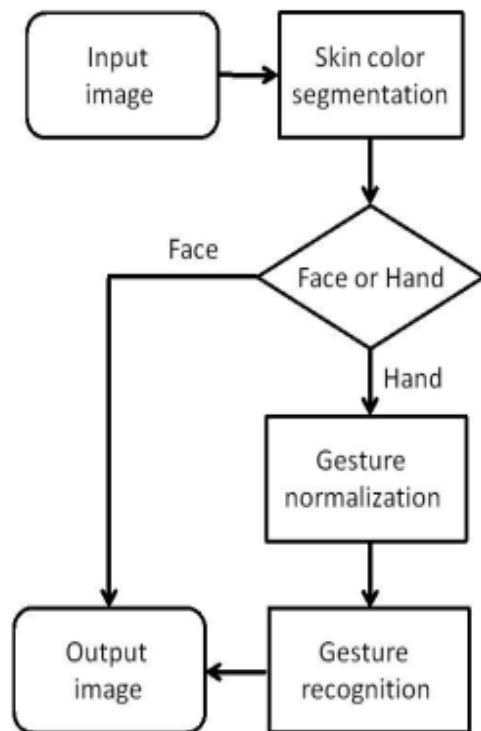
Figure 1. Diagram of the proposed HCI System.

Gesture recognition can be seen as a way for computers to understand the human body language. Gesture is an important aspect of human interaction with machine which can be in the form of hand movements, face or other parts of body. Gesture Recognition is an efficient approach in comparison to primitive text user interface or GUIs in which majority of input is still limited to mouse and keyboard.

Human computer interaction (HCI) also named Man Machine Interaction (MMI) refers to the relation between the human and the computer or more precisely the machine. Two important characteristics of HCI system designing as mentioned in are functionality and usability. Gestures can be static (fixed posture) and dynamic (sequence of postures) more specifically useful for real time.

II. WORKING OF OUR SYSTEM

Image Acquisition is the first step, after that face detection after that pre-processing of the image is the next phase (using some tracking algorithms). Feature extraction is the next step and finally classification is done.
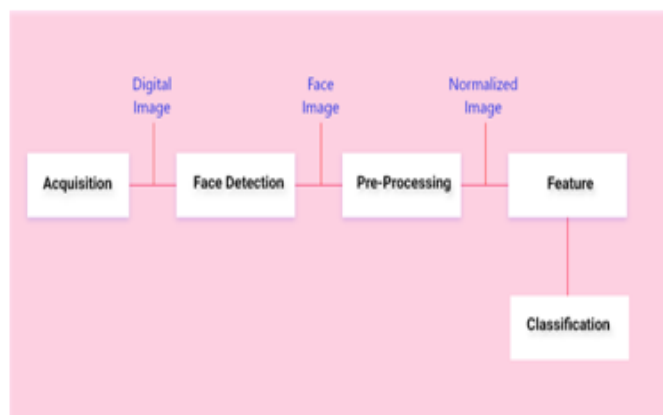
Figure 2. Architecture of Our System

The image of hand gesture is taken by the camera (single/stereo camera) then pre-processing is applied on it which includes– Noise filtering, RGB to grey scale conversion. Feature extraction includes Background separation, Image enhancement and Edge detection (SIFT OR SURF). Recognition (Classification) determines the shape of the hand and its gesture. For this there are different algorithms such as Face Tracking & Segmentation algorithm, Edge Detection algorithm etc.
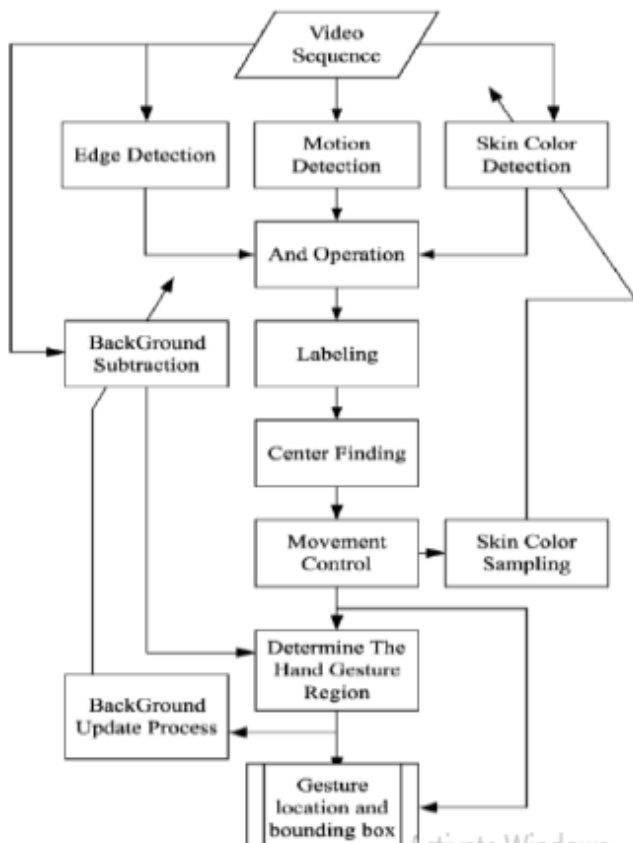
Figure 3. Flow dig. of Hand Gesture Tracking System.

- Capture the image through the web camera or camera.
- Convert the image from RGB to Grey Scale.
- Background is separated by subtracting image from the captured background.
- Binary conversion is done to apply edge detection.
- Then Edge detection algorithm is applied for hand gesture recognition.
- Serial interfacing is used to send the recognized gesture. We can also use device controlling.

III. RESULTS

In our experiments firstly we detected the face of human and then after detection of hand gesture of that human.

3.1 Face Detection and Hand Gesture Recognition

Using Microsoft Visual C++ 6 and OpenCV library for reading and outputting image data, we can process a 320 x 240 resolution image in 0.06 seconds. Hence, we can achieve the real-time calculation with 15 frames per second. Figure 4 shows the results of face detection. We capture the positions of face features (the eyes and mouth) in multiple head tilted situations. We circle and connect each of them, and show an inverted triangle on the screen. The bounding box marking the face area is achieved by using data retrieved from our face detection. The system can locate face features even if the person is wearing glasses
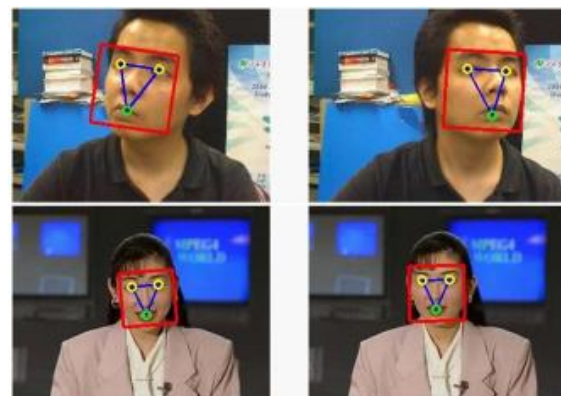
Figure 4. The result of face detection.

Moreover, we show some hand recognition snapshots in Figure 5. The name of the recognized hand gestures is labeled under the snapshots. Images can be processed in realtime, and it also shows the reliability estimation outputted by there calling algorithm of the neural network. It is only displayed to evaluate results efficiently. Reliability estimation indicates how similar it is with the data fed to the neuron network at the training step. We place a colorful poster in the background and our system can extract the hand region correctly even in busy background environments. In some special cases where the hand region were not extracted correctly, there liability rate decreases greatly. However, due to the high tolerance ability of neural networks, our system can recognize the hand gesture correctly.
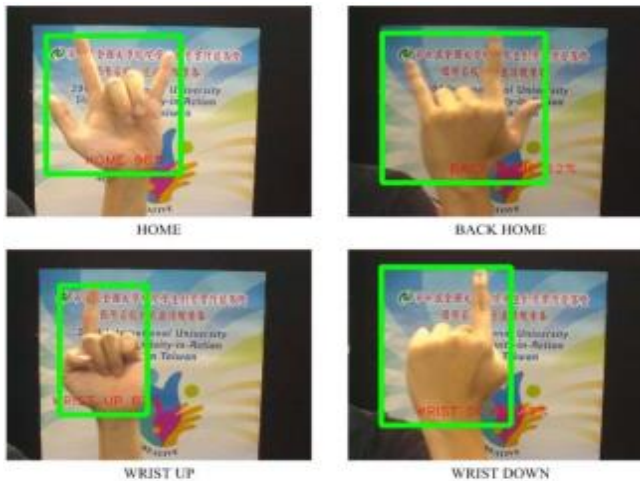
Figure 5. Result of hand gesture recognition

3.2 Emotion Detection

Facial expressions play an important role in recognition of emotions and are used in the process of non-verbal communication, as well as to identify people. They are very important in daily emotional communication, just next to the tone of voice. They are also an indicator of feelings, allowing a man to express an emotional state. People, can immediately recognize an emotional state of a person. As a consequence, information on the facial expressions are often used in automatic systems of emotion recognition. The aim of the research, presented in this article, is to recognize seven basic emotional states: neutral, joy, surprise, anger, sadness, fear and disgust based on facial expressions.

Figure 6. Facial expressions presented to users

Man's face, as the most exposed part of the body, allows the use of computer vision systems (usually cameras) to analyze the image of the face for recognizing emotions. Light conditions and changes of head position are the main factors that affect the quality of emotion recognition systems using cameras. Especially sensitive for these factors are methods based on 2D image analysis.

Methods in which 3D face models are implemented are far more promising.

IV. CONCLUSION

In this project various methods are discussed for gesture recognition, these methods include from Neural Network, Dynamic data generation besides using "training.yml" files are our brain (classifier) of the project. The contributions of the proposed system are as follows:-

a) The face detection can be done in real-time.
b) The user does not need to wear long clothing and   keep gestures in upright position.

The proposed system cannot detect the face correctly when some face features are covered. In future works we will conquer this problem.

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Diabetic Retinopathy

Akash Raut, Priyanka Shinde, Ashish Dhage, Mrunali Nandanwar

Computer Department, SKN SITS, Lonavala, Pune, Maharashtra, India

ABSTRACT

Diabetic retinopathy (DR) is a retinal blood vascular sickness caused because of diabetes mellitus. Being the main source of visual deficiency, it winds up most extreme critical to distinguish DR. There is assortment of reports on programmed identification of DR and a large portion of them are subject to the segmentation and highlight extraction algorithms of different clinical indications of DR. The order consequences of such techniques hand-off on the execution of division and highlight extraction strategies. In this paper, we have proposed a deep learning based way to deal with naturally distinguish DR. We misused the design of traditional Convolutional Neural Network (CNN) to take in the highlights of DR from the shading fundus images. The convolution layers in the CNN become familiar with the ordinary and anomalous highlights from the retina picture itself. This proposed two class characterization approach utilizing CNN distinguishes the DR and ordinary pictures with a high exactness of 98.7%.

Keywords: Retinopathy, Deep Learning, Medical Imaging, Computer-aided diagnosis (CAD), Image Recognition.

I. INTRODUCTION

Diabetic Retinopathy (DR) is the main source of visual impairment in the working age group. Among 23 million Americans, 59 million Europeans, and upwards of 50 million Indians experiencing diabetes, the pervasiveness of those with DR is assessed somewhere in the range of 18% and 28%. Ordinary eye examination among these defenceless gatherings is important to analyse DR at a beginning time, when it very well may be treated with the best visualization. Right now, identifying DR is a tedious and manual procedure that requires a prepared clinician to look at and assess advanced shading fundus photos of the retina. The clinical evaluating process comprises of recognition certain unobtrusive highlights, for example, microaneurysms, exudates, intra-retinal hemorrhages and now and then their position with respect to one another on pictures of the eye. Roughly four hundred and twenty million individuals worldwide have been determined to have diabetes mellitus. The commonness of this infection has

multiplied in the previous 30 years24 and is just expected to increment, particularly in Asia7. Of those with diabetes, roughly 33% are relied upon to be determined to have diabetic retinopathy (DR), an endless eye illness that can advance to irreversible vision misfortune 8. Early location, which is basic for good visualization, depends on talented perusers and is both work and time-concentrated. This represents a test in zones that customarily need access to skilled clinical facilities. Additionally, the manual idea of DR screening strategies advances far reaching irregularity among perusers. At last, given an expansion in predominance of both diabetes and related retinal inconveniences all through the world, manual strategies for finding might be unfit to keep apace with interest for screening administrations.

Computerized systems for diabetic retinopathy analyse are fundamental to taking care of these issues. While deep learning for parallel characterization as a rule has accomplished high approval exactnesses,

multi-arrange order results are less great, especially for beginning period ailment.

In this paper we present a programmed DR reviewing framework equipped for grouping pictures dependent on malady pathologies from four seriousness levels. A convolutional neural system (CNN) convolves an information picture with a characterized weight grid to extricate explicit picture highlights without losing spatial game plan data. We at first assess diverse designs to decide the best performing CNN for the twofold arrangement undertaking and expect to accomplish writing revealed execution levels. We at that point try to prepare multi-class models that upgrade sensitivities for the gentle or beginning period classes, including different strategies for information pre handling and information growth to both improve test exactness just as increment our successful dataset test measure. We address worries of information loyalty and quality by gathering a lot of ophthalmologist confirmed pictures. At last, we address the issue of inadequate example estimate utilizing a deep layered CNN with exchange learning on discriminant shading space for the acknowledgment task. We at that point prepared and tried two CNN structures, AlexNet and GoogLeNet, as 2-ary, 3-ary and 4-ary grouping models. They are tuned to perform ideally on a preparation dataset utilizing a few methods including bunch standardization, L2 regularization, dropout, learning rate arrangements and inclination plunge update rules3. Experimental studies were conducted utilizing two essential information sources, the openly accessible Kaggle dataset of 35,000 retinal pictures with 5-class labels (normal, mild, moderate, severe, end stage) and a physician-verified Messidor-1 dataset of 1,200 color fundus images with 4-class labels. Throughout this study we aim to elucidate a more effective means of classifying early stage diabetic retinopathy for potential clinical benefits.
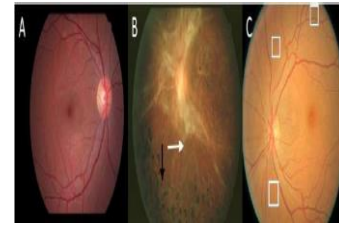
Figure 1.1. Blood Vessels

Automated analysis of retinal color images has such benefits as increased efficiency and coverage of screening programs, reduced barriers to access, and early detection and treatment. Over the last several decades the algorithms for automated retinal screening have been developed. Until recently, those algorithms have been using analysis based on image features manually crafted by experts. Deep Learning is an approach that avoids such engineering automatically learning hierarchy of discriminative features directly from the images given a large set of labelled examples. With AlexNet [1] stealing the show in 2012 Deep Convolutional Neural Network (CNN) have revolutionized the field of computer vision and have been highly successful in a large number of computer vision and image analysis tasks, substantially outperforming all classical image analysis techniques. In the domain of retinal image analysis, CNNs have been used for vessel segmentation to classify patch features into different vessel classes [5]. In the Kaggle competition [4] all top solutions used CNNs to identify signs of DR in retinal images. In this project we use Deep Learning models to detect referable Diabetic Retinopathy (rDR) in 2 data sets. We assess the sensitivity, specificity and area under the operator receiving characteristics curve (AUC) of the model, and compare these with other state-of-the-art models and clinicians.

II. METHODS AND MATERIAL

The structure of our neural network, shown in Fig 1, was decided after studying the literature for other image recognition tasks. Increased convolution layers are perceived to allow the network to learn deeper features. For example, where as the first layer learns

edges the deepest layer of the network, the last convolutional layer, should learn the features of classification of DR such as hard exudate. The network starts with convolution blocks with activation and then batchnormalisation after each convolution layer. As the number of feature maps increases we move to one batch normalisationper block.

All maxpooling is performed with kernel size 3x3 and 2x2 strides. After the final convolutional block the networkis flattened to one dimension. To avoid overfitting we use weighted class weights relative to the amount of images in each class. Likewise, we perform dropout on dense layers, to reduce overfitting, until we reach the dense five node classification layer which uses a softmax activation function to predict our classification. The leaky rectified linearunit13 activation function was used, applied with a value of 0.01, to stop over reliance on certain nodes in the network. Similarly, in the convolution layers, L2 regularisation was used for weight and biases. The network was also initialised with Gaussian initialisation to reduce initial training time. The loss function used to optimise was the widely used categorical cross-entropy function.

Pre-processing: The dataset contained images from patients of varying ethnicity, age groups and extremely varied levels of lighting in the fundus photography. This affects the pixel intensity values within the images and creates unnecessary variation unrelated to classification levels.

There are three major tasks in computer vision in increasing order of difficulty:
(I) classification, (II) localization/segmentation, and
(III) detection. Detection task represents the highest difficulty and requires detection of many small objects, while localization task pertains to a single, usually large object. In classification task an image is assigned a single label or score corresponding to the image as a whole.
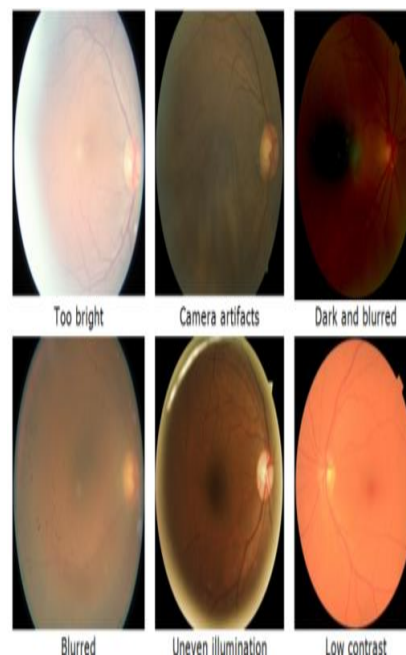
Figure 2.1. Retinal images of deficient quality

In DRD project, advantage of the classification task is that it does not require manual annotation of retina regions (as opposed to detection task), binary or categorical labels is enough for training a model. However, one serious challenge for classification task comes from the fact that on global scale healthy retinal images do not differentiate from those with DR. It is subtle lesions (Drusen, Exudates, Microaneurysms, Hemorrhages, and Cotton-wool Spots) observed on image patch scale make the difference.
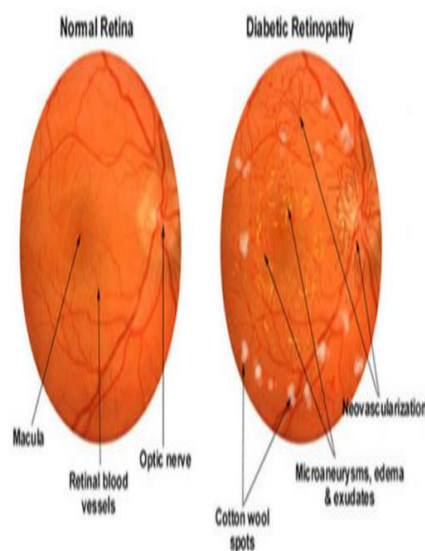
Figure 2.2. Microaneurysms, Exudates and Cotton-wool Spots

Fortunately, with recent advance of Deep and extra-Deep Convolutional Neural Networks (CNNs), it became possible to train powerful classification models capable of automatic discovery subtle local features without need of manual annotation of individual lesions. The network used in our project is a Convolutional Neural Network with deep layered structure that combines nearby pixels into local features, and then progressively aggregates those into global hierarchical features. The network was trained on binary classification task and outputs continuous score between 0 and 1, which represents classifier's confidence in Referable DR presence. Although classification model does not explicitly detect lesions (Drusen, Exudates, Microaneurisms, Hemorrhages, or Cotton-wool Spots), it likely learns to recognize them using the local features. The architecture used in our project originates from famous VGGNet family, winner of ImageNet Challenge ILSVRC-2014, designed for large-scale natural image classification [2], Training convolutional model 19 layers deep, with 8,013,393 parameters, on large 540x540 images represents significant challenge for convergence. We significantly redesigned original VGG architecture, added number of recent innovations and developed special training protocols to achieve better convergence and accuracy. More traditional techniques like dropout, data augmentation and pre-processing have been applied too. With these design choices, full end-to-end training is possible, and for a single model it takes several days on Kaggle data set on GPU Nvidia GTX-980.

Diagnosis Phase:

Unlike training, deployment and application of the model is straightforward, fast and not resource intensive. In principle, it can run on CPU, though GPU is recommended.

1. First, we preprocess retinal images to make them uniform. We normalize 1, scale, center and crop them to 540x540 pixels.
2. Next stage is image quality assessment module2. For DR detection system sensitivity is a key factor. Subtle signs of retinopathy at an early stage can be easily masked on a low contrast or blurred image. Analysis of an image of low quality may produce unreliable results when the system labels an image as normal while lesions are present. These low quality images should be automatically detected, and examined by a specialist, and reacquired if necessary.
3. Then we generate a number of randomly augmented images and feed them into DRD model(s).
4. Multiple scores obtained on previous stage are being fused into final diagnosis.
5. When possible, we combine the other eye scores too – for added accuracy.
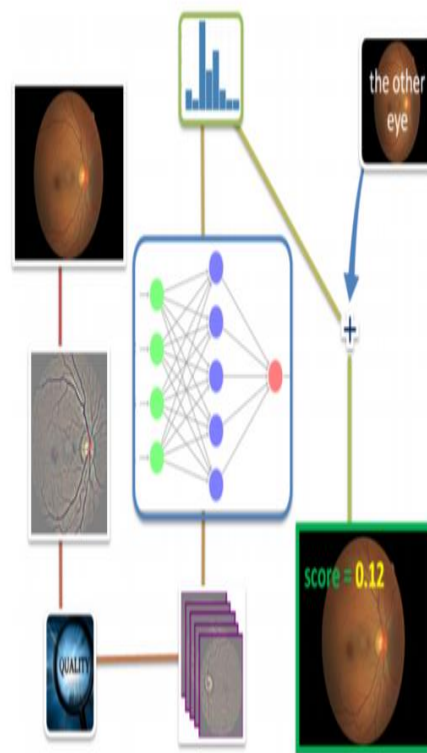
Figure 2.3. Diagnostic phase

III. RESULTS AND DISCUSSION

1. The proposed system makes use of Neural Networks for achieving the efficiency of the diabetic retinopathy detection.
2. The proposed system does not only rely on image processing procedures but also makes use

of artificial intelligence to determine the diabetic retinopathy.

3. Just like any automated system, even powerful Machine Learning models have their theoretical limits. Apart from specific quality considerations we discussed above, they demonstrate best performance being applied to images of the same genesis as those they were trained on. This means that images obtained using very different hardware, or from peculiar population not present on training stage, may sometimes result in decreased accuracy. Fortunately, these limitations can be circumvented by means of fine-tuning the model on the new data, or via training on broader data sets.

IV. CONCLUSION

The potential advantage of utilizing our prepared CNN is that it can arrange a large number of pictures each moment enabling it to be utilized progressively at whatever point another picture is gained. By and by pictures are sent to clinicians for reviewing and not precisely evaluated when the patient is in for screening. The prepared CNN makes a fast determination and moment reaction to a patient conceivable. The system likewise accomplished these outcomes with just a single picture for each eye. The system has no issue figuring out how to identify a picture of a sound eye. This is likely because of the substantial number of sound eyes inside the dataset. In preparing the learning required to group the pictures at the outrageous closures of the scale was fundamentally less. The issues came in making the system to recognize the gentle, moderate and extreme. instances of DR. The low affectability, fundamentally from the gentle and moderate classes recommends the system attempted to adapt sufficiently profound highlights to distinguish a portion of the more multifaceted parts of DR. A related issue distinguished, which was affirmed by a clinician, was that by national UK guidelines around over 10% of the pictures in our dataset are regarded ungradable. These

pictures were characterized a class based on having something like a specific dimension of DR. This could have seriously ruined our outcomes as the pictures are misclassified for both preparing and approval. instances of DR. The low affectability, predominantly from the gentle and moderate classes proposes the system attempted to adapt sufficiently profound highlights to recognize a portion of the more unpredictable parts of DR. A related issue recognized, which was guaranteed by a clinician, was that by national UK guidelines around over 10% of the pictures in our dataset are considered ungradable. These pictures were characterized a class based on having no less than a specific dimension of DR. This could have seriously prevented our outcomes as the pictures are misclassified for both preparing and approval.

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Automatic Detection and prediction of Gastric Cancer using Deep Learning

Prof. Akshita Chanchlani, Sumit Chauhan, Sujay Pasalkar, Anjali Bhatt, Prajakta Awaghade

Computer Science, SPPU/SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Many From all the worst cancers in the world, Gastric Cancer is a malign of all with the highest ratio of deaths and increasing mortality rate every year in the globe. As gastric cancer is so harmful to health, the main stress should be given on detection of the cancer first and then treating it. Currently, cancer detection is done by pathologists by examining the biological tissues of a patient and then perform various tests on it and come to conclusion. But this process in turn consumes more time and manpower. In this paper, a framework for automatic detection and classification of Gastric Cancer has been proposed based on Deep Learning. A deep neural network has been built for detecting and classifying abnormal and normal images (CT images) from obtained datasets. This research in automatic detection and classification of gastric cancer has a greater value as it will help doctors and medical sciences field.

Keywords: Gastric cancer, Image recognition, Convolutional neural network, Classification

I. INTRODUCTION

Gastric cancer is the fourth most common cause of cancer-related death in the world. Nearly one million new cases occur each year. Gastric cancer or stomach cancer, is a type of cancer that begins in the mucus-producing cells on the inside lining of the stomach. The most common type of stomach cancer is adenocarcinoma. The most important measure to diagnose gastric cancer is the detection and treatment of diseases early. Using Computer-Aided Diagnosis (CAD) to classify the pathology images can improve the diagnostic efficiency and provide doctors with more objective and accurate diagnosis results, which has significant clinical value. [1]

Despite a decrease in its incidence in some regions of the world, gastric cancer still poses a major clinical challenge because most cases are diagnosed in an advanced stage, with a poor prognosis and limited treatment options. The most common causes are Helicobacter pylori infection (proven), Epstein-Barr virus infection (suspected), and familial. Major predisposing factors include high salt intake, smoking, and a familial genetic component. Primary prevention (i.e., H. pylorieradication) is increasingly recommended. The current and traditional methods for detection of cancer are labour-intensive and also the the result may vary from pathologists to pathologists. Due to which this method becomes error-prone. Hence, to overcome this obstacles we need to implement a trustworthy way of detecting the cancer at an early stage and then treating it.[2]

II. METHODS AND MATERIAL
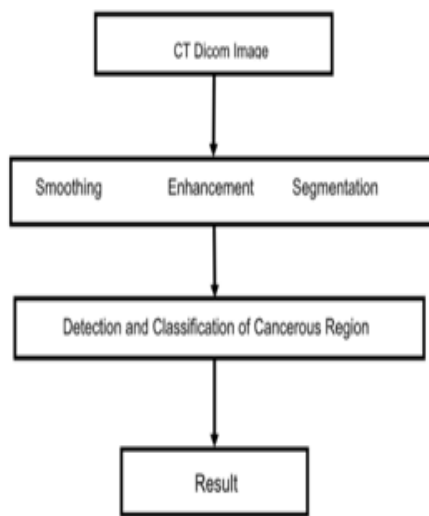
Figure 1. System Architecture

Firstly, standard data augmentation techniques are applied on the available gastric cancer dataset and thousands of images of size 512x512 are generated.

We build a sequential model and add convolutional layers and max pooling layers to it. For the sequential model we just stack the layers and only specify the image input dimensions in the first layer. Our first layer will be a convolutional layer Conv2D() where we specify the number of feature maps , the input shape and the activation function which is here relu .[3]

Now we add a flatten layer that takes the output of the CNN and flattens it and passes it as an input to the Dense Layers which passes it to the output layer.

We use Softmax with the output layer to output estimated probability vector for multi-class classification .

We also add dropout layers in between, dropout randomly switches off some neurons in the network which forces the data to find new paths. Therefore, this reduces overfitting. We add dense layers at the end which are used for class prediction.

Lastly ,segmentation is done to find the Region Of Interest(ROI), a grayscale image is taken and threshold function is applied to find the ROI. [1]
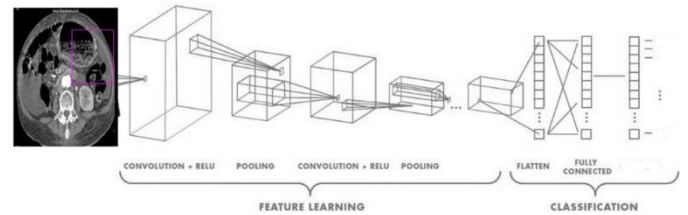
Figure 2. Convolutional Neural Network

III. RESULTS AND DISCUSSION

In this experiment, we used Diacom images taken from 46 patients. We tested the accuracy of the algorithm on the test set, and processed the image of the test set with a trained 2-layer neural network model. After training and fine-tuning the parameters, the accuracy of the test set reached 100%.The model is able to classify the grade of the cancer and also show the Region Of Interest.

(a)   (b)
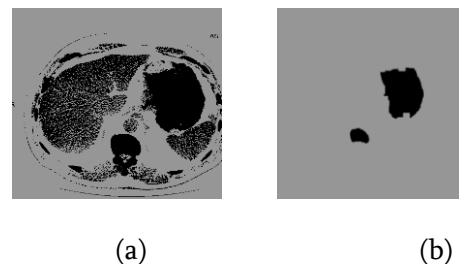
Figure 3. (a)Grayscaled image (b)ROI

IV. CONCLUSION

A self-designed CNN architecture is proposed for image analysis (cancer classification and detection based CNN) on datasets of gastric cancer. The datasets were obtained from www.cancerimagingarchive.net. In future the aim is to expand the processing on various dataset and to improve the CNN architecture for optimal performance.

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Secure Distributed Data Storage for Industrial Employee Health

Mukul Kopulwar, Mahadevan Patil, Pranav Kulkarni, Hardik Sharma

Computer Engineering Department, Savitribai Phule Pune University/SKN Sinhgad Institute of Science & Technology, Lonavala, Maharashtra, India

ABSTRACT

Industrial applications are considered as promising fields for wireless sensor networks, where employees can be monitored using wireless industrial sensor networks (ISNs). Current WMSN healthcare research trends focus on employee's t reliable communication, employee's mobility, and energy-efficient routing, as a few examples. However, deploying new technologies in healthcare applications without considering security makes employee's privacy vulnerable. Moreover, the physiological data of an individual are highly sensitive. Therefore, security is a paramount requirement of healthcare applications, especially in the case of employee's privacy, if the employee's has an embarrassing disease. This project discusses the security and privacy issues in healthcare application using WMSNs. We highlight some popular healthcare projects using wireless industrial sensor networks, and discuss their security the existing systems solutions can simply protect the employee's data during transmission, but cannot protect the inside attack where the administrator of the employee's database reveals the sensitive employee'data. So we are proposing a approach to prevent the inside attack by using multiple data servers to store patient data. The main contribution of this paper is to distribute employee's data securely in multiple data servers and performing the Paillier cryptosystems to perform statistical analysis on the employee's data without compromising the employee's privacy.

Keywords: Wireless medical sensor network, employee data privacy, Paillier encryption.

I. INTRODUCTION

A wireless sensor network is a network to monitor physical or environmental conditions such as temperature, sound, pressure, etc. The development of wireless sensor networks was motivated by air pollution monitoring, water quality monitoring, land side detection, forest fire detection, habitat monitoring and so on. . Though there are many applications in wireless sensor network domain, human healthcare applications takes the major role. In human healthcare, sensors are used to monitor the patients' health status such as temperature level, sugar level, heart beat rate, blood pressure. For instance, if the patient's sugar level is monitored 10 times per day

then the data is updated in the database which is present in the local server. Likewise the values for blood pressure, heart beat, and temperature are also noted at regular intervals. There are many security issues such as data stealing, stealing and updating, storing the wrong values. Suppose if the intruder is trying to hack the employee details, there are many chances for the misuse of data which may lead to severe consequences. The data can also be modified by the hackers due to lack of security. The treatment prescribed by the doctors can be hacked which may even lead to death of the employees. Employees are the victims because of the above issues. To prevent these issues, the intrusion detection system is proposed. An intrusion detection system is a system

used to check the malicious activities and produces electronic reports to a management station. It consists of Paillier algorithm key cryptosystems. The algorithms issue to encrypt the employee details before storing it in the database and perform decryption when needed by the physician.

II. METHODS AND MATERIAL PROPOSED SYSTEM

WSNs deployed at an outsized scale in a very distributed manner, and their knowledge rates differs supported their applications, wherever the Wireless Industrial device Networks have direct human involvement ar deployed on a small scale should support mobility (a worker will carry the devices), and WMSNs needs high data rates with reliable communication. Physiological conditions of worker s are closely monitored by deploying Wireless Industrial device motes. These Industrial sensors ar used to sense the employee's very important body parameters and transmit the detected knowledge in a very timely fashion to some remote location while not human involvement. victimization these medi Industrial device readings the doctor will get the main points of a employee's health standing. The employee's very important body parameters embody heart beats, body temperature, pressure, sugar level, pulse rate. WMSNs carry the standard of care across wide variety of health care applications. additionally, alternative applications that additionally have the benefit of WMSNs embody sports-person health standing watching and staff self-care. many analysis teams and comes have began to develop health watching victimization wireless device networks. Wireless Industrial health care application offers variety of challenges, like, reliable transmission of information, secured knowledge transmission, nodes quality, detection of event delivery of information in time, power management, etc. Deploying new technologies in health care applications while not considering security typically makes worker privacy vulnerable. for example, {the worker the worker}'s

physiological very important signals are sensitive therefore the leak of the employee's pathological knowledge may makes the employee embarrassed. generally revealing illness data will create it not possible for them to get insurance protection and additionally end in someone losing their job. To prevent the worker knowledge from the within attacks, we propose a replacement knowledge assortment protocol, wherever a device splits the sensitive worker knowledge into 3 parts in step with a random range generator supported hash operate and sends them to 3 servers, respective, via secure channels. To keep the privacy of the worker data in knowledge access, we propose a replacement data access protocol on the premise of the Paillier cryptosystem. The protocol permits the user (e.g. physician) to access the worker data while not revealing it to any knowledge server. To preserve the privacy of the worker data in applied mathematics analysis, we have a tendency to propose some new privacy-preserving applied mathematics analysis protocol on the premise of the Paillier cryptosystems. These protocols enable the user (e.g., Industrial researcher) to perform applied mathematics analysis on the worker data while not compromising the worker data privacy.

III. RESULTS AND DISCUSSION

We have developed a system where we are taking industrial employee data from the company and we are dividing the data into 3 servers using aggregators. Now using 3 servers we mean that 3 databases. And Using RSA algorithm we are encrypting the data so that whenever the hacker suppose hack one of the system at that time the other 2 databases will automatically get lock down and the hacker will not be able to hack the system.

Now the hacker has one database but still he will not be able to see or change the values of the data Because the data will be in encrypted format and The hacker

will be requiring very good skill to decrypt the system and get the values.

IV. CONCLUSION

We have investigated the protection and privacy problems within the industrial sensor information collection storage and queries and presented a whole answer for privacy-preserving industrial sensor network through the ad-hoc network. to stay the privacy of the worker information, we planned a replacement information assortment protocol that splits the worker information into 3 numbers and stores them in 3 information servers, severally. As long joined information server isn't compromised, the privacy of the worker information may be preserved. For the legitimate user e.g. medico to access the worker information, we planned associate degree access management protocol, wherever 3 information servers join forces to supply the user with the employee' information, however don't recognize what it's. just in case any 2 of 3 servers area unit compromised the planned system provides a proxy based information retrieval system.

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Blockchain-based Decentralized Password-less User Authentication System

Rajdeep Singh, Sankalp Khawade, Akshay Jinde, Yash Jain

Compute Dept., SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

IT around the world see the beginning of a new era, where passwords are considered as a relic of the past. The costs now outweigh the benefits of using passwords, which increasingly become predictable and leave users vulnerable to theft. Even the strongest passwords are easily phish-able. The motives to eliminate authentication systems using passwords are endlessly compelling and all too familiar to every enterprise IT organization. For enterprise IT departments, nothing costs more than password-support and maintenance. It's common practice for IT to attempt lessening password risk by employing stronger password complexity and demanding more frequent password changes. However, these tactics drive up IT help desk costs while leading to poor user experiences related to password reset requirements. Most importantly, this approach isn't enough for current cybersecurity threats and doesn't deliver on organizational information security needs. So in this project we are building a block chain based password-less user authentication system.

Keywords: Block chain, Password-less User Authentication, PKI.

I. INTRODUCTION

At its core, the underlying principle of password-less authentication is to eradicate the use of passwords and thereby drain their value for attackers. Moving forward with this approach requires technologies that can support it and time for organizations and users to adopt these technologies. Adoption also involves a new mindset. Organizations have to understand how the approach works with their flow of operations and make the necessary technical and cultural shift, so that users can operate in this new password-less world. Here are the key considerations for implementing password-less authentication.

PKI: PKI requires the 2 sides to have public and private key pair. The PKI manages these keys by verifying them through a certificate management authority, CA, who keeps the record of the valid certificate of the public. The most common approach to PKI is CA-based – specifically, the X.509 standard. CA is a trusted party, who will issue a signed certificate verifying an entity's ownership of a public key on request. In order to "trust" a CA, a device accepts a root certificate for that CA into its store. The metadata in a public key certificate typically comprises a version number, a validity period, a serial number, a URL that provides revocation information, an identifier that identifies the digital signature cryptosystem used to sign the certificate, and an identifier that identifies the CA that issued the certificate. A hierarchical certificate chain stems from this root, in which any certificates signed using a trusted certificate are also trusted. WoT-based PKI is also widely used. Members of the network establish trust by verifying that others have a certificate signed by an entity in whom the verifier has previously established trust. Unlike in CA-based PKI, trust is decentralized in WoT – certificate issuance can be performed by any party.

PKI in blockchain: Blockchain was first introduced as the transaction record for the Bitcoin cryptocurrency in 2008[11]. Alternative blockchains have since been

developed, including the Namecoin blockchain, on which Certcoin and PB-PKI are built. Namecoin works as a decentralized domain name server (DNS) which, unlike the Bitcoin blockchain, is able to store data, making it suitable for wider applications [Kalodner et al., 2015]. A blockchain is a public ledger to which events are posted and verified by network members, before being "mined" in an incentivized system in which members compete to complete some proof-of work – usually a cryptographic challenge. Blockchain has a unique combination of properties that make it suitable for a number of applications: it is decentralized (it is controlled through majority consensus of members), and the transaction record is reliable(events recorded in the past cannot be altered without the consensus of a majority of the network's mining power). Proposed and existing applications include smart contracts, reputation systems, and IoT device interactions. Many other Cryptocurrencies have been launched since the launch of Bitcoins[12]. Here we shall use the distributed and on chain storage feature of blockchain that will help us make PKI possible through it.

Password-less User Authentication System is better than any other authentication systems because it provides an optimum solution considering security and ease of use.
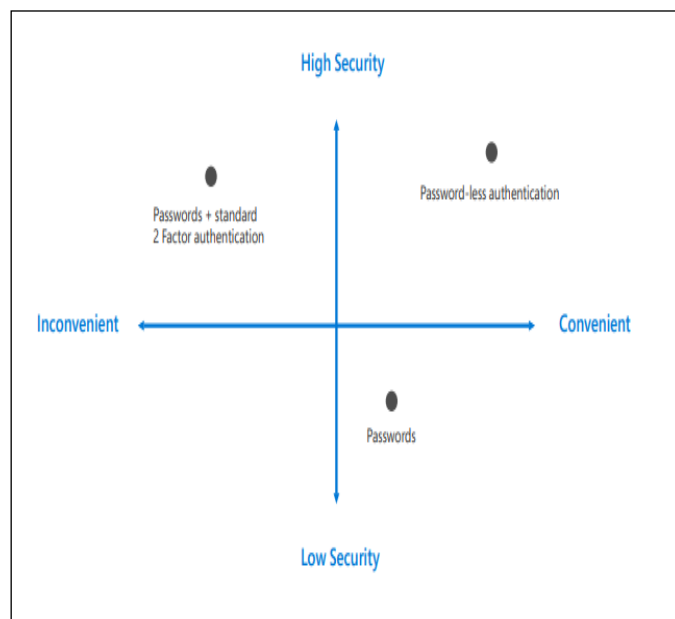
Figure 1. Convenience vs. Security Graph

II. MODELING OUR SYSTEM

A blockchain is a chain of blocks where every chain consists of a hash of complete chain prior to it. The chain can hold more of such data as required. The blockchain currencies used this concept to store transactions in it providing an immutable storage. We will exploit this feature of the blockchain to store the user account details instead of a central database. In our system, we used 6 separate chains.

1 - Hash Chain
2 - User Information Chain
3 - Request Chain
4 - Blocked users
5 – Logs
6 – Privilege

Since we are building a complete user management system, we will need these, for basic features of user data, requests, blocked users/deleted accounts, rights and login logs. A large number of chains would make the system bulky but the segregation of information keeps it systematic and more secure and manageable. Hash chain would generally contain user ID, public key and Hashes.
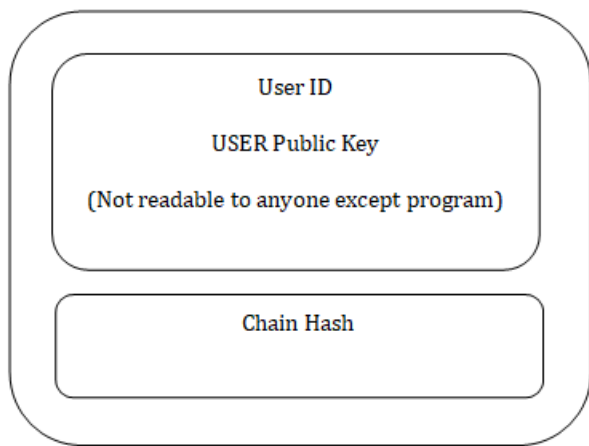
Figure 2. User Hash Chain

The second chain contains user information such as name, contact details, address, profile, department, etc. in a similar fashion. Read-only accessible to all the users since it doesn't contain any kind of personal information. The third chain contains the new user account request with details such as User Info, Contact Info ID, and Hashes. A new user will need to send a joining request before they could actually start using the system. The request needs to be approved by the senior authority like the Database admin in traditional database systems. The roles will be mentioned in the Roles list which will again be hidden from everyone containing the user IDs and their corresponding roles or access levels. The Blocked chain will have a list of the ID of accounts that are disabled or blocked. This will restrict the users to join the network and help to track of the same. The log chain will have user log details similar to traditional logs.
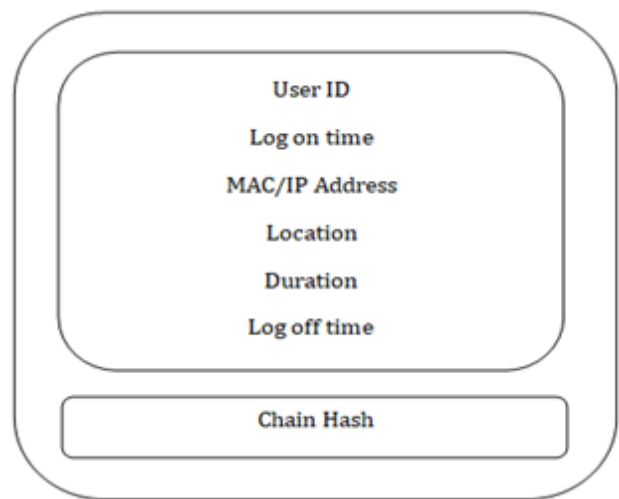
Figure 3. Logs Chain

The chained hash is always the hashes like in traditional blockchain systems.
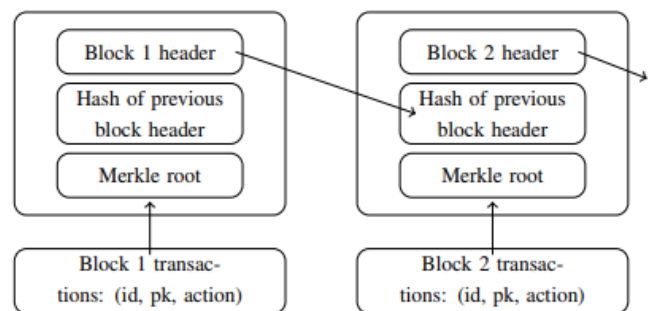
Figure 4. Blockchain with PKI Structure

III. RESULTS

The first advantage of the implementation of PKI as a blockchain is that the certificates are not signed. This means that they are shorter, which reduces the time it takes to transmit a certificate backed by a CA certificate chain. Second, validation of a certificate and its CA certificate chain is trivial. A blockchain being a distributed ledger, the verifier has a local copy of the entire blockchain and looks up hashes of certificates in blockchain stores in the local copy, without network access. No signatures need to be verified. A blockchain PKI solves a longstanding problem of traditional PKIs by not requiring the use of a service that issues certificate revocation lists (CRLs) or responds to online certificate status protocol (OCSP)

queries. CRLs can get very big. They must be stored by the verifier and updated over the network on a regular schedule. OCSP checks add network latency to certificate validation and leak the information that the subject is presenting the certificate to the verifier, destroying the feature of cryptographic credentials. Too often, if the revocation checking service is unavailable, verifiers skip revocation altogether. It should be noted that a blockchain PKI can be used to back plain blockchain certificates just as well as rich blockchain certificates and both use cases benefit from the above advantages of a blockchain PKI.

This project is based on a distributed system which enhances the security of the underlying processes by making it necessary to fulfill the consensus
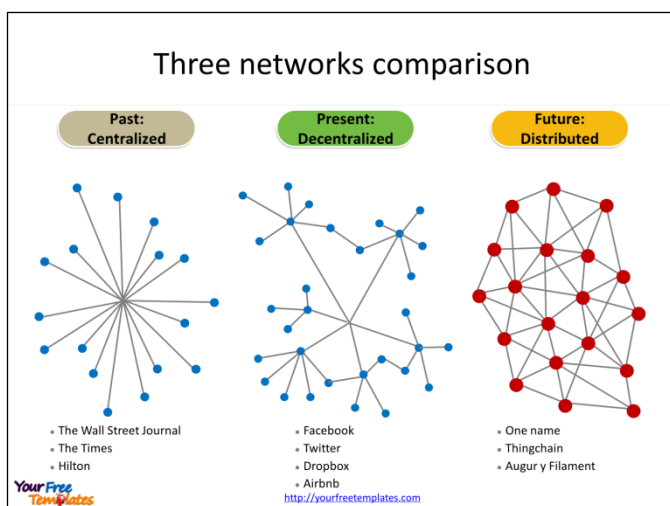
Figure 5. Networks Comparison

Our system mainly works on the concept of proof-of-work. A Proof-of-Work system is an economic measure to deter denial of service attacks and other service abuses such as spam on a network by requiring some work from the service requester, usually meaning processing time by a computer. A key feature of these schemes is their asymmetry: the work must be moderately hard (but feasible) on the requester side but easy to check for the service provider. This idea is also known as a CPU cost function, client puzzle, computational puzzle or CPU pricing function. It is

distinct from a CAPTCHA, which is intended for a human to solve quickly, rather than a computer.

IV. CONCLUSION

This is a description script of a project whose goal is to make the user management system secure by removing the concept of traditional alphanumeric characters and centralized authentication database. This system allows the user to select among multiple ways of password object as preferred including Files, Barcode, Smart Cards, etc. embedded with a private key of the user. The authentication will be provided by the blockchain network through the key object with the user instead of a central database. The user will be able to log in if more than 50% of the network nodes approves. This paper describes the model used to attain the same proving more benefits than traditional passwords and PKI systems with the same management features.

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Survey Paper OfAutomated Online Examination using Face Recognition And Proctoring

Silkesha Thigale[1], Vishvadeep Kamble[2], Shubham Temgire[2], Santosh Yejgar[2], Subhash Shinde[2]

[1]Assistant Professor, Computer Engineering Department, SKNSITS, Lonavala, India

[2]Computer Engineering Department, SKNSITS, Lonavala, India

ABSTRACT

With the expansion of Internet andtechnology over the past decade, E-learning hasgrown exponentially day by day.Cheating in exams has been a widespread phenomenonall over the world regardless of the levels of development. Therefore,detection of traditional cheating methods may no longer be wholly successful tofully prevent cheating during examinations. Online examination is an integral andvital component of E-learning. Student's exams in E-learning are remotely submittedwithout any monitoring from physical proctors. As a result of being able to easilycheat during e-exams, E-learning universities depend on an examination process inwhich students take a face-to-face examination in a physical place allocated at theinstitution premises under supervised conditions, however this conflicts with the conceptof distant E-learning environment. This paper will investigate the methods usedby student for cheating detection in online exams, through continuous authenticationand online proctors. In addition, we have implemented an E-exam managementsystem, which is used to detect and prevent the cheating in online exams.

Keywords: Security, PCA algorithm, Image Processing.

I. INTRODUCTION

In recent years, information and communication technologies (ICT) witnessed rapid developments and had direct impacts on human life, especially in the field of education. As a result, E-learning has become increasingly popular over the last few years and widely adopted by educational institutions. It enables to deliver information whenever students need at anytime and anywhere over the web. For this reason, it also called web-based learning or online learning. "Assessment for Learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there". Assessment is one of the main tasks of the education process. It takes an important weight during

the development of any e-learning course. Exams are most widely used to assess student learning. However, exams can be classified into three types: traditional exams, online exams and distance exams (D-exams). Traditional exam defined as a set of questionnaires given in the class. They are created based on static questions per student. As a result, students must begin and end the exam within the same time limits. Online exams, sometimes referred to as examination, are Internet based questionnaire. They are created randomly from questions set per student with a preset time limits by which the exam is to be completed. Furthermore, students should attend to a classroom for performing an exam. D-exams are a way of delivering questions to students who are not physically present in a traditional setting such as a classroom. They are created randomly from questions

set per student with a preset time limit by which they should be answered. Furthermore, they save or reduce time required for paper checking, as well as, they save papers, and printing, thus saving environment. D-exam present a new challenges for teachers; notably, how to prevent students from cheating. As a result, e-learning institutions depend on an examination process in which students take a face-to-face examination in a physical place located at the institution premises and under supervised conditions to ensure the student identity. However, that conflicts with the concept of E-learning, which eliminates the temporal and spatial dimensions between the students and the learning process. Each student must be physically present in the classroom in order to take the exam. This paper investigates all types of methods used for cheating in D-exam, and resolves this problem by either detection or prevention. Detecting and preventing cheating require a human intervention (i.e. the presence of a proctor). The proctor needs to physically authenticate students' IDs before starting the exam. However, this is not enough; we need continuous authentication all over the exam session. In addition, we need a continuous process of monitoring and controlling over all students during the exam period.

II. LITERATURE REFERENCES

[1]International Journal of Emerging Technology and Advanced Engineering,"Website: Online Descriptive Examination and Assessment System" BhagyashriKaiche 1, Samiksha Kalan 2, Sneha More 3 , LekhaShelukar,2014.

The descriptive exam system consists of checking of answer sheets and attendingtheory exam online. The system consists of candidate login and adminlogin. The whole system will be controlled by the admin. After registrationcandidate gets exam information related to his interest. In this system, thecandidate can apply for the exam, he receives his exam card through E-mailand he attends the exam and when the result should have to be declared, thisdecides by the administrator. The administrator arranges the exam scheduleand result declaration. He also arranges the exam question papers and answerpapers. The system checks paper manually also, if the exam paper checkergives wrong marks to candidate the system gives alert to him. The demo examis also provided; the sample question and answers are also provided for thehelp of the candidate.

[2] Secure Online Exams on Thin Client Exam;Tassanan,Treenantharath,Phaisarn Sutheebanjard,2013 Eleventh International Conference on ICT and Knowledge Engineering Nowadays, the online exam is become popular because the examination often have multiple-choice questions that can be quickly automated evaluation and graded by automated test scoring machines known as online exams. This paper proposed the secure online exams on thin client. The client in this system can be used older computer to reduced total cost of ownership. The proposed system used the Ubuntu operating system; the LTSP and the LXDE desktop manager to provide the thin client infrastructure in a dedicated exam room. The quiz activity was managed by Moodle that is a popular course management system.

[3]Automated Online Exam Proctoring;Yousef Atoum, Liping Chen, Alex X. Liu, Stephen D. H. Hsu, and Xiaoming Liu, IEEE TRANSACTION ON MULTIMEDIA, DEC 30, 2015.
Massive open online courses (MOOCs) and other forms of remote education continue to increase in popularity and reach. The ability to efficiently proctor remote online examinations is an important limiting factor to the scalability of this next stage in education. Presently, human proctoring is the most commonapproachofevaluation,byeitherrequiringthete sttaker to visit an examination center, or by monitoring them visually and acoustically during exams via a webcam. However, such methods are labor-intensive and costly. In this paper, we present a

multimedia analytics system that performs automatic online exam proctoring. The system hardware includes one webcam, one wearcam, and a microphone, for the purpose of monitoring the visual and acoustic environment of the testing location. The system includes six basic components that continuously estimate the key behavior cues: user verification, text detection, voice detection, active window detection, gaze estimation and phone detection. By combining the continuous estimation components, and applying a temporal sliding window, we design higherlevel features to classify whether the test taker is cheating at any moment during the exam. To evaluate our proposed system, we collect multimedia (audio and visual) data from 24 subjects performing various types of cheating while taking online exams. Extensive experimental results demonstrate the accuracy, robustness, and efficiency of our online exam proctoring system.

[4] ONLINE EXAMINATION SYSTEM ;DeepankarVishwasKotwal,ShubhamRajenda Bhadke, AishwaryaSanjay Gunjal, Puspendu Biswas,International Research Journal of Engineering and Technology (IRJET) 01 | Jan-2016.

This Online Examination System is a software solution, which allows any industry or institute to arrange, conduct and manage examinations via an online environment. It can be done through the Internet/Intranet and/ Local Area Network environments. Some of the problems faced during manual examination systems are the delays occured in result processing, filing poses a problem, filtering of records is difficult. The chance of loss of records is high also record searching is difficult. Maintenance of the system is also very difficult and takes lot of time and effort. Online examination is one of the crucial parts for online education system. It is efficient, fast enough and reduces the large amount of material resource. An examination system is developed based on the web. This paper describes the principle of the system, presents the main functions of the system, analyzes the auto-generating test paper algorithm, and discusses the security of the system.

III. PROPOSED SYSTEM

Explanation:

In proposed system different kind of functionality is provide means user can not close the window while attending the exam as well cannot open other tabs. Examinee can not copy, paste the data. These feature provided because of difficulty of analyzing the test manually, More observers are required to take exam of many students, Results are not accurate since calculations is done manually, The chance of losing exam's result is higher in current systems, Checking of result is time consuming since it done manually, Limitation of no of student can give examination at a time. With the development of information technology and use it in an orderly and properly helps to overcome the existing error in the manual system . Online examination system saves the exams information in a database, and this make it an easier way to give exam teachers can add theirs exams rules , and student can give exam in a totally automated system.

Examinee authentication is using real image with database image.

Advantages:
- Not time consuming process.
- Achieve better performance.
- Provide security.
- Make system user friendly.
- Reduce lot of paper work

Architecture Diagram
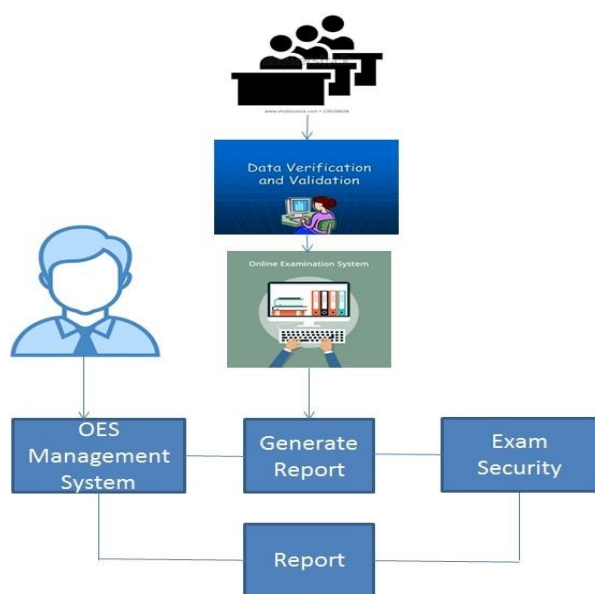
Figure 1. System Architecture

IV. SUMMARY

This paper addresses the cheating in online exam. Specifically, it introduced the concepts of cheating and how it can be controlled in online exam. It provides a technique for detecting and preventing student from cheating through continuous authentication and online proctor.As a result, the system classified the examinee status as cheating or non-cheating based on two parameters: the total an examinee time on out screen and the number of times, the examinee is out of screen. To evaluate this proposed work, a series of experimental tests were conductedThere are some limitations for the system that we presented in this paper, such as the handling of the cases of students with special needs.

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[4]. ONLINE EXAMINATION SYSTEM ;DeepankarVishwasKotwal, ShubhamRajendraBhadke, AishwaryaSanjay Gunjal, Puspendu Biswas,International Research Journal of Engineering and Technology (IRJET) 01 | Jan-2016.

Smart Data Sharing with Wi-Fi Network And AI

Prof. Silkesha Thigale, Prajakta Jawahire, Shubham Gaikwad, Shubham Dange, Shivam Babhale

Computer Department, SKN Sinhgad Institute of Technology & Science, Lonavla, India

ABSTRACT

With the development of society and the progress of science and technology, data transmission has increased to a great extent. This Data is transferred using various platforms like internet, adhoc, wifi network. Efficient use of data sharing using the wifi network to avoid the long queue at a shop or at mall during offer period. The system connects with the help of wifi, offers are shared with the customers through wifi –hotspot, user can see the offers on mobile application, order the particulars. User can also check specific offers with the help of chatbot based on artificial intelligence.

Keywords: Wifi, Ad-Hoc, Artificial Intelligence, Network, Internet

I. INTRODUCTION

In todays world fast and secured data transmission within the network is the prime fact of the smart data sharing system. Most of the applications uses the wifi/hotspot network and internet for data sharing. Due to the widespread coverage of internet, end users access Internet services on the run relying mainly on cellular networks. In 2018, the total mobile data traffic reached 16 hexabytes per month and this monthly volume is expected to surpass 30.6 hexabytes in the year 2020. To cope with these trends, WiFi offloading has gained a lot of attention by businesses and industry. Offloading mobile Internet connections to WiFi reduces the load on existing cellular infrastructure, which results in lower infrastructure expenses.

WiFi offloading helps end users to avoid exceeding their data plan volume limitations. Most of the business is done through e-commerce as it is easier and cost effective, but the use of internet for e The deployment of WiFi hotspots is essential for the coverage and the strength of the received signal. Thus, when designing or evaluating services, which rely on

the WiFi infrastructure (e.g., mobile traffic management solutions incorporating WiFi offloading , Internet of Things services for smart cities), the hotspot locations have to be taken into account. A low signal strength of the WiFi signal results in low throughput, which has an impact on energy consumption and may not meet the requirements of the application. The distribution of public WiFi hotspots within cities can be obtained from hotspot databases. To evaluate hypothetical scenarios and the scalability of mechanisms, a generic model would be needed to generate WiFi hotspot distributions for shops of different size, shape, customer density, and number of hotspots. Such a model could then facilitate the design and performance evaluation of mechanisms or services, which rely on WiFi infrastructure.

The ultimate goal of this work is to reduce the long queues and display offers, which presented a simple model for the WiFi hotspot distribution for shops or malls, by investigating its applicability and limitations. We investigated the accuracy of the model for performance evaluation applications, such as offloading potential, coverage, signal strength, interference, handovers, or bandwidth sharing. With

the use of AI we have made it easier to transfer the data in efficient manner.

II. SMART OFFLOADING PROXY SERVICE

In this section, we present the Smart Offloading Proxy (SOP) service to improve the users experience in uploading files over the mobile network. We hypothesize that network utilization in crowd events can also obtain better performance if users can finish their uploading task and then leave the system as soon as possible. Here we present the prototype of our proposed system. We then introduce various scheduling schemes that controls the bandwidth allocated to users for reducing file-uploading time.

A. Architecture

Figure 1 illustrates a network with Smart Offloading Proxy (SOP) service. A SOP service consists of a set of offloading trackers and servers. A Smart Offloading Tracker is a tracking system focuses on providing suggestions of proper offloading server for vendors. In order to make a feasible offloading server suggestion, it will analyze all the server information it recorded, including geo-location, loading and bandwidth capacity. A Smart Offloading Server (SOS) is a storing system for caching uploaded data temporarily.

It targets on providing a lower round trip time (RTT) and higher throughput for users. By enabling the request to send/clear to send (RTS/CTS) mechanism of the 802.11 wireless networking protocols, network resource scrambling between users can be reduced. To upload a file via SOP service, connection between end vendor and an offloading server should be established. User information will be collected and sent to the server for offloading s. Server will choose proper offloading servers by analyzing the information it recorded and the information user provided. Then, connect information and a token of the candidate SOS will be sent back to the vendor. After retrieving the information, a connection between the vendor applicaton and the Server can be established. To make

the occupation of network resources as short as possible, the SOS caches uploading data from vendors. The SOS then supersedes as a proxy to transmit data to the target server.
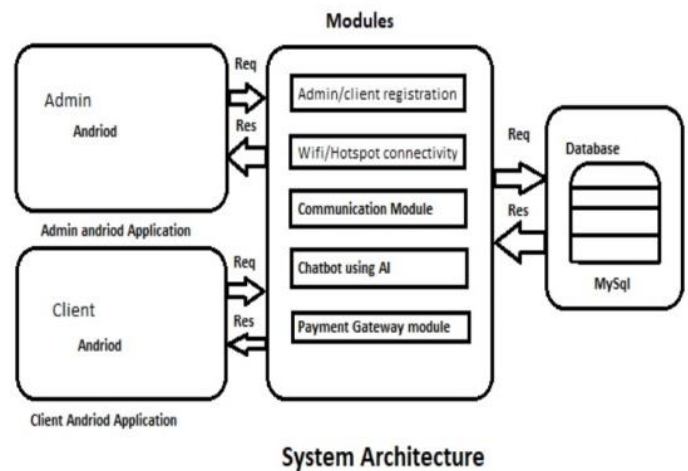
Figuer 1

B. Bandwidth scheduling

To improve user experience in uploading, we then introduce various schemes for scheduling the bandwidth allocated to vendors.

1) Method 1-Equal bandwidth: Bandwidth will be shared equally to jobs.
2) Method 2-Longest remaining job first: Bandwidth will be allocated as a reciprocal according to the elapsed time of a job.
3) Method 3-Shortest k jobs with equal bandwidth: Bandwidth will be shared equally to the shortest k jobs with shortest execution time.
4) Method 4-Shortest k jobs with longest remaining time: Bandwidth will be allocated to the shortest k jobs as a reciprocal of elapsed execution time.
5) Method 5-Shortest remaining k jobs with equal bandwidth: Bandwidth will be shared equally to the shortest jobs with shortest remaining time.

III. OVERVIEW OF A CHAT TOOL AND AN INTERFACE

The chat tool has four parts:

1. An interface for a discussion
2. A module for making a log file of comments.
3. A module for generating questions.
4. A module for generating back-channel responses.

Here we are using Google Assistant to making it more Smart. Discussion participants log on to the chat tool from the interface. After logging on, the discussion participants post comments comments. Of course, the discussion participants can post their comments through the interface or google assistant. Questions and back-channel responses by the chatting bot also can be read.

IV. PAYMENT GATEWAY

The Process of Online Payment Mode Based on Internet based payment gateway. Here we can use multiple wallets as an alternative to the traditional payment gateways. Tthe Online Payment Mode based on IBPG can be divided modes such as B2B, B2C, C2C,etc. We are implementing the B2C online payment mode based on the IBPG as an example. This mode makes use of buyer's bank card account or online wallet to realize transferring the fund to the seller account. This involves the consumer (buyer), vendor (seller) and bank.

The bank guarantees the buyer can receive the goods after paying for the goods; also guarantees the seller receives the payment for goods fast, safely enough after delivering. The payment process of this kind is as follows:

(1) Customer (buyer) submits the order after selecting the products online, and consults with the vendor to pay for the goods by online payment banking card or wallets.

(2) Vendor accepts the order after carrying on the identify authentication to the buyer. Then transmit the buyer's payment instruction to the IBPG.
(3) The IBPG carries on the identity authentication to Vendor and provide the customer payment interface.
(4) Customer fills in the account information after checking the message from the IBPG on the payment interface.
(5) The IBPG sends the account information to the banking system in order to obtain the payment authorization of the bank.
(6) Bank authenticates buyer's account information, deduct payment for goods temporarily, and then feedback the information to the IBPF.
(7) The IBPG informs the Vendor to deliver goods.
(8) The Vendor offers the goods to the customer.
(9) The customer confirms after receiving the goods.

V. CONCLUSION

This system includes the smart offloading proxy service, use of artificial intelligence for chatbot, e-commerce and the payment gateway.Smart Proxy Service makes the system easier for the vendors to offload the products easily on the server within the network. The use of artificial intelligence with the help of google assistant for effective request and response within user and the vendor. This system is main an e-commerce platform used only within the network of the server of vendor. The payment gateway will be integrated in the system for digital payment. The system run completely within single network. The network used will be mainly wifi or hotspot.

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Anti Theft Mobile Tracking

Prof. Jayant Jhadav, Prabhat Kumar Ranjan, Pravin Sarode, Akash Jadhavar, Dixit Jain

SKN Sinhgad Institute of Technology & Science, Lonavala – Engineering lonawala, Pune, Maharashtra, India

ABSTRACT

At first the GPS incessantly takes input file from the satellite and stores the latitude and meridian. With the assistance of propose system we will track our mobile. In propose system if we wish to trace mobile location then we'd like to send a message to our device, by that it gets activated. Once application gets activated it takes the present latitude and meridianpositions values from the GPS and sends a mail to the actual email id that is predefined at registration. Propose system may well be wont to track kid's current location.

Keywords: Location Sensing, Energy Efficiency, Location-Based Applications, Smartphone.

I. INTRODUCTION

With dynamic times, the mobile technology has modified tons and within the previous couple of years we've got seen the arrival of varied new types of gadgets within the variety of Smartphone, camera-phone, golem and pill phones. In fact, the French telephone trade has turned from easy budget handsets to modern high finish mobile phones. Today's device is nearly everything it's modern, innovative, appealing, high-performing, durable, fashionable and multitasking. Latest gadgets are often used for varied functions like browsing mobile, internet, taking part in games, emailing, and blogging, messaging, GPS, YouTube, Google search, Gmail and additional. The Global Positioning System (GPS) may be a location system supported a constellation of twenty four to thirty two satellites orbiting around the earth at altitudes of eleven,000 miles. every satellite is battery-powered by the Sun via its electrical device. In its earlier years, GPS was developed within the United States for military use, for the Department of Defense (DOD). Through the years of development and improvement, we've got advanced the utilization of GPS to trailing our precise location worldwide and as a navigation aiding tool for civilian usage.Currently, it's United States as navigation tooldevice to help us find the shortest route to ourdestination. We are able to use GPS to search out lost transportable or folks can track to their youngsters location.

II. LITERATURE SURVEY

According to literature survey after studying different IEEE paper, collected some related papers and documents some of the point discussed here:

1. Paper Name: Multi-satellite Formation control for Remote Sensing Applications using Artificial Potential Field and adaptive Fuzzy sliding Mode control
Author: RanjithRavindranathan Nair, LaxmidharBehera, Vinod Kumar, Mo Jamshidi Paper Explanation: The formation management of satellites for remote sensing applications has received goodish attention throughout the past decade. This work deals with the event of a formation management strategy for the circular formation of a bunch of satellites. During this paper, artificial potential field technique is employed for path coming up with, and slippy mode management (SMC) technique is employed for coming up with a sturdy controller.

A fuzzy logical thinking mechanism is employed to cut back the chattering development inherent within the standard SMC. AN adaptationalstandardisation formula is additionally derived supported Lyapunov stability theory to tune the fuzzy parameter. The projected fuzzy-SMC-based technique is meant to catch up on the modeling uncertainties existing in sensible applications. The results of simulations in deep trouble a bunch of 5 satellites creating a circular formation make sure the soundness and hardiness of this theme.

2. Paper Name: Optimizing sensor Locations in a very Multisensor Single-Object tracking System
Author: jasmine Cashbaugh, christopher Kitts Paper Explanation: trailing a mobile object presents several challenges, particularly once the caterpillar-tracked object is autonomous or semiautonomous and should move erratically. the employment of autonomous mobile sensing element systems permits for bigger chance to trace the mobile object however doesn't forever yield AN estimate of the caterpillar-tracked object's location that minimizes the estimation error. This paper presents a technique to optimize the sensing element system locations, given one object and a set variety of sensing element systems, to realize an edge estimate that minimizes the estimation error. The trailing stations might then be controlled to realize and maintain this optimum position, beneath position constraints. the idea predicts that given 'n' sensing element systems and one object there's a sensing element system configuration that may yield an edge estimate that minimizes the estimation error. A mathematical basis for this theory is conferred and simulation and experimental results for 2 and 3 sensing element system cases square measure shown let's say the effectiveness of the idea within the laboratory.

3. Paper Name: constrained Extended Kalman Filter for Target tracking in Directional sensor Networks
Author Name: Sha wen, ZixingCai, Xiaoqing Hu Paper Application: during this paper, the sector of read of

directional sensing element is approximated to a rectangle; per se the affected space during which the target is certain to be is made. Then, the target trailing drawback is developed as a affected estimation drawback, and a affected extended Kalman filter (CEKF) trailing formula integration the direction and activity data is presented; its structural and applied math properties square measure strictly derived. it's tested that CEKF is that the linear unbiased minimum variance expert, and CEKF will yield a smaller error variance than the free ancient extended Kalman filter victimization solely sensing element measurements. Simulation results show that the CEKF has superior trailing performance for directional wireless networks.

III. EXISTING SYSTEM

In existing system if we forget our phone then we call phone from another phone. If it's silent then is very difficult to find our phone. It's not possible to track children location for their parent

IV. PROPOSED SYSTEM

In propose system user can have main three choices to search out or track their mobile location. If use forget their mobile in home then user can send preformatted SMS to their phone then mobile can begin ringing. If user forgot their hone outside of home then he will track by propose system

V. SYSTEM DESIGN
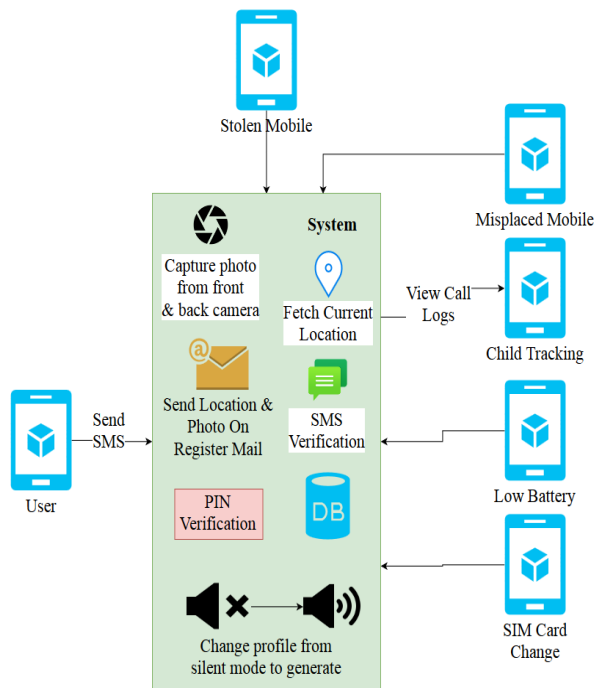
Figure 5.1 System Architecture

The figure 5.1 shows the Users install application on his/her android phone. Users register into system. After successful registration user login into system. After successful login user set his secret PIN. Whenever user want to change profile mode from silent to general OR want to track mobile location OR track children location and call logs; user send SMS. System verify SMS and match PIN, if SMS and PIN get match then system capture photo from front and back camera of phone. System identify battery status if battery is less than specific battery level OR any one change SIM card then

ADVANTAGES

- Easy way to find mobile location
- Save time and efforts to find mobile phone

ALGORITHM USED
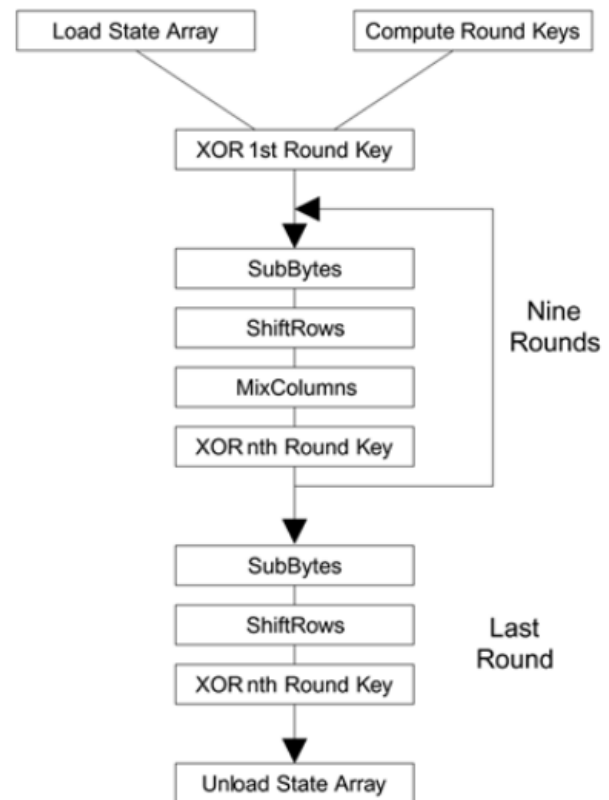
Figuer 5.2

You take the following AES steps of encryption for a 128-bit block:

1. Derive the set of round keys from the cipher key.
2. Initialize the state array with the block data (plaintext).
3. Add the initial round key to the starting state array.
4. Perform nine rounds of state manipulation.
5. Perform the tenth and final round of state manipulation.

Copy the final state array out as the encrypted data (cipher text)

VI. CONCLUSION

Propose system is anti-theft mobile following application. This application provides sturdy security to Smartphone once it's lost or taken by stealer. It offers the situation furthermore as photos of stealer to

user on emails id provided by user oldsters will simply track their children's locations. In future user will begin net of mobile by causation SMS.

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Block Design-based Key Agreement for Group Data Sharing in Cloud Computing

Prof. Bhagyashree Patale, Nikhil Kumar, Nikhil Deore, Charan Badekar
Department of Computer Engineering Sinhgad Institute of Technology, Lonavala, Maharashtra, India

ABSTRACT

Data sharing in cloud computing permits multiple participants to freely share the cluster data that improves the potency of labor in cooperative environments and has widespread potential applications. However, how to make positive the protection data of data of knowledge sharing among and thus the due to expeditiously share the out sourced information in Associate in Nursing very cluster manner unit of measurement formidable challenges. Note that key agreement protocols have contend a very necessary role in secure and economical cluster data sharing in cloud computing. throughout this paper, by taking advantage of the Centro parallel balanced incomplete block vogue (SBIBD), we have a tendency to tend to gift a novel block design-based key agreement protocol that supports multiple participants, which may exile extend the amount of participants in Associate in Nursing very cloud surroundings the structure of the block vogue. Supported the planned cluster data sharing model, we've a bent to gift general formulas for generating the common conference key K for multiple participants. Note that by taking advantage of the block vogue, the method complexity of the planned protocol linearly will increase with the amount of participants and to boot the communication quality is greatly reduced. To boot, the fault tolerance property of our protocol permits the cluster data sharing in cloud computing to face to completely different key attacks, that is analogous to protocol.

Keywords : Key Agreement Protocol, Auditing, Malicious User Detection, Data Sharing, Cloud Computing.

I. INTRODUCTION

CLOUD computing and cloud storage became hot topics in recent decades. unit dynamical the approach we've an inclination to measure and greatly rising production efficiency in some areas. At present, due to restricted storage resources and additionally the necessity for convenient access, we've an inclination to love higher to store all sorts of data in cloud servers, that's to boot AN honest chance for firms and organizations to avoid the overhead of deploying and maintaining instrumentality once data unit keep regionally. The cloud server provides degree open and convenient storage platform for folks and organizations, however it additionally introduces security problems. As AN example, a cloud system

might even be subjected to attacks from every malicious users and cloud suppliers. In these eventualities, it is vital to confirm the protection of the keep data among the cloud. In several schemes were planned to preserve the privacy of the outsourced data. The upper than schemes only thought-about security problems with one data owner. However, in some applications, multiple data householders would adore to firmly share their data throughout a cluster manner. Therefore, a protocol that supports secure cluster data sharing beneath cloud computing is needed. A key agreement protocol is utilized to urge a regular conference key for multiple participants to create certain the protection of their later communications, and this protocol is applied in cloud computing to support secure and

economical knowledge sharing. Since it completely was introduced by Diffie-Hellman in their seminal paper, the key agreement protocol has become one of the essential crypto logical primitives. the essential version of the Diffie-Hellman protocol provides degree economical answer to the matter of constructing a regular secret key between a pair of participants. In cryptography, a key agreement protocol might be a protocol among that a pair of or further parties will agree on a key in such the method that every influence the result. By mistreatment the key agreement protocol, the conferees will firmly send and receive messages from each other mistreatment the common conference key that they agree upon beforehand. Specifically, a secure key agreement protocol ensures that the individual cannot get the generated key by implementing malicious attacks, like eavesdropping. Thus, the key agreement protocol is wide used in interactive communication environments with high security needs (e.g., remote board conferences, teleconferences, cooperative workspaces, oftenest identification cloud computing thus on). The Diffie-Hellman key agreement provides the thanks to generate keys. However, it does not offer degree authentication service, that creates it in danger of man within the middle attacks. this instance is addressed   by adding some sorts of authentication mechanisms to the protocol, as planned by Law et al. in. to boot, the Diffie-Hellman key agreement can only support a pair of participants. afterwards, to resolve the varied key attacks

Architecture Diagram:
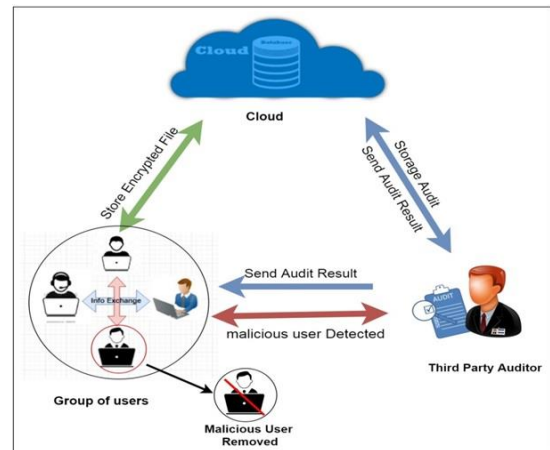
Figure 1

II. MATHEMATICAL MODEL

Input:

Large Bandwidth Network, movable device, sensor
Output:
Successful communication between two devices
System Description
1. Input: Set of outsourced data sets by corresponding data user.
2. Output: Securely data sharing with group participant and remove
malicious user from group through TPA.
3. System Used:
1. TPA for auditing on data and remove malecious users
Let S is the system, S= I, P, O,IS,OS,F,G,f1,f2
Where,I-Input,
P- procedure,
O- Output.
I-F,G
F- data les set of f1,f2,,fn
G- Group Users Query g1,g2,,qN
Procedure(P):
Where :
TPA=Third Party Auditor,
F=FaultTolerance
B=Set of block.
V=No of group participant.

ei = PublicKey

di = PrivateKey

H1,h2=HashFunction

Identify failure cases as F

F=fshare data to malicious user in group.g

Identify success as s.

s=share data in group and give private key to all group participant and re-

move

malicious user from group.

III. LITERATURE SURVEY

1)Paper Name: Privacy-Preserving Multi-keyword Ranked Search over Encrypted Cloud Data

Author: Ning Cao, Cong Wang, Ming Li, Kui Ren, and Wenjing Lou

Description: With the advent of cloud computing, data owners are motivated to outsource their complex data management systems from local sites to the commercial public cloud for great flexibility and economic savings. But for protecting data privacy, sensitive data has to be encrypted before outsourcing, which obsoletes traditional data utilization based on plaintext keyword search. Thus, enabling an encrypted cloud data search service is of paramount importance. Considering the large number of data users and documents in the cloud, it is necessary to allow multiple keywords in the search request and return documents in the order of their relevance to these keywords. Related works on searchable encryption focus on single keyword search or Boolean keyword search, and rarely sort the search results. In this paper, for the first time, we define and solve the challenging problem of privacy preserving multi-keyword ranked search over encrypted cloud data (MRSE). We establish a set of strict privacy requirements for such a secure cloud data utilization system.

2) Paper Name: Enabling Cloud Storage Auditing with Key-Exposure Resistance

Author: Jia Yu, Kui Ren, Cong Wang

Description: Cloud storage auditing is viewed as an important service to verify the integrity of the data in public cloud. Current auditing protocols are all based on the assumption that the clients secret key for auditing is absolutely secure. However, such assumption may not always be held, due to the possibly weak sense of security and/or low security settings at the client. If such a secret key for auditing is exposed, most of the current auditing protocols would inevitably become unable to work. In this paper, we focus on this new aspect of cloud storage auditing. We investigate how to reduce the damage of the clients key exposure in cloud storage auditing, and give the first practical solution for this new problem setting. We formalize the definition and the security model of auditing protocol with key-exposure resilience and propose such a protocol. In our design, we employ the binary tree structure and the pre-order traversal technique to update the secret keys for the client. We also develop a novel authenticator construction to support the forward security and the property of block less very ability. The security proof and the performance analysis show that our proposed protocol is secure and efficient.

3) Paper Name: Enabling Cloud Storage Auditing With Verifiable Outsourcing of Key Updates

Author: Jia Yu, Kui Ren and Cong Wang

Description: Key-exposure resistance has always been an important issue for in-depth cyber defence in many security applications. Recently, how to deal with the key exposure problem in the settings of cloud storage auditing has been proposed and studied. To address the challenge, existing solutions all require the client to update his secret keys in every time period, which may inevitably bring in new local burdens to the client, especially those with limited computation resources, such as mobile phones. In this paper, we focus on how to make the key updates as transparent as possible for the client and propose a new paradigm called cloud storage auditing with verifiable outsourcing of key updates. In this paradigm, key

updates can be safely outsourced to some authorized party, and thus the key-update burden on the client will be kept minimal. In particular, we leverage the third party auditor (TPA) in many existing public auditing designs, let it play the role of authorized party in our case, and make it in charge of both the storage auditing and the secure key updates for key-exposure resistance.

4) Paper Name: Cryptanalysis of simple three-party key exchange protocol

Author Name: N.W. Lo, Kuo-Hui Yeh and Meng-Chih Chiang

Description: Three-party authenticated key exchange (3PAKE) protocol plays an indispensable role in history of the secure communication areas in which two clients can agree a robust session key based on a human-memorable password. Current research community focuses on the issue of designing a simple 3PAKE (S-3PAKE) protocol which possesses both of robust system security and efficient computation complexity. In 2008, Chung and Ku pointed out that Lu and Caos S3PAKE scheme cannot resist three variants of the man- in-themiddle attack. The authors proposed a countermeasure to eliminate the identified weaknesses. Nevertheless, based on our security analysis, the S-3PAKE mechanism proposed by Chung and Ku is vulnerable to the undetectable on-line dictionary attack. In this paper, we review Chung and Kus S-3PAKE protocol and analyze its robustness. For security enhancement, a modified S-3PAKE scheme is introduced to resist to the undetectable on-line dictionary attack

5) Paper Name: Provably authenticated group diffe-hellman key exchange

Author Name: H. Guo, Z. Li

Description: Group Diffe-Hellman protocols for Authenticated Key Exchange (AKE) are designed to provide a pool of players with a shared secret key which may later be used, for example, to achieve multicast message integrity. Over the years, several schemes have been o

ered. However, no formal treatment for this cryptographic problem has ever been suggested. this paper, we present a security model for this problem and use it to precisely define AKE (with implicit authentication) as the fundamental goal, and the entity- authentication goal as well. We then define in this model the execution of an authenticated group Diffe-Hellman scheme and prove its security.

IV. CONTRIBUTION

In this paper, we present an efficient and secure block design-based key agreement protocol by extending the structure of the SBIBD to support multiple participants, which enables multiple data owners to freely share the outsourced data with high security and efficiency. Note that the SBIBD is constructed as the group data sharing model to support group data sharing in cloud computing. Moreover, the protocol can provide authentication services and a fault tolerance property. The main contributions of this paper are summarized as follows.

1. Model of group data sharing according to the structure of the SBIBD is constructed. In this paper, a group data sharing model is established based on the definition of the SBIBD, which can be used to determine the way of communication among the participants. Regarding mathematical descriptions of the structure of the SBIBD, general formulas for computing the common conference key for multiple participants are derived.

2. Fault detection and fault tolerance can be provided in the protocol. The presented protocol can perform fault detection to ensure that a common conference key is established among all participants without failure. Moreover, in the fault detection phase, a volunteer will be used to replace a malicious participant to support the fault tolerance property.
The volunteer enables the protocol to resist different key attacks, which makes the group data sharing in cloud computing more secure.

V. PROBLEM STATEMENT

In block design based key agreement protocol system, we proposed a block design based key agreement protocol that supports multiple participants, which can flexibly extend the number of participants. Generate a common group key K for multiple participants to share securely data in group. Existing system operate only when all group participant are honest, but do not work when some group members are malicious and attempt to delay or destruct the group.

VI. CONCLUSION

As a development among the technology of the online and cryptography, cluster data sharing in cloud computing has spread out a greenhorn house of quality to portable computer networks. With the help of the conference key agreement protocol, the safety and efficiency of cluster data sharing in cloud computing are going to be greatly improved. Specifically, the outsourced information of the data the information the knowledge owners encrypted by the common conference key area unit protected from the attacks of adversaries. Compared with conference key distribution, the conference key agreement has qualities of higher safety and reliability. However, the conference key agreement asks for AN outsized quantity of information interaction among the system and extra process worth. To combat the problems among the conference key agreement, the SBIBD is employed among the protocol style. during this paper, we've got an inclination to gift a totally distinctive block design-based key agreement protocol that supports cluster data sharing in cloud computing. owing to the definition and additionally the mathematical descriptions of the structure of a (v; k + 1; 1)- style, multiple participants are going to be involved among the protocol and general formulas of the common conference key for participate in area unit derived. Moreover, the introduction of volunteers permits the given protocol to support the

fault tolerance property, thereby making the protocol further sensible and secure. In our future work, we'd wish to extend our protocol to provide further properties (e.g., anonymity, traceability, and so on) to make it applicable for a range of environments.

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Sales Analysis and Forecasting In Shopping Mart

Amit Kumar, Kartik Sharma, Anup Singh, Dravid Kumar, Neha Jamdar

Dept of Computer Engineering, SKNSITS, Pune, India

ABSTRACT

The enormous number of Shopping Marts in themarket today has lead to the need of having analysis tools which helps to determine whether the organization is meeting its desired sales goals. The goal is to analyze the database transactions of Shopping Marts using various data mining techniques and algorithms such as affinity analysis, logistic regression and linear regression. Idea is to develop a system which takes input, the database transactions of sold products, segments the data obtained, analyzes the graphs and extracts the market trends and product sales patterns. The system optimizes this data on the basis of market requirements thereby improving sales and merchandise planning in a way that to increase the overall productivity and profits of the organization.

Keywords: Transactions, Regression, Affinity analysis

I. INTRODUCTION

With the growing economy, the shopping trends have also been increased; therefore, the challenges for shop owners to perform better in market have also been increased. Therefore, shop owners and businessmen need to analyze their sales data and forecast future sales & ideas in order to raise their sales graph and profit percentages. In this way they can avoid going out of stock on most selling products, provide discounts on product at right time, avoid losses in investments. The regular and new customers can be handled much easily and profitably. With the increase in universal data volume, the technology of big data and its analytical processes are generally used to provide the description about massive datasets. Compared with other traditional datasets and its processes, big data includes semi structured and unstructured data that need more real time analysis. Big data also gets details about new prospects for determining new values, supports us to improve an in-depth understanding of the hidden values, and also incurs new challenges, for instance, how to

exceptionally organize and manipulate such big datasets. The volume of information from various sources is growing large, it also provides about some challenging issues demanding rapid resolutions. Big data visualization process is another vital process which takes an important place in big data analytics problems. Because through data visualization only the final report of data analytics will be visualized.

II. RELATED KNOWLEDGE ABOUT SALES FORECAST

Sales Forecast [1] is a technology which using the mathematical way to predict the sales of one or several varieties of products of a company in a specific period of time in the future. Based on various factors and combined with the company's sales performance, it presents us a feasible sales target through certain analyzingmethod. With the help of sales forecast, salesman can be greatly motivated to promote product sales as soon as possible to realize the products' value. Enterprise manager can also benefit a lot from it. They can rearrange the producing process accordingly so as

to reduce operational risk and improve the company's competitiveness.

With the help of various information technology, enterprises have accumulated hundreds even thousands of gigabytes sales history data. Prediction usually involves massive data processing. However, in face of these massive data, traditional forecasting system cannot meet the new forecast requirements anymore, such as operating efficiency, computing performance, accuracy and storage space, large amounts of historical data is now in an offline state, turned into a kind of "data grave". Further more, the traditional database technology, which used to be used alot for forecasting, is weak in knowledge expressing and reasoning. For the two reasons mentioned above, a model that both have the capability of massive data processing and knowledge discovery can fix these sticky problems. Compared to traditional data processing tech, Data Ming is more specialized in massive data based knowledge discovery, which makes it a better solution than traditional database tech to be used in prediction model.

III. FORECASTING METHOD

A. Double Moving Average Model

Double Moving Average [3] is a average computing method based on Single Moving Average model. Firstly, it uses the single moving average twice to get the one moving average value and one moving average based moving average value, here we call it twice moving average value. Then the algorithm uses the two kinds of value to calculate the target data, according to its compute model.

B. Exponential Smoothing Model

Exponential Smoothing [4] is a kind of moving average method developed on the basis of time series analysis and forecast, it is a most often used method in production prediction, especially in short-term forecast. It was built on the theory that the trend of time series has the characteristics ofstability and regularity.

Common practice for the use of Exponential Smoothing is use it to get predicted value of the historical data,then use it again to predict recently from maximum recent demand and the predicted value mentioned above. The final step is using the recent trend factors to adjust the result. The model is listed down below:

Exponential smoothing is a very effective marketing budget, statistical methods. You can use Excel to predict which is time saving and effective. But there are some limitations. First, a more complete historical data is required before using this model; Second, if season factors influences business sales a lot, time series decomposition is more applicable than exponential smoothing. It would be wise to choose between exponential smoothing and qualitative forecasting according to the specific circumstance before making a final conclusion.

C. Grey-Markov Model

To begin with, $x(0)$ $\{x(0)$ (1), $x(0)$ (2), , $x(0)$ $(n)\}$ is assumed as the original time sequence, Grey-Markov prediction model can be divided into two parts.

1. GM(1,1) Model

This step is based on the result of GM(1,1) model.According to the difference range between actual value and predicted value by GM(1,1), the series is divided into different groups. Each group is called a state. Here we assume the states are E1,E2….En.

IV. EXISTING SYSTEM

Existing systems helps in classifying the various systems which are already in the market. The classification of existing systems is given as follows:

Mindtree:

It has a reporting capability which provides a complete view of customers.

It consists of a manager module which is used for planning, preparing and tracking customer interactions.

Micro Strategy:

To create superior data visualizations it uses a powerfull visual data exploration interface.

The data from multiple sources is combined.

Feasible advanced analytics are used for trend analysis and financial analysis.

Tableau:

It has an excellent user interface: It has highest number of customers as it provides convenient,straightforward and manageable user interface.

Integration:

It integrates well with big data platforms;including Hadoop it also offers support for Google Big Query API– a boon for organizations that want highly detailed analytics.

Drawbacks of Existing Systems:

Research shows that there is no positive connection between the first element of original time sequence and the GM(1,1) model. So, a kind of new measure is taken to build an optimal GM(1,1) forecast Model. Detailed information about constructing this model has beyond the scope of this article,and the details can be found in reference.

2.Markov model

Tools which use big data sets are imprecise.

Data breach can occur due to big data analytics..

Existing systems like Micro Strategy have a very complex development environment. Despite of the fact that it uses Schema & SQL Engine it has a very high development speed.

V. OUR APPROACH

As shown in (Fig.1) The Sales Analytics tool is one which takes input the sales transactions data by using data mining techniques [4]. The raw data is then segmented as products that are sold, the combination of products sold together, product ratings and product review [3]. These are then profiled into graphs to obtain the market trends and patterns from which we obtain the fast selling and slow selling products. Then the tool decides which product's price needs to be increased and which products should be discounted or discarded. Merchandize planning is updated accordingly to balance the stocks so that there is no shortage of products. The prices of products are revised according to their demand to increase the profit of organizations.
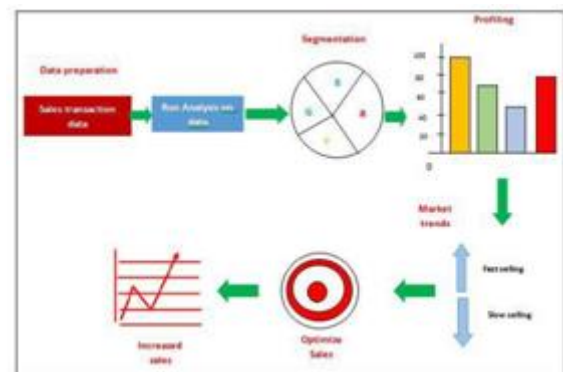
Figure 1. Overview of the system.

The block diagram (Figure 2) shows the working of every unit of the Sales Analytics Tool.
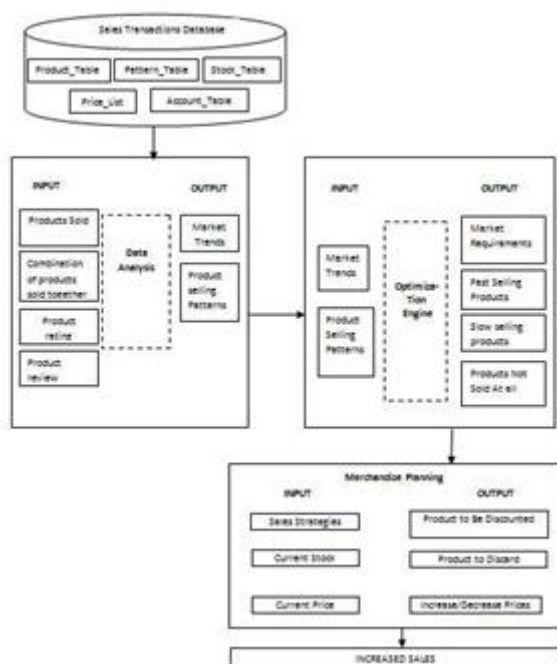
Figure 2

Database: The database contains all details of the products sold, product selling patterns, stocks of products, prices of products, account details.

Product Sold: Here we analyze the products which are sold and those which are not sold.

Product Rating and Reviews: The reviews from customers who have made a purchase from the organization helps to understand which products are liked by them.

Market Trends: Sales patterns of the product sold indicate market trends, here we do the changes in customer demands e.g. increasing or decreasing product price also add new product or any service launch for growing sales.

Product Selling Patterns: According to the sales of products, generate a pattern of sales which shows fast-selling and less-selling products.

Sales Strategies: It will perform various sales strategies to optimize online sales like Recommend Products and Up sells, special offers on products,Increase Urgency, Add reviews and ratings.

Current Stock: It will Check the product stock if product is out of stock then balance the stock and also make offer discount on less-selling products.

Current Prices: It will Evaluate and change the product prices (increase/decrease) according to sales.

Increased Sales: The overall aim of this system is to increase productivity of products and increase theoverall sales profits.
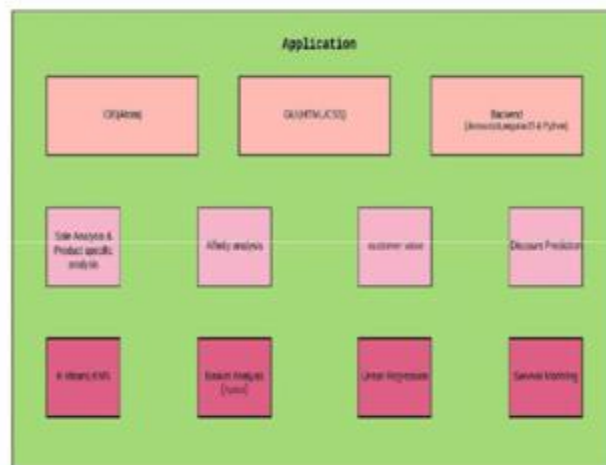
Figure 3

VI. CONCLUSION

Due to tremendous growth of shopping mart it has become increasingly necessary for organizations to utilize automated tools to find the desired information resources, and to track and analyze the sales transaction. Patterns of the type of products that are sold frequently can be found out using data mining of sales data.Thus by observing the vast increase in shopping mart there was a need to make use of various data mining algorithms to optimize the sales of our ecommerce website. By performing analysis on database of the products we will update the stocks of our inventory by using algorithms like Market Basket Analysis. This algorithm helps to produce patterns product sales. Then we will categorize the products as fast-selling and less-selling products using algorithms like logistic and linear regression. Accordingly we will update stocks of fast-selling products.

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Hand Gesture Recognition for Mute, Deaf and Blind People

Prof . Neha Jamdar , Aditi Vitthal Karanje, Shefali Sujal Patil, Goutami Shashikant Gandhi, Aishwarya Tukaram Bhapkar

Computer Department, Pune University/SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Generally a mute and deaf person communicates with signature language which is not known to most of the normal people. Hence, to reduce this barrier we are proposing an Electronic system (glove) which converts hand gestures to text and voice. Based on the electronic system that hand gesture can translate into text in order to convey a message from mute or deaf person to normal person. We can even make communication possible between mute, deaf and blind people via this system which converts sign language into text as well as voice. The system is based on Arduino which uses a glove embedded with flex sensor, for acquiring hand gestures and to convert it to voltage. This system can be implemented in real time to complete the basic needs of communication.

Keywords: Glove, Arduino, Bluetooth Module, Flex sensor , Smartphone.

I. INTRODUCTION

Since about 7.5% of total population are facing from speech disability in India. The only way to communicate is through the sign language. Although using signature language they can communicate with one another but the problem arises when these people want to communicate with normal people in their daily life.

Our main aim of this project is to lower the barrier in communication. Gesture are some forms of actions which a person express in order to express information to others without saying. This is based on the need of developing an electronic device that can translate signature language into text in order to make the communication take place between the mute communities with general public.

A wired data glove is used which a normal cloth is driving gloves fitted with flex sensors along the length of each finger. Speechless people can use the glove to perform hand gesture and it will be converted into text which will be displayed on smartphones by using Bluetooth module. So that normal people can understand their expression gesture in sign language is a particular movement of the hands with a specific shape made out of them. We can even translate text into voice. This enables communication for mute, deaf and blind people. It is an effort in developing a glove which sense the hand moments through sensors and translate text and voice.

II. METHODS AND MATERIAL

Hardware requirements:

1. Flex sensor
2. Aurdino
3. Smart phone (android terminal)
4. Bluetooth Module

Software requirements:

1. Aurdino IDE 1.8.8
2. Customized cpp

3.Bluetooth terminal

Gestures can be easily adapted by any person and hence convenience for using this system is more. Here we have implemented a system to convert sign language into speech and voice for mute, deaf and blind people. This application extended to hearing impaired people who can do public interactive jobs. It focuses on overall hand. Hence by making proper gesture output will be conveyed through audio message as well as text display on android phone.

For that we make use of sign language as an input and this input gets converted into output that will get displayed as a single character, string or full sentence. The Indian sign language consist of 26 letters of English alphabets, in our system we have assigned a specific sign for every alphabet. Common words like Hello, Yes, No, Bye etc which we use in our day-to-day communication have also assigned special sign for easy implementation of string.

We also make use of sentences with the use of sentence framing, to distinguish between words we assign a specific sign for indicating spacebar. Here, Fig1. Indicates the signature languages which is globally accepted for communication.
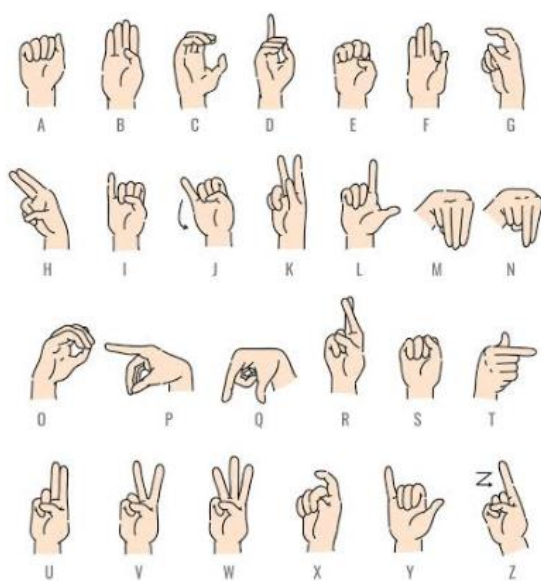
Figure 1. Sign Language

For the working of Arduino we used Arduino Software Development which is Flex android 1.8.8. We have done all the coding in Customized CPP. Through the software mention above, we upload the program into Arduino only once. Once the program is uploaded then we can run the program. After successfully running of the program the output will be generated. The generated output will be displayed on the smartphone with the help of Bluetooth module at the same time the text will also get converted into voice.

III. RESULTS AND DISCUSSION

The simulation studies involve the glove as shown in Figure 2. As shown in figure the glove is embedded with the flex sensors and Arduino. Flex sensor are used to measure the amount of deflection or blending. High resistance to extreme temperatures. Reliable and consistent Countless bend ratios and resistance possibilities.
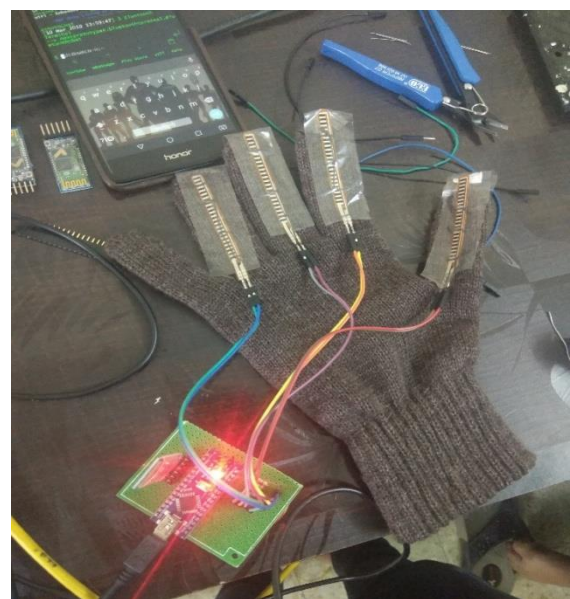
Figure 2. Embedded glove

As shown in figure 3. Arduino consist of a Bluetooth module and ADC . Here Bluetooth is a wireless technology standard for exchanging data over short distance from fixed and mobile devices and building personal area networks. Here we are make use of Bluetooth module for making a reliable connection between Arduino and smartphones.

In this system Analog to Digital Converter (**ADC**) is a very useful feature that converts an analog voltage on a pin to a digital number. By converting from the analog world to the digital world, we can begin to use electronics to interface to the analog world around us.

Arduino is a type of microcontroller. It is open source platform use to build a electronic project. It stores the data on ROM and make execution at RAM. Arduino consists of both of physical programable circuit board and the piece of software, a IDE that runs on your computer, used to write and upload computer board to the physical board.
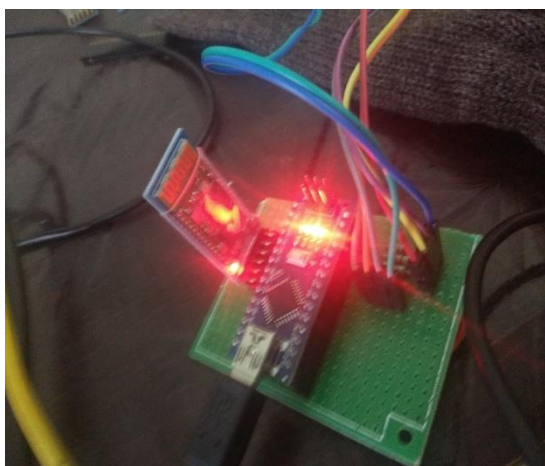
Figure 3. Arduino

Figure 4. shows how smartphone, Bluetooth and glove are connected with each other.

Figure 4. Result of the system

Block diagram of the system:
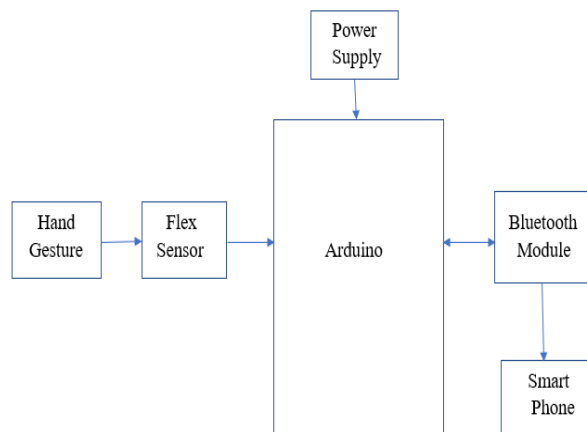
Figure 5. Block diagram

IV. CONCLUSION

In our Technology we have developed a glove fitted with flex sensors. Besides that, we are using Arduino which converts hand gestures into text and voice. We display single characters, full stings and sentences on android smartphone. The text converted into voice will be heard on the smartphone device which will be useful for communication between mute, deaf and blind. This system offers low cost and handy feature for users. It can be further use for teaching purposes in special schools. After adding some additional features we can use this system in different countries which supports different languages.

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Automated Attendance System using Face Recognition

Abhishek Joshi, Aniket Kadam, Rohit Bukan, Shubham Ligade

SKN Sinhgad Institute of Technology and Science, Maharashtra, India

ABSTRACT

Face Recognition may be a vital branch of the biometric verification that's used wide for various applications. A number of these applications are human-computer interaction, video monitor system, automatic attending system, door management systems, and network security. This paper tries to explain attending system that integrates with technology of face recognition victimization Personal element Analysis (PCA) algorithmic program. This method tries to record the attending of scholars in a very room mechanically and conjointly offer advance choices like maintaining a log for clock-in and clock-out time.

Keywords: Biometrics, Face Recognition System, Automatic Attendance, Authentication, PCA.

I. INTRODUCTION

Face recognition is as recent as laptop dream, eachdue to the purposeful importance of the subject and theoretical interest from psychological feature scientists. Despite the detail that alternative procedures of identification (such as fingerprints, or iris scans) are oftenadditional unquestionable, face acknowledgement has routinely remains a foremost aim of analysisdue to its non- invasive atmosphereand sinceit's people's prime methodology of individual identification. Face acknowledgement technology is bit-by-bit evolving to a universal biometric answer since it wants effectively none effort from the shopperfinishwhereas compared with alternative biometric choices. Biometric face recognition is essentiallyutilized in3 major do majors: time group action schemes and employee management; traveler administration systems; and last however not the smallest amount authorization schemes and gets access to command schemes.

Traditionally, student's group actions are taken manually by utilizing attendance sheet granted by the varsity constituents at school, thatmay be a time overwhelming event. moreover, it'sterriblypowerful to verify one by one scholar in a verymassiveclassroom natural atmosphere with circulated components if the students are literallyrespondent or not.

The present authors illustrate during this paper however face Acknowledgement are often used for a goodgroup actiontheme to mechanically record the prevalence of associatelisted individual within the severalvenue. steered system moreover sustains a log document to stay records of the applyingof each individual with esteem to a universal theme time.

Face recognition is one of the few biometric ways that possess the deserves of every high accuracy and low aggressiveness. It is the accuracy of a

physiological approach whereas not being intrusive.

II. BACKGROUNDANDRELATEDWORK

The first makes an attempt to use face recognition began within the 1960's with a semi-automated system. Marks were created on images to findthe mainoptions; it used features like eyes, ears, noses, and mouths. Then distances and ratios were computed from these marks to a typicalpoint of reference and compared to reference information. within the early 1970's Goldstein, Harmon and Lesk [2] created a system of twenty one subjective markers like hair color and lip thickness. This proven even more durable to automatisebecause of the subjective nature of the many of the measurements still createdfully by hand. Fisher and Elschlagerb [3] approaches to livecompletely differentitems of the face and mapped all of them onto a worldguide, that was found that these optionsdon't contain enough distinctiveinformation to represent Associate in Nursing adult face. Another approach is that the Connectionist approach [4], that seeks to classify the faceemploying a combination of eachvary of gestures and a collection of distinguishing markers. this can besometimesenforcedexploitation 2-dimensional pattern recognition and neural web principles. Most of the time this approach needs a largevariety of coaching faces to attaingood accuracy; for that reason it'showever to be enforced on an outsized scale. The first totallymachine-controlled system [5] to be developed usedterribly general pattern recognition. It compared faces to a generic face model of expected options and created a series of patters for a picture relative to the current model. This approach is primarilyapplied mathematics and depends on histograms and therefore thegreyvalue

III. SYSTEM OVERVIEW

The comparison of eigenface is employedto spot the presence of a face and its identity. there's a 5 stepmethodinvolved the system developed by Turk and Pentland [1]. First, the system has to be initialized by feeding it a groupof coachingpictures of faces. this is oftenaccustomedoutline the face housethatis ready of pictures that area unit face like. Next, once a face is encountered it calculates associate eigenface for it. By comparison it with famed faces and mistreatment some applied mathematics analysis it will be determined whether or not the image givenmay be a face in the slightest degree. Then, if a pictureconfirmd|isdecided|is set} to be a face the system can determine whether or not it is aware of the identity of it or not. The optional final step is that if associate unknown face is seen repeatedly, the system will learn to acknowledge it.
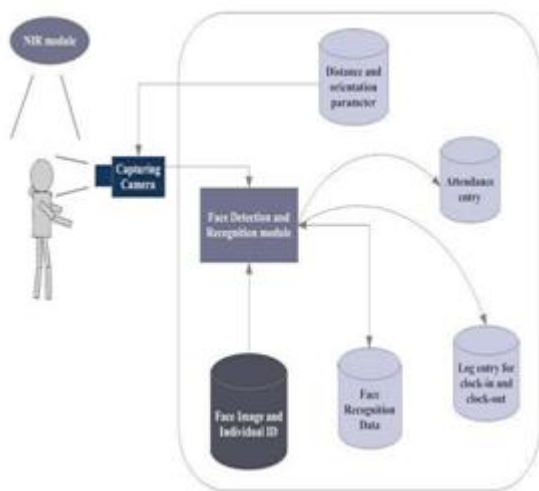
Figure 1. Architecture of thesystem

The two main partsutilized in the implementation approach are open supplylaptop vision library (OpenCV) and lightweightcarpenter's kit (FLTK). one among OpenCV's goals is to supply a simple-to-use laptop vision infrastructure that helps folks build fairly refined vision applications quickly. OpenCV library contains over five hundred functions that span several areas in vision. the first technology behind Face recognition is OpenCV; the interface is intendedexploitation FLTK. The user stands before of the camera keeping a minimum distance of 50cm associated his image is taken as an input. The frontal face is extracted from the image then regenerate to grey scale and hold on. The Principal part Analysis (PCA) rule [7] is performed on the photographsand also thechemist values arhold on in associate xml file. once a user requests for recognition the frontal face is extracted from the captured video frame through the camera. The chemistprice is re-calculated for the take a look at face and it's matched with the hold onknowledge for the nearestneighbour.

PCA (Principal element Analysis) PCA technique has been wideemployed in applications like face recognition and compression. PCA could be a common technique for locating patterns in knowledge, and expressing {the knowledge|theinfo|the information} as eigenvector to focus on the similarities and variations between

totally different data [6]. the subsequent steps summarize the PCA method.

1. Let be the coachingknowledge set. the common
Avg is outlined by:
Avg = add of Values/No of values

IV. SYSTEM IMPLEMENTATION

The projected system has been enforced with the assistance of 3 basic steps: A. sightassociate degreed extract face image and save the face data in an xml file for future references. B. Learn and train the face image and calculate Eigenprice and Eigen vector of that image. C. Recognise and match face pictures with existing face picturesdatakeep in xml file

A. Face Detection and Extract

At first, openCAM_CB() is termed to open the camera for image capture. Next the frontal face [2] is extracted from the video frame by line the performExtractFace(). The ExtractFace() perform uses the OpenCvHaarCascademethodology to load the haarcascade_ frontalface_alt_tree.xml because the classifier. The classifier outputs a "1" if the region is probably goingto indicatethe article (i.e., face), and "0" otherwise. to look for the articlewithin the whole image one will move the search window across the image and check each location exploitation the

classifier. The classifier is meant such a fashion that it will besimply "resized" so as to be able torealize the objects of interest at totally different sizes, that is a lot ofeconomical than resizing the image itself. So, to search outAN object of AN unknown size in the image the scan procedure is done many times at totally different scales. once the face is detected it's clipped into a grey scale image of 50x50 pixels.

B. LearnandTrainFaceImages

Learn() performthat performs the PCA algorithmic program on the coaching set. The learn() perform implementation is completed in four steps:

1. Load the coachinginformation.
2. Do PCA on thatto search out a topological space.
3. Project the coaching faces onto the PCA topological space.
4. Save all the coachinginfo.
   a. Eigenvalues
   b. Eigenvectors
   c. the commoncoaching face image
   d. Projected face image
   e. Person ID numbers

The PCA topological space is calculated by business the constitutional OpenCV perform for doing PCA, cvCalcEigen Objects(). the rest of doPCA() creates the output variables that may hold the PCA results oncecvCalcEigenObjects() returns [5].

To do PCA, the dataset should1st be "centered." For our face pictures, this suggests that finding the average image – a picturewithin whicheverycomponent contains the commonprice for that component across all face

pictureswithin thecoaching set. The dataset is centred by subtracting the common face's component values from everycoaching image. It happens withincvCalcEigenObjects(). But we'd liketo carry onto the common image, because itarerequired later to project the info for that purpose it'srequired to apportion memory for the common image and therefore the image may be afloating-point image. currentlywe've found a topological spacevictimization PCA, we will convert the coachingpictures to points during thistopological space. This step is named "projecting" the coaching image. The OpenCV perform for this step is namedcvEigenDecomposite(). Then all the information for the learned face illustration is saved as Associate inNursing XML file victimization OpenCV's constitutional persistence functions.

C. RecogniseandIdentification

Recognize() perform, that implements the popularitypart of the Eigenface program [5]. it'ssimply3 steps. 2 of them – loading the face pictures and protrusive them onto the mathematical space – square measure already acquainted. the decision to loadFaceImgArray() hundreds the face pictures, listed in the train.txt, into the faceImgArr and stores the bottom truth for person ID variety in personNumTruthMat. Here, the amount of face pictures is keepwithin thenative variable, n TestFaces. We conjointlyhave to be compelled to load the world variable n TrainFacesstill as most of the oppositecoachingknowledge – nEigens, EigenVectArr, pAvgTrainImg, and so on. The functionloadTrainingData() will that for US. OpenCV locates and

hundredseveryknowledgepricewithin the XML file by name.

After all the infosquare measure loaded, the ultimate step within the recognition part is to project everytake a look at image onto the PCA mathematical space and find the nighest projected coaching image. the decision to cvEigenDecomposite(), comes the take a look at image, is analogous to the face-projection code within the learn() perform. As before, we have a tendency to pass it the variety of Eigen values (nEigens), and the array of eigenvectors (eigenVectArr). This time, however, we have a tendency to pass a take a look at image, rather than a coaching image, because theinitial parameter. The output from cvEigenDecomposite() is keepin an exceedinglynative variable - projectedTestFace. as a result ofthere is nohave to be compelled to store the projected take a look at image, we have a tendency toused a C array for projectedTestFace, instead ofAssociate in Nursing OpenCV matrix. The findNearestNeighbor() perform computes distance from the projected take a look at image to every projected coaching example. the space basis here is "Squared euclidian Distance." To calculate euclidian distance between 2 points, we have a tendency towant to add up the square distance in every dimension, so take the root of that total. Here, we have a tendency to take the total, however skip the root step. the ultimateresult'sidentical, as a result of the neighbour with the littlest distance conjointly has the littlestsquare distance, thereforewe willavoid wasting computation time by comparisonsquare values.

Figure 2

V. EXPERIMENT AND RESULT

The step of the experiments methodarea unit given below:

1. Face Detection:
Start capturing pictures through net camera of the consumer side: Begin: //Pre-process the captured image and extract face image
//calculate the chemistworth of the captured face image and compared with chemist values of existing faces within theinformation.
//If chemistworthdoesn't matched with existing ones, save the new face image data to the face information (xml file).
//If chemistworth matched with existing one then recognition step can done.

End;

2. Face Recognition:

Using PCA algorithmic rulethe subsequent steps would be followed sure face recognition:

Begin:

// realize the face info of matched face image in from the information.

// update the log table with corresponding face image and system time that produces completion of group action for a private students.

end;

This section presents the results of the experiments conducted to capture the face into a gray scale image of 50x50 pixels.

Table1. Describestheopencvfunctionusedin Theproposed Systemanditsexecutionresults.

Test data	ExpectedResult	Observed	Pass/
OpenCAM_CB()	Connects withthe installedcameraand	Camera started.	pass
LoadHaar Classifier()	Loads the HaarClassifierCascade files for	Gets readyfor Extractio	Pass
ExtractFace()	Initiates the Paul-Viola	Faceextracted	Passed
Learn()	Start the PCA Algorithm	Updates the	Pass
Recognize()	Itcompares the input facewiththesa	Nearestface	Pass

Table 2. Facedetectionandrecognitionrate

FaceOrientations	Detection Rate	RecognitionRate
O^0 (Frontal face)	98.7 %	95%
18°	80.0 %	78%
54°	59.2 %	58%
72°	0.00 %	0.00%
90°(Profile face)	0.00 %	0.00%

I performed a collection of experiments to demonstrate the potency of the plannedtechnique. thirtycompletely differentpictures of ten persons square measureemployed incoaching set. Figure three shows a sample binary image detected by the ExtractFace() performvictimisation Paul-Viola Face extracting Frame work detection technique. From table a pair ofit's been discovered that with the increasing of face angle with respect to camera face detection and recognition rate is become decreases.

VI. CONCLUSIONANDFUTURE WORK

In order to obtain the attendance of individuals and to record their time of application and go out, the authors suggested the attendance management scheme founded on face recognition expertise in the institutions/organizations. The system takes attendance of each scholar by continuous observation at the entry and go out points. The outcome of our initial trial shows advanced presentation in the estimation of the attendance contrasted to the customary very dark and white attendance systems. Current work is concentrated on the face detection algorithms from images or video borders.

In further work, authors propose to improve face acknowledgement effectiveness by using the interaction amidst our scheme, the users and the managers. On the other hand, our scheme can be utilized in a absolutely new dimension of face acknowledgement application, mobile founded face acknowledgement, which can be an help for widespread persons to understand about any person being photographed by cell telephone camera encompassing correct authorization for accessing a centralized database.

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Mining Frequently Search Links using Apriori Algorithm on Web Logs

Prof. Venu Manga, Kaleedas Sake, Chitrang Satpute, Shubham Kothavde, Anjali Ramteke

Computer Engineering, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

Web mining is a combination of data mining and World Wide Web. It consists of three types namely web structure mining, web content mining and web usage mining. Web Usage Mining is one of the parts of web mining and extracts the web users' behavior from web log file. It is the method to extract the user sessions from the given log files. Initially, each user is identified according to his/her IP address specified in the log file and corresponding user sessions are extracted. Two types of logs ie., server-side logs and client-side logs are commonly used for web usage and usability analysis. Server-side logs can be automatically generated by web servers, with each entry corresponding to a user request. Client side logs can capture accurate, comprehensive usage data for usability analysis. Usability is defined as the satisfaction, efficiency and effectiveness with which specific users can complete specific tasks in a particular environment. This paper consists of three phases. The first one is data preprocessing phase, which is the most important one because it makes the data with good quality. This can be done by data cleaning, user identification, and session identification. The next one is pattern discovery phase; in this the users' navigational pattern and rules are extracted by using apriori algorithm. Final one is pattern analysis phase, which is used to analyze and visualize the rules. The aim of this paper is to identify the frequent link from web log data by using the Apriori algorithm. Whenever user fires the search query we compare the online extracted links with Apriori algorithm result and finely will arrange the online links as per the user interest and display it on the screen.

Keywords: Data Cleaning, Web Mining, Apriori Algorithm Web Structure Mining.

I. INTRODUCTION

Web mining is one of the functions of data mining procedure to gather knowledge from web log data, including web documents, hyperlinks among documents, usage logs of websites, etc. website is a combination of web pages that is testimony obtainable over the World Wide Web on the internet. Web mining is a blending of data mining and World Wide Web. It abides of types, namely web structure mining, web content mining and web usage mining. Web content mining is used to obtain favorable instruction from the essence of web documents. Content data is the combination of reality in a planned web page. It may abide of text, images, audio, video, lists, and tables. Web structure mining is the process of determining structure knowledge from the web. Web structure mining is used to estimate the node and connection structure of a website. It can be partition into double kinds that are hyperlinked and document structure.

A. Motivation:

World Wide Web becomes more popular and user friendly for transferring information, Therefore, people are more interested in analyzing log files which can offer more useful insight into web site usage. Data mining is the extraction of knowledge from the huge amount of data sets, to find a relationship and patterns in data that have been not

previously been discovered to summarize the data in original ways to make it understand and useful to the users. Web mining is one of the techniques of data mining to extract useful information based on users' needs, under web mining; web usage mining is one of the application of data mining technology to extract information from weblog to analyze the user access to websites. In existing system, it does not provide the user interest wise links. Link ranking are deciding as per the view count or visit count of links. Web usage mining is used to perceive amusing usage patterns from web data, in order to accept the demands of web-based applications. It is the third type of web mining and also the procedure of data mining approaches. The web content and structure mining mines the primary data on the web but web usage mining manage the secondary data derived from the communication of the users. Web usage mining search conclusion of user cooperation's with a web server, as well as weblogs, click streams, and database transactions at a website of a bundle of dependent sites [2].

B. Objectives and goals:

> Facilitating other Documentation
> Product Validation

II. RELATED WORK OR LITERATURE SURVEY

A literature review disputes published information in a selective subject area, and sometimes information in a distinct subject area within a certain time period [16]. A literature review can be just a quiet brief of the sources, but it generally has an organizational pattern and conjoined both summary and integration. A summary is a recap of the significant knowledge about the origin, but integration is a reorganization, or a rebuilding, of that instruction. It might give a new clarification of old material or merge new with old interpretations. Due to the dependent position, the literature review may estimate the sources and instruct the reader on the most applicable or related [16]. Rathi, A., et al. [1] presented this paper to learn the web usage mining process like preprocessing of web usage data and also the identifying of familiar patterns and their inquiries. And also the correlation of two methods on the same dataset is done. Due to more use of the internet, the log files are increasing at a higher rate in according to size. The Preprocessing plays an important role in the efficient mining process whereas data in Log files are normally noisy and not distinct. Sriram, R., et al. [2] proposed a well-organized preprocessing technique and an ingenious Hashing technique – (a Hash table and a Hash function have been proposed) to analyze a distinct user for web usage mining. The proposed preprocessing technique has good accuracy and efficiency compared with existing preprocessing techniques. Resembling the Hashing techniques has been correlated with existing search methodologies and it has been demonstrated that the proposed technique is active in searching according to Big O notation. Umarani, J., et al. [3] concentrated on methods applied in user identification phase of data preprocessing. In addition, we have also prepared an analysis of these methodologies to find out the most appropriate on web server log. Kumari, A, G, K., et al. [5] introduced a new Modified Reverse Apriori algorithm in which an Apriori algorithm can be enhanced. The Modified Reverse Apriori algorithm is one of the new approach for the frequent pattern generation. It generates large, frequent item sets which are to be started by considering a maximum number of total attributes in the dataset. It is efficiently considering a maximum combination of all the item sets in pairs and then it generates a huge frequently mined set of items based on the condition; also satisfy the user defined support. If it satisfies, then it decreases gradually the number of items in the item sets unless it obtains the largest set of frequent items. Kumar, V, S., et al. [13] presented the dispute of Web usage mining, i.e. mining user familiar patterns from one or more web servers for finding correlation among data stored and pay peculiar attention to the amusing new patterns. They adapt a very decisive Apriori algorithm for coordinating intriguing new

arrangements and applied support and confidence to enumerate the measures of interesting patterns, to this particular context. Kumar, A., et al. [12] produced the inquiry of the server logs through WEKA that can provide the organization with information on how to develop a worthier structure for the website to persuasively use and aid of the organization. The data are gathered from the server access logs which are introduced as a decision of cooperation between the client and the server. The two salient tasks in the data preprocessing phase are data cleaning and feature separation. The first phase consists of data fusion, data cleaning, user identification, session Identification, Path Completion, Formatting and Data Summarization. After data preprocessing a few of the features are included from the log file this is called Feature Extraction.

III. MATHEMATICAL MODELING

A. Mapping Diagram
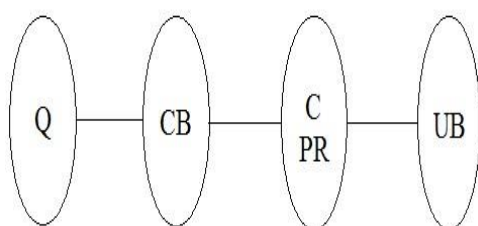
Where,

Q = User search query

CB = Extract web log files details

C = Preprocessing

PR = Compare User interest with extracted links

UB = Links ranking result

B. Set Theory

1)Let S be as system which find search query

S = {In, P, Op,Φ}

2)Identify Input in as

In = {Q}

Where,

Q = User entered query

3)Identify Process P as

P = {CB, C, PR}

Where,

CB = System Extract web log files details

C = Compare Links

PR = Preprocess request

4)Identify Output Op as

Op = {UB}

Where,

UB = Update Result

After preprocessing the request, system Check links and Link ranking result.

Φ = Failures and Success conditions.

Failures:

1. Huge database can lead to more time consumption to get the information.
2. Hardware failure.
3. Software failure.

Success:

1. Search the required information from available in Datasets.
2. User gets result very fast according to their needs.

Space Complexity:

The space complexity depends on Presentation and visualization of discovered patterns. More the storage of data more is the space complexity.

Time Complexity:

Check No. of patterns available in the datasets= n

If (n>1) then retrieving of information can be time consuming.

So the time complexity of this algorithm is $O(n^n)$.

Above mathematical model is NP-Complete.

IV. EXISTING SYSTEM AND DISADVANTAGES

World Wide Web becomes more popular and user friendly for transferring information, Therefore, people are more interested in analyzing log files

which can offer more useful insight into web site usage. Data mining is the extraction of knowledge from the huge amount of data sets, to find a relationship and patterns in data that have been not previously been discovered to summarize the data in original ways to make it understand and useful to the users. Web mining is one of the techniques of data mining to extract useful information based on users' needs, under web mining; web usage mining is one of the application of data mining technology to extract information from weblog to analyze the user access to websites. In existing system, it does not provide the user interest wise links. Link ranking are deciding as per the view count or visit count of links.

Disadvantages:
Disadvantages of existing systems:

System does not provide the user interest wise links. Link ranking are deciding as per the view count or visit count of links.

V. ADVANCED SYSTEM AND ADVANTAGES
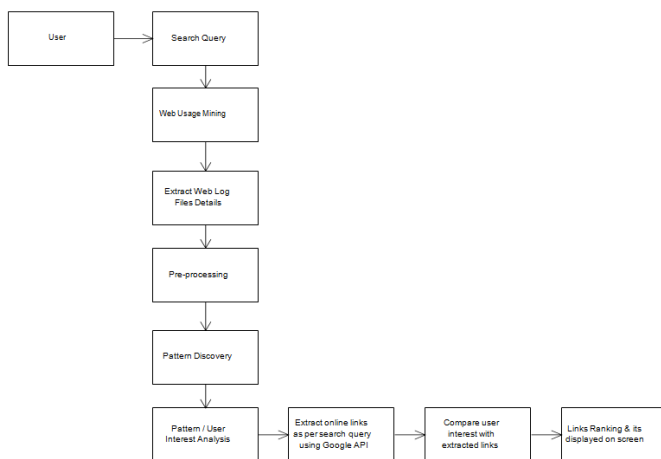
Figure 1. Advance System Architecture

Web Usage Mining is one of the parts of web mining and extracts the web users' behavior from web log file. It is the method to extract the user sessions from the given log files. Initially, each user is identified according to his/her IP address specified in the log file and corresponding user sessions are extracted. Two types of logs i.e., server-side logs and client side logs

are commonly used for web usage and usability analysis. Server-side logs can be automatically generated by web servers, with each entry corresponding to a user request. Client side logs can capture accurate, comprehensive usage data for usability analysis. Usability is defined as the satisfaction, efficiency and effectiveness with which specific users can complete specific tasks in a particular environment. This paper consists of three phases. The first one is data preprocessing phase, which is the most important one because it makes the data with good quality. This can be done by data cleaning, user identification, and session identification. The next one is pattern discovery phase; in this the users' navigational pattern and rules are extracted by using apriori algorithm. Final one is pattern analysis phase, which is used to analyze and visualize the rules. The aim of this paper is to identify the frequent link from web log data by using the Apriori algorithm. Whenever user fires the search query we compare the online extracted links with Apriori algorithm result and finely will arrange the online links as per the user interest and display it on the screen.

Advantages:

1. User Interest wise web link searching

2. Time saving

3. It helps to identify the unwanted links and it increases the execution time of system.

VI. CONCLUSION

Web Usage Mining is the part of web mining and extracts the web users' attitude from log files. Preprocessing is end by data cleansing, user identification and session identification. Data cleaning is used to weaken the size of web log file and also raises the quality of contents in the log file. Then the Apriori algorithm is applied in preprocessed data for mining the frequent link from web log data. Our proposed technique helps to identify the user interest

using is log details and we also provide the online links as per the user interest.

VII. FUTURE SCOPE

We plan to improve User Interest wise web link searching.

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Detection of Urban Emergency Event using Social Media

Prof. Venu Manga, Phase Pranali, Shinde Priyanshu, Kothari Pratiksha, Shaikh Ahemad

Department of Computer Engineering, SPPU/SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Now-a-days, peoples are using social media for communication purpose but we can use it for detection of emergency events. Detection of emergency events like fires, storms, traffic jam are playing the vital role in the humans life. In this paper we discuss the process and challenges, for detecting emergency events by analysing big data of social media for emergency purpose. Social media includes references to emergency events occurring at, or moving specific locations. To sight and describe the necessary time urban emergency event the 5W (What, Where, When, Who, and Why) model is projected. Foremost users of social media are set as a result of the target of crowdsourcing. Secondly, the spatial and temporal data from the social media are extracted to sight the necessary time event. Third a GIS based annotation of the detected urban emergency event is shown. Throughout this study, Associate in nursing experiment has been disbursed to assemble data from accelerometers and gyroscopes on smartphones. The collected data is processed at intervals the frequency domain to calculate magnitudes of the vibration.

Keywords: Social Media, Crowdsourcing; Situational Awareness; Earthquake; GIS annotation;Clustering ,Visualizing; Notification.

I. INTRODUCTION

Crowdsourcing is additionally associate degree rising computing paradigm that tasks everyday mobile devices to make democratic device networks. It permits the increasing range of transportable users to share native data non-inheritable by their sensor-enhanced devices, e.g., to watch pollution level or amplitude, traffic condition, etc. The sensing information from volunteer contributors like social network users are often additional analyzed and processed, and leveraged in several areas like surroundings watching, urban coming up with, emergency management, similarly as public healthcare/safety. Weibo1 , a preferred Chinese small blogging service the same as Twitter2 , has received a lot of attention recently.

This on-line social network service is employed by concerning five hundred several individuals in China to stay well-connected to their friends, members of the family, and colleagues through their computers and mobile phones. The user of Weibo considerations one question, "What's happening?" The poster of every user should be fewer than a hundred and forty Chinese words. a standing update message is commonly used as a message to friends and colleagues. A user will follow different users; that user's followers will browse her messages on a daily basis.

A crucial feature of Weibo service is its real time nature. The big range of denote messages includes urban emergency events like storm, fire, tie up, riots, serious downfall, and earthquakes. In fact, a Weibo user is often seen as a device of associate degree urban emergency event. By urban emergency events, we have a tendency to mean vital phenomena with a

neighborhood and temporal dimension within the physical world as an example, if a user makes a message in Weibo a few hearths or crash, then she/he are often seen as a "fire sensor" or "crash sensor". The social network like Weibo is often seen as a device receiver. Usually, the Weibo users are often as "social sensors."

Crowdsourcing is once associate degree entity whether or not a private or a company requests specific resources from a bunch of individuals. Use web, social media etc. Engage with a broader spectrum of sources.

II. PROBLEM STATEMENT

Detection regarding emergency events like fires, storms, traffic jams are of nice importance to shield the protection of humans. We use social media for many purpose like for communication and sharing information. Social has become big source of information and we are using it for saving human life. Social media includes references to emergency events occurring at, or poignant specific locations.

To discover and describe the important time urban emergency event the 5W (What, Where, When, Who, and Why) model is planned. Firstly users of social media are set because the target of crowdsourcing. Secondly, the abstraction and temporal info from the social media are extracted to discover the important time event.

III. EXISTING SYSTEM

Authorities are allocated to each area and region which takes care of all emergency events occurs in respective areas. Role of authorities are to solve emergency events or to give alerts to normal peoples. The authorities don't have all the knowledge concerning any emergency.

The info can be gift on social media however the authorities don't have the tools to use that information. Also folks don't get any real time info concerning any emergency events. As most news agencies don't report native news folks can't provide their facilitate throughout the emergencies.

IV. PROPOSED SYSTEM

It is important to detect, analyze and solve emergency events to avoid loss of human life but because of lack of information to authorities it is difficult to solve emergency situations. As we know social media is a big source of information and we can use that important information to analyze and solve emergency events or situations. In this paper we will see method to analyze huge data of social media and use it to give alert of emergency events.

To discover and describe the important time urban emergency event, the 5W (What, Where, When, Who, and Why) model is planned. Firstly, users of social media square measure set because the target of crowd sourcing. Secondly, the spatial and temporal data from the social media square measure extracted to discover the important time event. Thirdly, a GIS based mostly annotation of the detected urban emergency event is shown. The planned methodology is evaluated with in depth case studies supported real urban emergency events. The results show the accuracy and potency of the planned methodology.

V. SYSTEM ARCHITECTURE
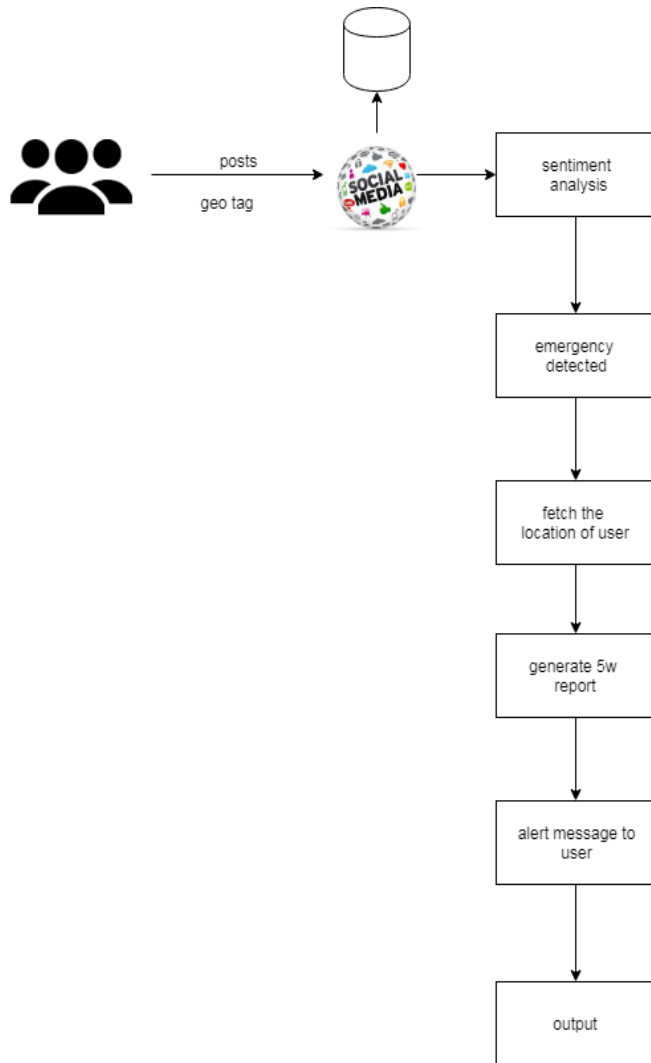
Figure 1

VI. CONCLUSION AND FUTURE WORK

A crowdsourced and bunch based mostly methodology to advise the earthquake hit areas that require immediate attention by the emergency rescue task force via SMS and map conception. The region affected is represented victimization the Maptive tool via Google maps to denote the situational awareness. The believability concerning the impact or response part is targeted during this work GIS annotated social media feeds. As social media feeds that square measure crowdsourced square measure solely thought-about during this work, the task of knowledge preprocessing to filter the content is eliminated. The highlighted feature of the projected work includes notifying the suitable authorities from a location outside the incident as a result of when a natural disaster like Associate in Nursing earthquake, communication channels is also packed or cutoff hampering the dissemination of the incident. The projected methodology is easy in conception and economically possible to advise earthquake incidents thereby alerting authorities to evacuate folks in and round the incident space to safer regions before ensuing shock waves or alternative connected incidents strike. This work may be additional swollen from situational awareness to call network for handling natural disasters, during a higher method.

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Mind Stress Detection Using EEG Signal

B. S. Kurhe[1], Rohit Khopade[2], Abhishek Rajhans[2], Shubham Sakhare[2], Shubham Salunke[2]

[1]Assistant Professor, Dept. of Computer Engineering, SKN-Sinhgad Inst. of Tech. and Science, Lonavala, India
[2]Student, Dept. of Computer Engineering, SKN-Sinhgad Inst. of Tech. and Science, Lonavala, India

ABSTRACT

Study of world health organization shows stress could be a vital downside of this generation that affects each physical further because the psychological state of individuals. in line with analysis in space of stress detection has improved several techniques for watching the human brain and Body that detects Stress. the normal stress detection system relies on physiological signals and countenance techniques. This proposes a unique methodology that detects the strain victimization graph signals and reduces the strain by introducing the interventions into the system. Propose methodology delivered system that use SVM rule for divide the topics into completely different classes and to live stress to estimate the strain level. By Result generating throw system humans will take action for determinant best answer for stress management. System generates feedback from stress hormones. The collected information was then accustomed extract a group of options victimization separate riffle rework (DWT). The extracted options square measure manipulated to notice stress levels victimization hierarchical Support Vector Machine (SVM) classifier. For classifying "stressed" and "relaxed" states SVM are studied. Results have shown the potential of victimization graph signal to examine completely different levels of stress. This paper discusses the techniques associated transformations planned earlier in literature for extracting feature from a graph signal and classifying them.

Keywords: Electroencephalogram (EEG), epilepsy, seizure, ictal, interracial, 1D-CNN

I. INTRODUCTION

The stress response may be measured and evaluated in terms of physical response, sensory activity and behavioral and physical responses. Throughout the analysis in science and technology has granted ways which might be accustomed take the strain detection. The measuring of stress victimization neurophysiologic signals that embody neurologic signals. Brain activates several neuropeptide-secreting systems in response to worry. In result to the current activation, adrenal steroid hormone hormones square measure free, that square measure referred to as "stress hormones". electroencephalogram is a very important methodology for readying within the transient dynamics of the human brain's large-scale vegetative cell circuits. In EEG, electrodes square measure placed at the top skin to create a decent contact with scalp and register the electrical potentials because of vegetative cellactivity. electroencephalogram provides sensible empiric information of variability in mental standing owing to its high temporal resolution. electroencephalogram wave form (amplitude and frequency) depends on the aware level of the person. Alpha waves square measure additional active in os and frontal regions of the brain. These waves square measure related to idleness of the brain. therefore in no stress condition, once the brain is doing no activity, alpha waves square measure dominant. In nerve-wracking things, the ability of alpha waves falls down showing the modification in response underneath stress. Beta waves show variable behavior in several

frequencies in several elements of the brain and power in letter waves will increase underneath stress or mental tasks. electroencephalogram signals square measure terribly sensitive to numerous artifacts whose supply aren't the brain. attainable sources of unit in electroencephalogram signals embody either technical reasons or person's own behavioral and physical activities.

II. LITERATURE SURVEY

Name : The cognitive activation theory of stress.
Author : Holger Ursin , Hege R. Eriksen
Description :

This paper presents a psychological feature activation theory of stress (CATS), with a proper system of systematic definitions. The term 'stress' is employed for four aspects of 'stress', stress stimuli, stress expertise, the non-specific, general stress response, and skill of the strain response. These four meanings could also be measured severally. the strain response could be a general alarm in a very physiological condition system, manufacturing general and general neuroscience activation from one level of arousal to a lot of arousal. the strain response happens whenever there's one thing missing, as an example a physiological condition imbalance, or a threat to equilibrium and lifetime of the organism. Formally, the alarm happens once there's a discrepancy between what ought to be and what is—between worth a variable ought to have (set value (SV)), and therefore the real price (actual price (AV)) of an equivalent variable. the strain response, therefore, is a vital and necessary physiological response. The unpleasantness of the alarm isn't any health threat. However, if sustained, the response might cause health problem and illness through established pathophysiological processes ('allostatic load').

Name : EEG Signals to Measure Mental Stress
Author : Ahmad Rauf Subhani†, Likun Xia, Aamir Saeed Malik
Description :

Stress could be a physiological and psychological response to threatening things which require adjustment in physiological condition imbalance caused by a general alarm in equilibrium. Normally, the alarm happens once there's a discrepancy between what it ought to be and what it is[1]. Pioneering effort on stress was created by Hans Selye WHO introduced the term 'stress' in medical studies by presenting a general adaptation syndrome (GAS) [2]. the strain response will be measured and evaluated in terms of sensory activity, activity and physical responses. Psychological questionnaires square measure usually accustomed infer stress in terms of activity changes. Progress in science and technology has granted strategies which may be accustomed take the target measuring of stress victimization neuroscience signals that embody medicine signals.

Name : Neurocircuitry of stress (central control of the hypothalamo–pituitary–adrenocortical axis)
Author : James P. Herman and William E. Cullinan
Description :

Integration of the hypothalamus–pituitary–adrenal stress response happens by approach of interactions between stress-sensitive brain electronic equipment and system neurons of the neural structure paraventricular nucleus (PVN). Stressors involving a direct physical threat ('systemic' stressors) area unit relayed on to the PVN, in all probability via neural structure catecholaminergic projections. in contrast, stressors requiring interpretation by higher brain structures ('processive' stressors) seem to be channeled through bodily structure neural structure circuits. neural structure bodily structure sites connect with the PVN via interactions with GABA-containing neurons within the bed nucleus of the stria terminalis, biological process space and neural structure. Thus, final elaboration of processive stress responses is probably going to involve modulation of PVN GABAergic tone. The useful and neuroanatomic information obtained counsel that illness processes involving inappropriate stress management involve disfunction of possessive stress pathways.

Name : Stress and Cognition: A Cognitive Psychological Perspective

Author : Lyle E. Bourne, Jr., and Rita A. Yaroush

Description :

The direct effects of microgravity on the central system and therefore the motor system of the body and (2) the non-specific effects of multiple stressors. proof obtainable up to now is in step with each hypotheses and additional experiments area unit needed to settle this question. the problem has sensible implications as a result of the countermeasures required to ameliorate or forestall performance deficits can disagree in keeping with that hypothesis is correct. Understanding and ameliorative performance deficits can certainly facilitate guarantee safer operations aboard the International space laboratory and through a mission to Mars.

Name : Studies of Interference in Serial Verbal Reactions

Author : J. Ridley Stroop

Description :

Interference or inhibition (the terms appear to possess been used nearly indiscriminately) has been given an outsized place in experimental literature. The investigation was begun by the physiologists before 1890 (Bowditch and Warren, J. W., 1890) and has been continued to this, mainly by psychologists (Lester, 1932). Of the many studies that are printed throughout this era solely a restricted variety of the foremost relevant reports demand our attention here.

III. EXISTING SYSTEM

EEG provides good observational data of variability in mental status because of its high temporal resolution. EEG waveform (amplitude and frequency) depends on the conscious level of the person. Alpha waves are more active in occipital and frontal regions of the brain. These waves are associated with idleness of the brain. So in no stress condition, when the brain is doing no activity, alpha waves are dominant. In stressful situations, the power of alpha waves falls down showing the change in response under stress. Beta waves show varying behavior in different frequencies in different parts of the brain and power in theta waves increases under stress or mental tasks [1]. Researchers have proposed methods for the detection of seizures using features extracted from EEG signals by hand-engineered techniques. Some of the proposed methods use spectral (Tzallas et al., 2012) and temporal aspects of information from EEG signals (Shoeb, 2009). An EEG signal contains low frequency features with long time-period and high-frequency features with short time period (Adeli et al., 2003) i.e. there is a kind of hierarchy among features. Deep learning (DL) is a state-of-the-art ML approach which automatically encodes hierarchy of features, which are not data dependent and are adapted to the data; it has shown promising results in my applications [4]. Moreover, features extracted using the DL models have shown to be more discriminative and robust than hand-designed features (LeCun et al., 1995). In order to improve the accuracy in the classification of epileptic and non-epileptic EEG signals, we propose a method based on DL. The recognition of epileptic and non-epileptic EEG signals is a classification problem. It involves extraction of the discriminatory features from EEG signals and then performing classification. In the following paragraphs, we give an overview of the related state-of-the-art techniques, which use different feature extraction and classification methods for classification of epileptic and non-epileptic EEG signals [3].

IV. PROPOSED SYSTEM

EEG provides smart experimental information of variability in mental standing attributable to its high temporal resolution. electroencephalogram undulation (amplitude and frequency) depends on the aware level of the person. Alpha waves ar additional active in bone and frontal regions of the brain. These waves ar related to idleness of the brain. therefore in no stress condition, once the brain is doing no activity, alpha waves ar dominant.

In trying things, the facility of alpha waves falls down showing the amendment in response below stress. Beta waves show varied behavior in numerous frequencies in numerous elements of the brain and power in letter waves will increase below stress or mental tasks [1].

Moreover, options extracted exploitation the metric capacity unit models have shown to be additional discriminative and strong than hand-designed options (LeCun et al., 1995). so as to boost the accuracy within the classification of epileptic and non-epileptic electroencephalogram signals, we tend to propose a technique supported metric capacity unit. the popularity of epileptic and non-epileptic electroencephalogram signals could be a classification drawback. It involves extraction of the discriminatory options from electroencephalogram signals so performing arts classification. within the following paragraphs, we tend to offer an summary of the connected progressive techniques, that use completely different feature extraction and classification strategies for classification of epileptic and non-epileptic electro encephalogram signals [3].

This planned system is associate EEG-based stress detection system for individual person. It helps to see stress level of material body and to stop from major health risks. we've determined that electroencephalogram could be are liable tool to discover stress levels. we tend to applied time frequency analysis to extract helpful info from electroencephalogram and enforced hierarchical SVM as classifier and obtained additional accuracy. The results largely to feasibleness of exploitation electroencephalogram for stress detection. The system is necessary for clinical intervention and interference of physical and mental state issues.

EEG then, could be a style of distant relation of animate thing electrophysiology, particularly mensuration of the native field potential. all told cases, the flow of ions causes distortions of the electrical field that may be detected at a distance.

Some of the advantages of the invasive techniques transfer to electrophysiology. We're not considering associate indirect signal, like blood flow in daring magnetic resonance imaging, however ar instead viewing the electrical activity of neurons that ends up in conjunction unleash and therefore the cellular communication that underlies computation within the brain. as a result of these electrical changes ar fast, we are able to get terribly fine time resolution, on the order of milli- or maybe micro-seconds.

EEG provides smart experimental information of variability in mental standing attributable to its high temporal resolution. electroencephalogram undulation (amplitude and frequency) depends on the aware level of the person. Alpha waves ar additional active in bone and frontal regions of the brain. These waves ar related to idleness of the brain. therefore in no stress condition, once the brain is doing no activity, alpha waves are dominant. In trying things, the facility of alpha waves falls down showing the amendment in response below stress.

V. ADVANTAGES

1. We perform a close security analysis and performance analysis of
   the planned information.
2. Requires less time.
3. Increased potency.
4. Improved accuracy.

VI. SYSTEM ARCHITECTURE
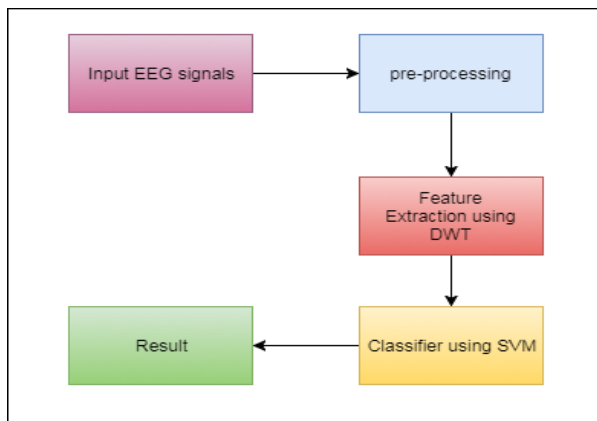
Figure 1. System Architecture (Software)

VII. CONCLUSION

This planned system is associate EEG-based stress detection system for individual person to see the strain level for bod and to forestall the foremost health risks caused because of the strain. we've determined that graphical record could be a reliable tool to find stress levels. we tend to applied time frequency analysis to extract helpful info from graphical record and enforced class-conscious SVM as classifier and obtained additional accuracy. The results principally to feasibleness of victimization graphical record for stress detection. The system is vital for clinical intervention and bar of physical and mental state issues.

Future Scope :

Future work to acquire data from more participants is underway to validate the current results. We are pursuing this track as it should lead to a better identification of emotions.

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Collective Data Sanitization

Prof. Bhagwan Kurhe[1] , Akshata Galbale[2], Shubhangi Kadam[2], Shiv Murti[2], Kalusing Pawara[2]

[1]Professor SKNSITS lonavala, Pune, Maharashtra, India

[2]BE Student SKNSITS lonavala, Pune, Maharashtra, India

ABSTRACT

On-line social networks like Facebook are increasingly utilised by many people. These networks allow users to publish their own details and enable them to contact their friends. some of the data discovered inside these networks is private. These structures allow clients to gift specific of them and interface with their mates. shopper profile and family relationship relations area unit extremely non-public. These networks allow users to publish details regarding themselves and to attach to their friends. a number of the data discovered within these networks is supposed to be non-public. A privacy breach happens once sensitive data about the user, the data that a private desires to stay from public, is disclosed to an adversary. private data leakage can be a crucial issue in some cases.[1] And explore a way to launch inference attacks victimisation discharged social networking information to predict non-public data. during this we tend to map this issue to a collective classification drawback and propose a collective logical thinking model. In our model, AN attacker utilizes user profile and social relationships in an exceedingly collective manner to predict sensitive data of connected victims in an exceedingly discharged social network dataset. to guard against such attacks, we tend to propose a knowledge cleanup methodology conjointly manipulating user profile and friendship relations. The key novel plan lies that besides sanitizing friendly relationship relations, the proposed method will take benefits of various data-manipulating ways. we show that we can simply reduce adversary's prediction accuracy on sensitive data, whereas leading to less accuracy decrease on non-sensitive data towards 3 social network datasets.[2] To the best of our data, this can be the primary work that employs collective ways involving varied data-manipulating ways and social relationships to guard against logical thinking attacks in social networks.

Keywords: Online Social Networks (OS Ns), Collective Inference, Data Sanitization.

I. INTRODUCTION

The rapid growth and presence of on-line social media services has given an impact to the way people move with each other. on-line social networking has become one of the most popular activities on the net. Social network analysis has been a key technique in trendy social science, geography, economics, and information science. Knowledge the inf |the information} generated by social media services usually stated as the social network data. In several things, the info must be revealed and shared with others. Social networks square measure on-line applications that allow their users to attach by means of assorted link types.[3] As a part of their skilled network; thanks to users specify details that square measure related to their professional life. These sites gather extensive personal information, social network application providers have a rare chance direct use of this info might be helpful to advertisers for marketing. Publish data for others to research, even though it should produce severe privacy threats, or they'll withhold data thanks to privacy concerns, even supposing that produces the analysis not possible. A privacy breach happens once sensitive info regarding the user, the information that a personal desires to

stay from public, is disclosed to associate individual. For examples, business firms are analyzing the social connections in social network knowledge to uncover client relationship that may profit their services and product sales. The analysis results of social network knowledge is believed to potentially give another read of real-world phenomena because of the sturdy affiliation between the actors behind the network knowledge and universe entities. Social-network knowledge makes commerce way more profitable. On the opposite hand, the request to use the info may also come back from third party applications embedded within the social media application itself. for example, Facebook has thousands of third –party applications and therefore the variety is growing exponentially. even though the method of data sharing during this case is implicit, the info is so passed over from the info owner (service provider) to totally different party (the application) the info given to those applications is common not change to guard users' privacy. Desired use of knowledge and individual privacy presents a chance for privacy-preserving social network data processing. That is, the invention {of information|of knowledge|of knowledge} and relationships from social network data while not violating privacy.[2]

Privacy considerations in social networks will be in the main classified into 2 types: inherent-data privacy and latent knowledge privacy. Inherent-data privacy is said to sensitive knowledge contained within the knowledge profile submitted by users so as to receive data-related services.

II. MATHEMATICAL MODEL

Let W be the whole system which consists:
W= {IP, PRO, OP}
Where,

IP is the input of the system.
A) IP= {U, C, R, OSN, SA, UA}

1. U is the number of users in the system.
2. R is the set of number of registered U in the system.
3. C is the custom setting for all U.
4. OSN is the system.
5. SA is the sensitive attributes.
6. UA is the User Activities.

B) PRO is the procedure of our proposed system:

Step 1: At first user will register into the OSN system with his/her basic information.

Step 2: The registered information will be forwarded to OSN system.

Step 3: OSN system will check the sensitive and non-sensitive attributes of registered users.

Step 4: OSN system will automatically hide the sensitive information of user.

Step 5: Then user will login into the system.

Step 6: User will perform the U like profile setting, post sharing, like or comment onto the post and message sending to the another users by matching the attributes.

Step 7: Then OSN will provide the privacy for users likes and comments post.

C) OP is the output of the system:

The system provides the privacy to the user's sensitive data and privacy for posts which share by users.[4]

III. RESULTS AND DISCUSSION

A) Figures :
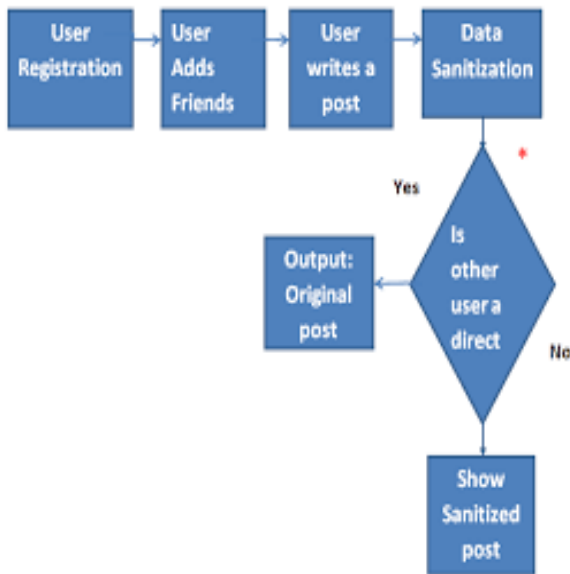
IV. CONCLUSION

Desired use of data and individual privacy presents an opportunity for privacy-preserving social network data processing. That is, the invention of data|of knowledge} and relationships from social network data without violating privacy. we address 2 problems in this paper: (a) how exactly third party users launch AN reasoning attack to predict sensitive data of users, ANd (b) ar there effective strategies to protect against such an attack to achieve a desired privacy utility exchange. we tend to propose a Collective technique that takes benefits of various data manipulating ways to guarantee sanitizing user data does not incur a foul impact on data utility. using Collective method, we tend to ar ready to effectively sanitize social network data before release.

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Detection of Bus Driver Fatigue

Prof. Madhuri Dharanguttikar, Ankita Ingole, Mahadev Yede, Sourabh Patole , Priya Sahu

Computer Engineering Department, SKN Sinhgad Institute of Technology and Science, Lonavala, India

ABSTRACT

The International statistics shows that a large number of road accidents are caused by driver fatigue. Therefore, a system that can detect oncoming driver fatigue and issue timely warning could help in preventing many accidents, and consequently save money and reduce personal suffering. The authors have made an attempt to design a system that uses video camera that points directly towards the driver's face in order to detect fatigue. If the fatigue is detected a warning signal is issued to alert the driver. The authors have worked on the video files recorded by the camera. Video file is converted into frames. Once the eyes are located from each frame, by measuring the distances between the intensity changes in the eye area one can determine whether the eyes are open or closed. If the eyes are found closed for 5 consecutive frames, the system draws the conclusion that the driver is falling asleep and issues a warning signal. The algorithm is proposed, implemented, tested, and found workingsatisfactorily.

Keywords: Bus drivers, visual information, PERCLOS, softmax, fatigue, stress.

I. INTRODUCTION

The increasing number of traffic accidents due to a diminished driver's vigilance level has become a serious problem for society. Statistics show that 20% of all the traffic accidents are due to drivers with a diminished vigilance level [1]. Furthermore, accidents related to driver hypo-vigilance are more serious than other types of accidents, since sleepy drivers often do not take evasive action prior to a collision. For this reason, developing systems for monitoring the driver's level of vigilance and alerting the driver, when he is drowsy and notpaying adequate attention to theroad, is essential to prevent accidents. The prevention of such accidents is a major focus of effort in the field of active safetyresearch.

In the last decade many researchers have been working on the development of the driver monitoring systems using different techniques. Driver's state of vigilance can also be characterized by driver performance with a focus on the vehicle behavior. But these techniques are subject to limitations like vehicle type and characteristics of road. The other detection techniques are based on driver state. The best accurate detection techniques are based on physiological phenomena of drivers like brain waves, heart rate, pulse rate and respiration [2]. Among these methods, the technique based on human physiological phenomena is most accurate. This technique is implemented in two ways: measuring changes in physiological signals, such as brain waves, heart rate, and eye blinking; and measuring physical changes such as sagging posture, leaning of the driver's head and the open/closed states of the eyes. Our system relies on the eyelid movement visual cue to detect the fatigued state of the driver. By monitoring the eyes, it is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident. The eye blink frequency increases beyond the normal rate in the fatigued state. In addition, micro sleeps that are the short periods of sleep lasting 3 to 4 seconds are the

good indicator of the fatigued state. Thus by continuously monitoring the eyes of the driver one can detect the state of thedriver.

II. LITERATURE SURVEY

A Survey on Driver Fatigue-Drowsiness Detection System paper by Indu R. Nair , Nadiya Ebrahimkutty , Priyanka B.R , Sreeja M, Prof. Gopu Darsan ,this paper address to one of an major reasons for road accidents now a day is due to driver fatigue. Be it long distant travelling or drunk driving drowsy state leads to risky crashes which are hazardous to lives as well. To overcome such accidents some method has to be developed which is feasible to all the vehicle drivers. This paper is based on various methods for the preventing road accidents and designs on a drowsiness detection methods which were proposed and have advantages and disadvantages.

A Review on the Driver Face Monitoring Systems for Fatigue and the Distraction Detection driver face monitoring systems is one of the main approaches for the driver fatigue or distraction detection and accident prevention. Paper by Mohamad-Hoseyn Sigari, Muhammad-Reza Pourshahabi Mohsen Soryani and Mahmood Fathy. Driver face monitoring systems capture the images from an driver face and extract the symptoms of fatigue and distraction from eyes, mouth and head. These symptoms are usually percentage of eyelid closure over time (PERCLOS), eyelid distance, eye blink rate, blink speed, gaze direction, the eye saccadic movement, yawning, head nodding and head orientation. The system estimates driver alertness based on extracted the symptoms and the alarms if needed. In this paper, after an introduction to a driver face monitoring systems, the general structure of these systems is then discussed. Then a comprehensive review on the   driver face monitoring systems for fatigue and distraction detection is presented.
Jennifer F. May , Carryl L. Baldwin present a paper on Driver fatigue: The importance of identifying causal factors of the fatigue when considering detection and

the counter measure technologies this paper state that the technologies currently exist which enable detection of the driver fatigue and the interventions that have the potential to dramatically reduce the crash probability. The successful implementation of these technologies depends on the cause and a type of fatigue experienced. Sleep-related (SR) forms of a driver fatigue result from accumulated sleep debt, prolonged wakefulness or troughs in the circadian rhythms. SR fatigue is resistant to the most intervention strategies. Conversely, technologies for detecting and the countering task-related (TR) fatigue (caused by mental overload or under load) are proving to be effective tools for improving transportation safety. Methods of the detecting and counteracting the various forms of driver fatigue are discussed. Emphasis is placed on examining the effectiveness of the existing and the emerging technologies for combating TR forms of the driver fatigue.

Design and Implementation of the Driving Assistance System in the Car-like a Robot .When Fatigue in the User is Detected. In this paper, it is presented an driving assistance system when drowsiness is detected in a driver; the system is tested by a car like robot that is wirelessly controlled by the   computational interface developed in Visual Studio 2010, which emulates an automobile panel. Through an artificial vision system the driver´s head orientation is monitored for determining that if he/she is in the drowsiness state; if so, the robot control turn into automatic and the robot pull over to the right side of the way (built track).

Automatic Detection of Driver Fatigue Using Driving Operation Information for Transportation Safety Paper by Zuojin Li , Liukui Chen, Jun Peng and Ying Wu. The method in this paper is based on the steering wheel angles (SWA) and the yaw angles (YA) information under real driving conditions to detect the drivers' fatigue levels. It analyzes an operation features of SWA and YA under different fatigue statuses, and then calculates the approximate entropy

(ApEn) features of a short sliding window on the time series. Using the nonlinear feature construction theory of the dynamic time series, with the fatigue features as input, designs a "2-6-6-3" multi-level back propagation (BP) Neural Networks classifier to realize an fatigue detection. An approximately 15-h experiment is carried out on the real road, and the data retrieved are segmented and labeled with the three fatigue levels after an expert evaluation, namely "awake", "drowsy" and "very drowsy". The average accuracy of 88.02% in the fatigue identification was achieved in the experiment, endorsing the value of the proposed method for engineering applications.

A driver face monitoring systems can be divided into the two general categories. In one category, the driver fatigue and the distraction is detected only by an processing of the eye region. There are many researches based on this approach. The main reason of this large amount of researches is that the main symptoms of a fatigue and the distraction appear in the driver eyes. Moreover, a processing of the eye region instead of the processing of the face region has less computational complexity. In the other category, the symptoms of fatigue and the distraction are detected not only from the eyes, but also from the other regions of the face and head. In this approach, in addition to processing of the eye region, the other symptoms including yawning and the head nodding are also extracted.

Driver face monitoring system includes some of the main parts: (1) face detection, (2) eye detection, (3) face tracking, (4) symptom extraction, and (5) driver state estimation. These main parts are reviewed in a different systems in the current section.

In the most of the driver face monitoring systems, the face detection is the first part of the image processing operations. Face detection methods can be divided into the two general categories : (1) feature-based and (2) learning-based methods.

In the feature-based methods, the assumption is that the face in the image can be detected based on applying a heuristic rules on features. These methods are usually used for detecting one face in the image. Color-based face recognition is one of the fast and a common methods. In these methods, the face is detected based on the color of skin and the shape of a face. Color-based face detection may be applied on different color-space including RGB , YCbCr , or HIS . In the noisy images or in the images with low illuminations, these algorithms have a low accuracy.

Learning-based face detection uses statistical learning methods and the training samples to learn the discriminative features. These methods benefit from the statistical models and the machine learning algorithms. Generally, learning-based methods have less error rates for a face detection, but these methods usually have more computational complexity. Viola and Jones presented an algorithm for the object detection, which is very fast and robust. This algorithm was used in for an face detection.

Almost in all the driver face monitoring systems, because of the importance of a symptoms related to eye, the eye region is always processed for extracting the symptoms. Therefore, before the processing of a eye region, eye detection is required. Eye detection methods can be divided into the three general categories: (1) methods based on the imaging in an infrared spectrum, (2) feature-based methods, and (3) other methods.

One of the fast and the relatively accurate methods for the eye detection is the method based on the imaging in the infrared (IR) spectrum. In this method, physiological and optical properties of the eye in an IR spectrum are used. The eye pupil reflects a IR beams, and it seems as a bright spot when the angle of IR source and imaging device are suitable. According to this interesting property, pupil and the eye are detected. The systems proposed in used such method for eye detection.

Feature-based eye detection approach includes various methods. Image binarization and the projection are two feature-based eye detection methods which assume that the eye is darker than the face skin. Usually, more complicated processing is needed to detect an proper location of eyes, because these methods are simple and have a high error rate.

There are few methods for eye detection based on the other approaches which were used in the driver face monitoring systems. In , a geometrical face model with some feature-based methods was used to detect eyes. In addition, some systems such as used hybrid methods for eye detection. In ,the elliptical gray-level template matching and IR imaging system were used for the eye detection in day and night, respectively.

Usually, the entire image is searched for detecting an face/eye. Searching an entire image increases the computational complexity of the system. Therefore, usually after the early detection of face/eyes, in the next frames, face/eye tracking is performed. In the most of driver face monitoring systems, Kalman filter or a extended versions of Kalman filter such as Unscented Kalman Filter (UKF) were used. However, in some researches, search window and particle filter (PF) were used for tracking.

In the driver face monitoring systems, useful symptoms for fatigue and distraction detection can be divided into the three general categories:(i)a symptoms related to the eye region;(ii)symptoms related to the mouth region;(iii)symptoms related to the head.

Eye is a most important area of the face where the symptoms of fatigue and distraction appear in it. Therefore, many of the driver face monitoring systems detect a driver fatigue and distraction only based on the symptoms extracted from the eyes. The symptoms related to eye region include PERCLOS , eyelid

distance, eye blink speed , eye blink rate , and gaze direction .

Yawning is one of the hypo vigilance symptoms related to the mouth region. This symptom was extracted by detecting the open mouth in .These systems detect the mouth based on the color features of an lips in the image.

Some fatigue and the distraction symptoms are related to head. These symptoms include head nodding and the head orientation . Head nodding can be used for the fatigue detection, and a head orientation can be used for both the fatigue and distraction detection. Driver nodding and the lack of driver attention to the road can be detected by estimating an angle of head direction.

After the symptom extraction, the driver state has to be determined. The determination of a driver state is considered as a classification problem. The simplest method for detecting an driver fatigue or distraction is based on applying a threshold on the extracted symptom .

Another method for determining the driver state is an knowledge-based approaches. In a knowledge-based approach, decision making about the driver fatigue and distraction is based on the knowledge of an expert which the knowledge usually appears in the form of if-then rules. In , fuzzy expert systems were used as the knowledge-based approach for estimating the driver state.

More complicated approaches such as the Bayesian network and nave dynamic Bayesian network were used for driver state determination. These approaches are usually more accurate than the threshold-based and a knowledge-based approaches; however, they are more complicated.

III. EXISTING SYSTEM

A driver falls asleep, then the driver loses control over the vehicle, an action which often results in a crash with either another vehicle or any object. In order to prevent these devastating accidents, there was a previous approach developed, in this system the state of drowsiness of an driver was monitored. The following measures were used widely for monitoring drowsiness:

(1) Vehicle-based detection: An number of actions/metrics, including deviations from a lane position, movement of the steering wheel, pressure on the acceleration pedal, etc., are constantly monitored and any change in these that crosses the specified threshold indicates a significantly increased probability that the driver is drowsy .

(2) Behavioral measures: The behavior of the driver, including yawning, eye closure, eye blinking, head pose, etc., was monitored through an camera and the driver was alerted if any of these drowsiness symptoms are detected.

(3)Physiological measures: The correlation between physiological signals (electrocardiogram (ECG), electromyogram (EMG), electrooculogram (EOG) and electroencephalogram (EEG)) and driver drowsiness was studied.

IV. PROPOSED SYSTEM

In recent days, driver drowsiness has been one of the major causes of road accidents and can lead to severe physical injuries, deaths. Statistics indicate the need of the reliable driver drowsiness detection system which could alert the driver before a incidents takes place. The proposed system is a driver eyes monitoring system that can specially works on a drivers eyes and the face region. Firstly the eyes and the face regions are monitored by camera. Secondly, Iris structuring, the jaw angle finding and the calculation is done using regression analysis, Haar (cascade classifier algorithms) which will examine the eyes are open or closed, then

system will detect whether driver is sleeping or not sleeping. If driver is sleeping the alarm rings.

4.1 Advantages of Proposed System

1.System is able to distinguish the simulated drowsy and an sleepy states from the normal state of driving on the low resolution images of the faces and eyes observed from an oblique viewing angle.

2.Effectively monitors the bus driver's attention level without the extra requirement for a cameras.

3.The System approach could extend the capability and applicability of the existing vision-based techniques for the driver fatigue detection.

V. SYSTEMOVERVIEW

A flowchart of the major functions of The Drowsy Driver Detection System is shown in Figure.1.
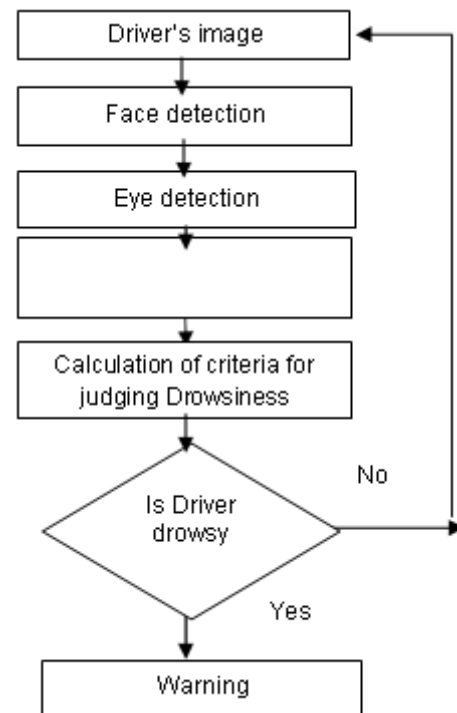
Figure 1. System flowchart

After acquiring the video file of the driver's image, it is converted into consecutive frames of images. The skin color based algorithm is applied to detect the face

portion in the image. Since eyes lie in the upper half portion of the face, the lower half of the face is removed to narrow down the search area where the eyes exist. Using the sides of the face, the centre of the face is found, which will be used as a reference when comparing the left and right eyes. Movingdown from the top of the face, horizontal averages (average intensity value for each x coordinate) of the face area are calculated. Large changes in the averages are usedto define the eye area. Using the horizontal average values of both sides of the face the open or closed states of the eyes are detected. If the eyes are found closed for 5 consecutive frames, the system draws the conclusion that the driver is falling asleep and issues a warning signal. All the codes are written in MATLAB software.

5.1.Face Detection

Human face localization and detection is often the first step in applications such as video surveillance, human computer interface, face recognition and / or facial expressions analysis, and image database management. A lot of research has been done in the area of human facedetection.

In prior studies, different human skin colors from different races have been found to fall in a compact region in color spaces. Therefore, we decided to detect skin by making use of this compactness. The face detection is performed in three steps. The first step is to classify each pixel in the given image as a skin pixel or a non-skin pixel. The second step is to identify different skin regions in the skin-detected image by using connectivity analysis. The last step is to decide whether each of the skin regions identified is a face or not. After the probable location of the face is found the left and the right edges of the face are determined.

5.2.Eye detection and eye stateestimation

The next step in locating the eyes is finding the intensity changes on the face. This is done using the gray scale image and not the color image. The first step is to calculate the average intensity for each x –

coordinate. These average values are found for both the eyes separately. When the plot of these average values was observed it was found that there are two significant intensity changes. The first intensity change is the eyebrow, and the next change is the upperedge

of the eye, as shown in the figure. Thus with the knowledge of the two valleys the position of the eyes in the face werefound.
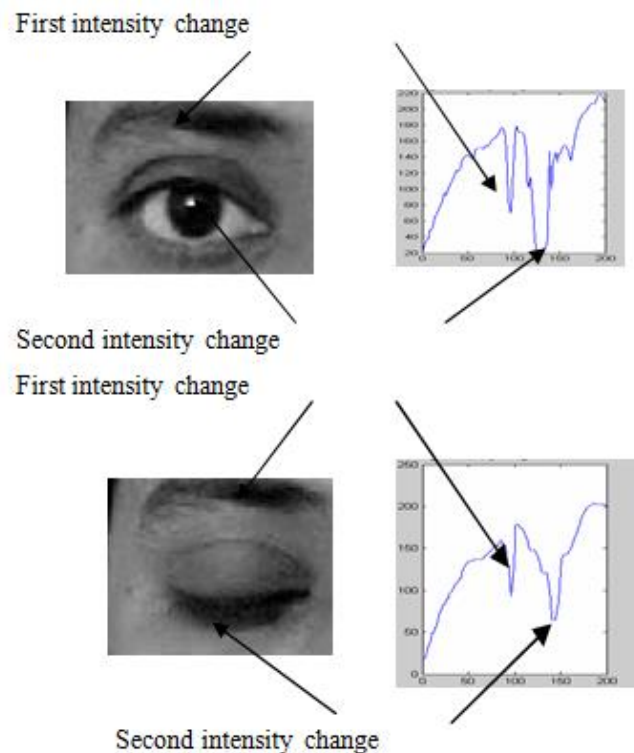
Figure 2. Average intensity variation on the face when eyes are open and close

The state of the eyes (whether they are open or closed) is determined by the distance between the first two intensity changes (valleys) found in the above step. When the eyes are closed, the distance between the x – coordinates of the intensity changes is larger compared to when the eyes are open.

5.3.Drowsinessdetection

The video image captured by the camera is converted into consecutive frames. From each frame face portion is located and then eyes are localized. The eye region is observed to check whether the eyes are closed or

open. Thus, if the eyes are found closed for consecutive 5 frames the system decides the occurrence of micro sleep and give a fatigue alert to thedriver.

5.4.Experimental results

All the codes were written in MATLAB. The experimental results are shown in the figure. The video recording of the driver's image is converted into consecutive frames. From each frame face is detectedand lower half of the face is removed. In the upper half portion search has done for locating eyes. Once the eyes are located, by using the intensity variations the distance between eyebrow and eyelids is measured. This distance is maximum when eyes are completely closed and minimum when eyes areopened.

| (a) Open Eye | (b) Closed Eye |

Figure 4. Eye detection
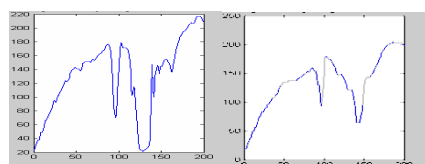
| (a) Open eye | (b) Closed eye |

Figure 5. Average intensity variation on theface when eyes are open and close

VI. CONCLUSION

Thus a driver monitoring system is implemented which detects the fatigued state of the driver through continuously monitoring the eyes of the driver. The basis of the method used by authors was the horizontal intensity variation on the face. One similarity among all faces is that eyebrows are significantly different from the skin in intensity, and that the next significant change in intensity, in the y-direction, is the eyes. This facial characteristic is the centre of finding the eyes on the face, which will allow the system to monitor the eyes and detect long periods of eyeclosure.

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AI in Gaming

Prof. Madhuri Manohar Dharanguttikar, Tushar Bharadwaj, Mohammed Bhuranpurwala, Tarun Jain, Aditya Patil

Computer Engineering Department (SKNSITS), Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

The proposed will be a computer game version of a popular game Mario. Instead of having a single player like in Mario our system has 2 players. where both the players are controlled by user therefore making it a two-player game. This adds more functionality and more diversity to a game. The game use artificial intelligence to create enemies and helps to make the game more challenging. The end goal of the game is that both the players need to complete the level together

I. INTRODUCTION

Use Unity 3D engine to create a 2D 2 player game each player has finite amount of life. Main goal of the game is to reach from one starting point to the end point while maintaining their lives, so both have to reach the end point. Artificial Intelligence is used to create enemies which take the life of the player. The player has the ability to shoot the enemy or avoid them. There are different kind of enemies that are introduced to make the game hard and interesting.Each player has their own ways of completing the task. Artificial Intelligence tracks every movements of the players and acts accordingly. Enemies are based on Artificial Intelligence. so it very difficult to complete the task. There are some tricky paths which the players has to identify and play accordingly.

II. LITERATURE SURVEY

· **General Video Game for 2 players: Framework and Competition**

In This paper is regarding the game of 2 player which can be played with the patrolling bots. Having understood the basic idea of the project which tells about basic idea and background for the proposed system . Different methods and principles have been studied to implement an 2d 2player game. By Raluca D. Gaina (2016), a system providing 2D game was implemented is to directly test against each other in more complex and dyamic environment, where there is an extra uncertainty in a game, consisting of the behaviour of the other player.

III. LIMITATIONS

a. Patroling bots:

These are the bots which follows a simple path as given by the developer, the patroling bots are just simple enemies which moves in a designated path and goes for each and same for every level and it is eas as it make for the player to dodge them.

b. Repeated levels:

The user after some levels exprince the same repeated steps or series of task and in the higher levels the movements from start till end is the same and does not include and change it just repeat the privious levels with some changes and make it look diffcukt

but it is the same level with some modification

c. Single player:

In the previous system there was a limitation where the user was doomed to use a single player and there was clashes between the friends that who will play first or whose turn it is.

IV. EXISTING SYSTEM APPROACH

In traditional system like Mario there are lot of problems to face, some of them are-

- Basic AI which makes the game easy and the user loses the interest.
- Basic player movement script.
- No special ability.

Traditional System does not used multiple enemies which gives us the consistent levels and the user can easily guess the next movement of the enemy

V. PROPOSED SYSTEM APPROACH
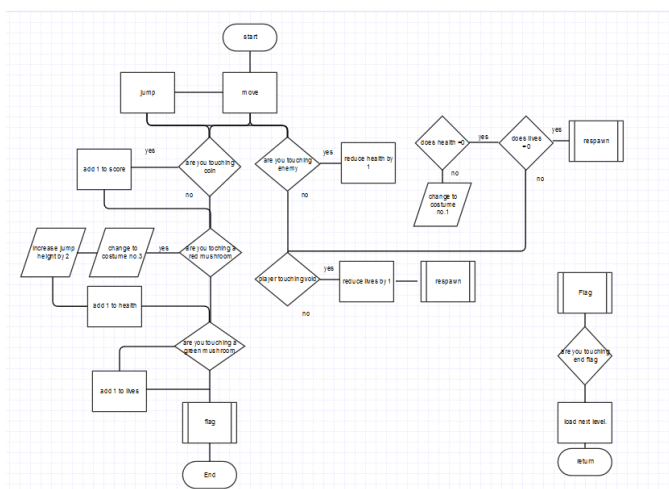
Figure 1

In traditional system there was a basic view of the movement and interaction with the enemy it simply jumps and move back and forth. The enemy was just the patrolling enemy (move from one specific end point to another).

In proposed system improvement of the movements of the player by introducing new features like double jump, wall jump and sprint. There are new features in AI to make the movement of the enemy more advanced and less predictable than the traditional system enemies. The most interesting feature is the health bar and the shooting.
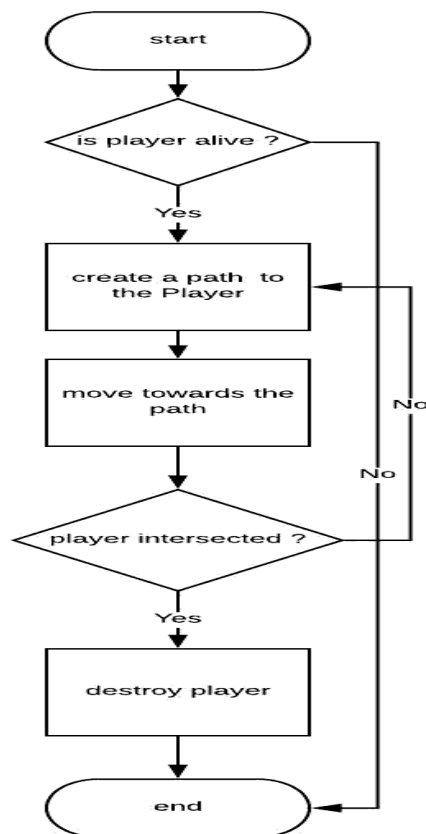
Figure 2

In this proposed system we will beusig two players concept, in this the player will detect the enemy and will try to destroy him, if the player1 gets destroy then player2 have to complete the game.

The AI enemy will have its own algorithm to find the players and to destroy them by learning their movements.

If both the players gets detroys then the game will end.

VI. CONCLUSION

In the proposed system, we will use the concept in which we will improve the movement strategies and make the AI enemy more advanced and less predictable than the traditional system.

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An Intelligent Visual Search

Prof. V. Y. Baviskar[1], Indrajeet Ambure[2], Sakshi Amrutkar[2], Nilesh Mahakulkar[2], Deepam Patel[2]

[1]Assistant Professor, Computer Engineering, SKNSITS, Lonavala, India

[2]Computer Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

In today's world text search engine is used by the users for searching purpose. This is manual process and is prone to many human errors. There are some visual systems developed with different technology. But these systems also have some or the other drawback like efficiency and accuracy. To overcome the traditional systems drawbacks we propose an intelligent visual search system. The input to the application will be an image. The image will be detected and the features will be extracted from it. On the basis of features of an image the similar or matching images are shown to the user as an output. The system is very user friendly, easy to use and shows accurate results as expected.The digital image information is apace increasing in amount and nonuniformity. the standard info retrieval techniques doesn't meet the user's demand, therefore there's ought to develop associate degree economical system for content based mostly image retrieval. The content based mostly image retrieval are getting a supply of actual and quick retrieval. In this paper the techniques of content based mostly image retrieval square measure mentioned, analysed and compared. Techniques such as K-Means, C-Means for effective retrieval of a picture are discussed.

Keywords : Feature Vector, BPN Networks, K-Means and C-Means cluster formula, Color Collelogram, JPEG Compression Domain

I. INTRODUCTION

Content Based Image Retrieval (CBIR) is a system which utilizes visual substance, regularly called as highlights, for example, shape, shading, surface, edge. and so forth… to look pictures from huge scale picture databases as indicated by clients' asks for as a question picture. Content based recovery of visual information requires a worldview that varies altogether from both conventional databases and content based picture understanding frameworks. The test in CBIR is to build up the strategies that will expand the recovery precision and decrease the recovery time. Among them, color highlight is regularly extensively used to portray the pictures which are hard to be fragmented and needn't to consider space information. Texture is a standout amongst the most critical ones, because of its essence in generally genuine furthermore, manufactured world pictures, which makes it under high consideration for CBIR as well as for some other applications in PC vision, therapeutic imaging, remote detecting, etc .Finally the edge highlights that incorporate five classes vertical, level, 45 degree askew, 135 degree inclining, and isotropic are included.
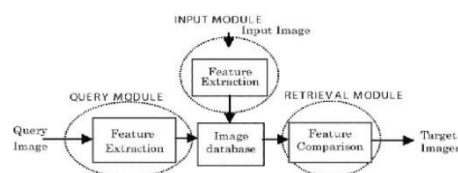
Figure 1. Content Based Image Retrieval

II. RELATED WORK

Jing Huang edal[1] examined new component callede shading correlogram for picture ordering and comparison. This new element registered productively and demonstrate that execution extremely well. Sim, D. G., H. K. Kim and R. H. Park [2] the picture recovery plot for JPEG arranged picture is exhibited. content based picture recovery for JPEG pictures has pulled in numerous individuals' consideration and a progression of calculations specifically dependent on the discrete cosine change space. Also, to take full preferred standpoint of DCT coefficients and think about the shading and surface data for the recovery of JPEG arranged pictures. Here decompressing the pictures and after that performing in the spatial space. The element vectors are processed from a few DCT coefficients. Also, this activity is performed in the fractional decoded space. It can incredibly diminish the recovery unpredictability.

M. Flickner et.al [3] proposed Color histograms are computationally proficient, and by and large unfeeling to little changes in camera position. Be that as it may, a shading histogram gives just an extremely coarse portrayal of an picture, A pictures with comparable histograms can have significantly unique appearances. Here , to portray a strategy which forces extra imperatives on histogram based coordinating. In histogram refinement, the pixels inside a given can are part into classes dependent on some neighborhood property. Split histograms are looked at on a container by can premise, like standard histogram coordinating. Inside a given basin, just pixels with the same property are thought about. Two pictures with indistinguishable shading histograms can have diverse part histograms, split histograms make a better qualification than shading histograms. This is especially essential for expansive picture databases, in which numerous pictures can have comparable shading histograms. To portray a split histogram called a shading lucidness vector (CCV), which parcels every histogram pail dependent on spatial

rationality. A database with 15,000 pictures can be questioned utilizing CCV's in less than 2 seconds. What's more, to show that histogram refinement can be utilized to recognize pictures .

A. P. Berman [4] found that procedure reasonably coordinates a various and expandable arrangement of picture properties (shading, surface, and area) in a recovery system, and permits end clients significant command over their utilization. We propose a novel arrangement of assessment techniques notwithstanding applying set up tests for picture recovery; our procedure demonstrates aggressive with condition of workmanship strategies in these tests and improves the situation on specific errands. The Stairs calculation can work in a local inquiry mode with just a moderate increment in computational overhead. For certain questions this capacity fundamentally builds the pertinence of the pictures recovered. Moreover, it enhances numerous standard picture recovery calculations by supporting questions dependent on subsections of pictures. The benefits of illustration on various kinds of picture highlights for Image recovery are solidly settled. Our work profits by this pattern, giving a system to reasonably and reliably coordinating assorted picture properties into a portrayal amiable to quick, solid recovery.

J. Zhang et.al[12] recommend the picture recovery dependent on the textural data of a picture, for example, introduction, directionality, and normality. Here, use surface introduction to build the pivoted Gabor change for extraction of the pivot invariant surface element. The turn invariant surface element, directionality, and normality are the fundamental highlights utilized in the proposed methodology for likeness appraisal. Utilizing these highlights, we at long last propose a proficient component for CBIR and look at it through a few applications. the framework would now be able to contrast highlights of the question and highlights of pictures in the gathering based on some coordinating paradigms.

Since three highlights are utilized in this work, three coordinating scores should be registered. A weighted normal of the coordinating scores is then determined to get a last score for each picture. At long last, position pictures dependent on these last scores and best positioned pictures are shown to the client as the consequence of recovery.

Haralick RM l[6]discussed the four picture highlights are separated by this framework, which are shading highlight (HSV shading histogram), surface element (co-event network), shape highlight (minute invariant dependent on limit streamlining), spatial relationship highlight (in light of the Markov chains). As indicated by the measurable examination of the test results find that the four visual highlights depict picture characters differently. The recovery accuracy dependent on shading highlight is superior to anything dependent on surface component. A picture recovery technique consolidated shading and surface highlights. As per picture surface trademark, a sort of picture highlight measurement is characterized. By utilizing highlight weight task administrators planned here, the strategy can allot load to shading also, surface highlights as indicated by picture content adaptively and acknowledge picture recovery dependent on consolidated picture highlights. The recovery results are more correct and productive than different strategies dependent on single element and straightforward direct joined highlights of settled weight, the recovery results are increasingly reasonable to the human visual trademark. The blunder coordinating is diminished and weight task is legitimate.

P.S .Hiremath ," [7] talked about four methodologies, for example, multispectral Approach, HSV shading space, YCbCr shading space, and utilizes dim scale surface highlights for shading surface examination. The wavelet disintegrated coefficient of picture and its supplements by utilizing surface element. Their investigations are completed on Wang's dataset utilizing JSEG for division and look at the four changed shading space. Finally haar wavelet is increasingly powerful in surface component contrast and other wavelet in this way. The outcomes are empowering.

P. S. Hiremath and Jagadeesh Pujari [7] discussed An incorporated coordinating plan dependent on higher need of comparable picture and the contiguousness lattice of a bipartite chart by utilizing tiles of query. Shape data is registered by Gradient Vector Flow fields.This showing is proficiency contrast and wavelet strategy. K.P. Ajitha Gladis and K.Ramar [8] talked about principally as the picture can be spoken to on measurable properties, morphological highlights and fluffy bunch highlights of the picture so as to get progressively precise outcomes. He separate is estimated through a back engendering system.

Lam Phung and A. Bouzerdoum [9] proposed new element called edge thickness. it separates objects from non-objects utilizing picture edge attributes. This methodology depends on a quick protest recognition technique. The edge thickness, which estimates the explicit area of the protest , that can be processed all the more proficiently. Where each element is the normal edge size in an explicit subregion. The new component capacity looked at to the Harr-like features.Finally new element demonstrate great discriminative capability S. Nandagopal nedal discussed surface for surface co - event grid based entropy, vitality, and so forth, and for edge thickness , Edge Histogram Descriptor (EHD).For recovery of pictures, at last to lessen the computational multifaceted nature in light of voracious stategy. in this way, its accomplished better outcomes for both neighbourhood and worldwide element.

Mamta Juneja and Parvinder Singh Sandhu [11] proposed treat technique for edge detection. Here, to think about watchful strategy with laplacian of Gaussian strategy.

III. FEATURES

In a Visual Search the user usually clicks a photo and uploads it to a server. The role of the server is to extract features based on some criteria. In our the features are extracted from the "Objects" that are detected from the input image using **Object Detection**

Object location is the distinguishing proof of a question in the picture alongside its restriction and grouping. It has across the board applications and is a basic segment for vision based programming frameworks.

Progress and Future Work:

Object Detectors have been making fast strides in accuracy, speed and memory footprint. The field has come a long way since 2015, when the first viable deep learning based object detector was introduced. The earliest deep learning object detector took 47s to process an image, now it takes less than 30ms which is better than real time. Similar to speed, accuracy has also steadily improved. From a detection accuracy of 29 mAP (mixed average precision), modern object detectors have achieved 43 mAP. Object detectors have also improved upon their size. Detectors can run well on low powered phones, thanks to the intelligent and conservative design of the models. Support for running models on phones has improved thanks to frameworks like Tensorflow and Caffe among others. A decent argument can be made that object detectors have achieved close to human parity. Conversely, like any deep learning model, these detectors are still open to adversarial attacks and can misclassify objects if the image is adversarial in nature. Work is being done to make object detectors and deep learning models in general more robust to these attacks. Accuracy, speed and size will constantly be improved upon, but that is no longer the most pressing goal. Detectors have attained a respectable quality, allowing them to be put into production today. The goal now should be to make these models robust against hacks and ensure that this technology is being used responsibly.

Recent Work :

There are as of now two strategies for developing object identifiers the single step approach and the two stage approach. The two stage approach has accomplished a superior exactness than the previous while the single step approach has been quicker and demonstrated higher memory productivity. The single step approach characterizes protests in pictures alongside their areas in a solitary advance. The two stage approach on the other hand separates this procedure into two stages. The initial step creates a lot of areas in the picture that have a high likelihood of being a protest. The second step at that point performs the last identification and grouping of articles by taking these locales as information. These two stages are named the Region Proposition Step and the Object Detection Step separately. On the other hand, the single step approach consolidates these two ventures to straightforwardly anticipate the class probabilities and question areas. Question indicator models have experienced different changes during the time since 2012. The main leap forward in questionidentification was the RCNN [1] which brought about an enhancement of almost 30% over the past condition of the workmanship. We will begin the review by investigating this indicator first.
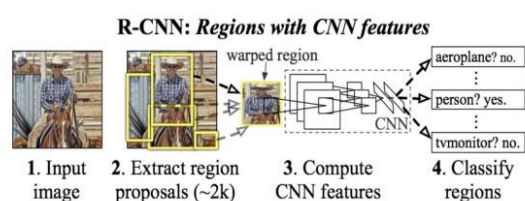
Figure 2. Regional Convolutional Network

IV. CONCLUSION

In this review paper treat technique is simple and quick to figure the procedure .Image part and picture compaction is to diminish the calculation intricacy by lessening highlight vector size and Haar

wavelets are utilized, since they are progressively compelling contrasted with different wavelets. In every one of the paper they give a few strategies ,in that every strategy satisfy their works. The outcomes are very useful for the greater part of the question pictures and it is conceivable to further enhance, to utilize hereditary calculation, group calculation, for example, various leveled bunching, Cure information Clustering, combination calculation and some other method will incorporating into CBIR ,it will give the better and powerful recovery of a picture.

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Data Analytics In Bank Industry

Satish Gaikwad, Tushar Darekar, Sanman Khalate

Computer Engineering Department, SKN-SITS, Lonavala, Maharashtra, India

ABSTRACT

Banking as information intensive subject has been progressing unendingly beneath the selling influences of the time of huge data. Exploring the advanced massive information analytic tools like data processing techniques is vital for the banking sector that aims to reveal valuable data from the overwhelming volume of knowledge and succeed higher strategic management and client satisfaction. so as to produce sound direction for the longer term analysis and development, a comprehensive and most up thus far review of this analysis standing of DM in banking are very helpful. Credit rating is that the primary methodology for classifying loan candidates into 2 categories, particularly credible payers and defaulters. In general, credit score is that the primary indicator of trustworthiness of the person. This credit rating technique is employed by banks and alternative cash lenders to make a probabilistic prophetical model, referred to as a book for estimating the chance of defaulters. within the current international state of affairs, credit rating could be a major tool for risk analysis and risk management for all the prevailing and rising economies. Credit rating has gained abundant significance in retail credit trade.The downside of credit-risk analysis could be a terribly difficult and vital monetary analysis problem.

Keywords: credit/debit card, CIBIL score, fraud detection, data analytics, banking, security.

I. INTRODUCTION

The banks face terribly difficult and necessary money issues, as a result of there's a weakness in credit-risk assessment and completion of loan package. The bank crises studies in numerous countries, whether or not advanced or developed, indicate that almost all of the countries that area unit exposed to money crises area unit because of the most reason of the overdue credits (financial defaults).Credit risk level assessment strategies have contend a vital role within the follow of contemporary banking risk management. They contribute to the key to a authorisation method that accurately and expeditiously quantifies the credit risk level of a prospective recipient. These credit assessment strategies aim to predict future behaviour in terms of credit risk supported past expertise of consumers with similar characteristics.

The extent of a borrower's credit risk is attributed to the prospect that it'll neglect associate degree approved loan at a present time. The most task of a credit grading technique is to supply a separation between UN agency who fail and people who don't fail in terms of credit payments. The separating ability may be a key indicator of a method's success. Credit grading may be a qualitative technique to judge the credit risk of loan applications.

Both applied mathematics strategies and AI area unit typically utilized by credit analysts to assist them decide whether or not the candidate area unit deserve credit. These strategies aim to predict futurebehaviour in terms of credit risk supported past expertise of consumers with similarcharacteristics

II. EXISTING SYSTEM

The banks face terribly difficult and necessary monetary issues, as a result of there's a weakness in credit-risk assessment and completion of loan package. The banks crises studies in several countries, whether or not advanced or developed, show that the majority of the countries that area unit exposed to monetary crises area unit because of the most reason of the overdue credits (financial defaults).

Problems occurred to the choice maker as a result of the nice variety of things that ought to be thought-about with completely different weight in keeping with every case and additionally the lake of existence information. This monetary failure chiefly is because of the shortage of consultants in banking domain.

III. PROPOSED SYSTEM

In this proposed systemseveral modules are present:
1) Loan Amount Prediction using CIBIL score.
2) Transitional Fraud detection.
3) This module is for education loan and their interest.
4) Real time document verification i.e. Aadharcard, PAN card.

Figure 1
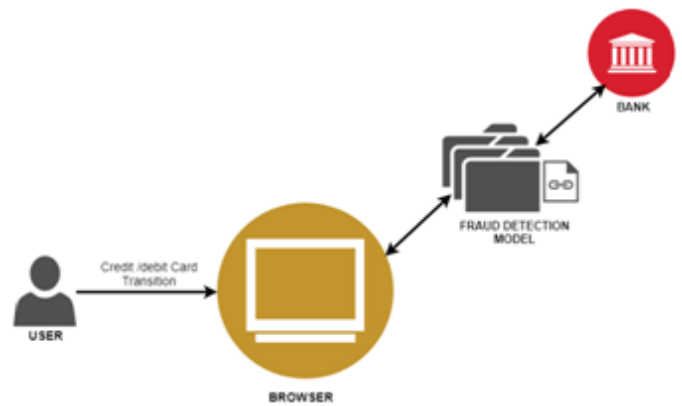
Figure 2

IV. CONCLUSION

Credit marking could be a quatitative technique to guage the credit risk of loan applications. each applied math ways and AI square measure typically employed by credit analysts to assist them decide whether or not the candidates square measure merit credit. These ways aim to predict future behavior in terms of credit risk supported past expertise of shoppers with similar characteristics.Credit marking could be a cluster of call models and their under-lying techniques that offer support to lenders once providing credit to customers. so as to finish the in depth study we've got performed with individual classifier and ensembles

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Deep Convolutional Neural Networks based Galaxies Classification

Sanket Kulkarni, Kaustubh Deshmukh, Nikhil Lad, Dinesh Inamdar

Computer Engineering,SPPU/SKN SITS, lonavala, Maharashtra, India

ABSTRACT

In this Project, The neural network architecture for galaxies classification is presented. The galaxy can be classified based on its features into a main three categories Elliptical, Spiral, and Irregular. This paper presents an new approach for an automatic detection of galaxy morphology from datasets based on the image-retrieval approach. The galaxy can be classified based on its features into a main three categories Elliptical, Spiral, and Irregular.

Keywords: Galaxies Classification, Deep Convolutional Neural Networks, Computational Astrophysics

I. INTRODUCTION

Studying the types and an properties of the galaxies are important as it offers important clues about the origin and the development of an universe. The classification of the galaxy is an important role in studying the formation of the galaxies and an evaluation of our the universe. Galaxy morphological classification is an system used to divide the galaxies into groups based on their visual appearance. There are several schemes in use by which the galaxies can be classified according to their morphologies.

Galaxy classification is used to help the astrophysicists in facing this challenge. It is done on the huge databases of information to help the astrophysicists in testing theories and finding new conclusions for explaining the physics of processes governing galaxies, star-formation, and the evaluation of universe.

Historically, galaxies classification is an matter of visually inspecting two-dimensional images of an galaxies and categorizing them as they appear. Even though expert human classification is somewhat reliable, it is simply too time consuming for the huge amounts of astronomical database taken recently because of the increase in the size of a telescopes and the CCD camera have has produced extremely large datasets of images, for example, the Sloan Digital Sky Survey (SDSS). an long-term goal for astrophysicists. These data is too much to analyze manually feasible. Galaxy classification is based on the images and spectra. This classification was considered However, the complicated nature of the galaxies and the quality of images have made the classification of the galaxies challenging and not accurate . Galaxy classification system helps astronomers in the process of grouping the galaxies per their visual shape. The most famous being the Hubble sequence Hubble sequence is considered one of the most used schemes in the galaxy morphological classification. The Hubble sequence was created by the Edwin Hubble in 1926 .

In the past few years, advancements in a computational tools and algorithms have started to allow automatic analysis of galaxy morphology. There is several machine learning methods are used to improve an classification of galaxy images. Prior researchers do not achieve an satisfying results. In this paper, the authors perform automated morphological galaxy classification based on the machine learning and image analysis. They depend on

the feed-forward neural network and an locally weighted regression method for classification. With the huge increase in the processing power, a memory size and the availability of powerful GPUs and large datasets, it was possible to train deeper, the larger and more complex models. The machine learning Researchers had been working on the learning models which included learning and extracting the features from images. Deep Learning has achieved significant results and a huge improvement in visual detection and the recognition with a lot of categories. Raw data images are used deep learning as input without the need of expert knowledge for an optimization of segmentation parameter or feature design.

II. METHODS AND MATERIAL

2.1. EXISTING SYSTEM

Several machine learning methods for star/galaxy separation based on photometric analysis from catalogs. The experiments revealed that in terms of accuracy, most of the analyzed and explored methods outperformed the baseline method Zero. Among them, both NN and RF achieved good performance.

2.2 PROPOSED SYSTEM

The classification of galaxies based morphologies is considered one of the motivating topics of interest to researchers. a robust deep convolutional neural network architecture for galaxies classification was introduced.

Galaxies to be classified based on their morphological features as one of three types: Elliptical, Spiral, and Irregular. The proposed architecture convolutional layer for features extraction with some filters and two principles fully connected layers for classification. Image augmentation techniques were applied to the training data and included rotation, reflection, cropping and Gaussian noise.

2.3 SYSTEM ARCHITECTURE
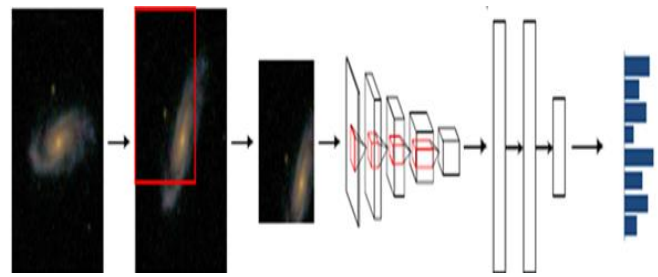
Figuer 1

III. RESULTS AND DISCUSSION

The output is generated by three stapes using this system:-

1] Original colour image processing: Here the image taken from the database is scanned and processed.

Figuer 2

2] Conversion of Binary image: Here the original image is converted into binary form of image.
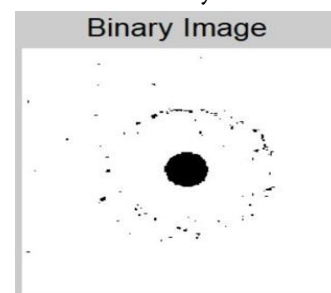
Figuer 3

3] Clearing binary image: Here the binary form of image is cleared to it it view clear ., this make the image easy to further processing.

Cleaned Binary Image
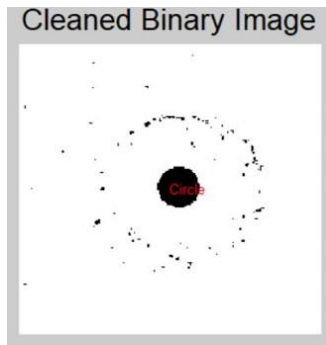
Figuer 4

After this ., the shape of galaxy is shown by the system. This also shows shapes of all the objects in the input original image.

IV. CONCLUSION

The deep learning approach led to a powerful shape detection system for galaxy that performs better than state-of the- art systems. Extend our system by using deep learning and correctly process the extracted features. The galaxy can be classified based on its features into the main three categories Elliptical, Spiral, and Irregular..

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Health EduCare System Using Data Mining Technique

Prof. K. S. Mulani[1], Archana M. Jadhav[2], Monika T.Salokhe[2], Ankita P. Asalkar[2],Sharddha R. Bangal[2]

[1]Professor SKNSITS lonavala, Pune, Maharashtra, India

[2]BE, Student SKNSITS lonavala, Pune, Maharashtra, India

ABSTRACT

Data mining is one among the techniques to seek out hidden data in massive amounts of knowledge and it's been wide employed in several areas as in communication, credit assessment, marketing, health and drugs, exchange prediction, data acquisition, hazard prognostication, banking, scientific discovery, education, fraud detection, etc., however data processing is considerably applied to drugs for the identification of many diseases like skin cancer, breast cancer, lung cancer, diabetes, liver disorder, heart disease, nephrosis, calculus, liver disease etc. This paper discusses the information mining applications in medical and attention trade as well as analysis of knowledge for higher gaining ends up in preventing the incidence of assorted errors in hospitals, early detection and prevention of assorted diseases and saving a lot of lives by reducing death rates. The success of medical data processing depends on the provided clean medical information resources.

Keywords: Graphical Passwords, Social Engineering, Distortion

I. INTRODUCTION

Data mining technology provides a user oriented approach to novel and hidden data within the information. Valuable data is discovered from application of knowledge mining techniques in health care system. data processing in health care medication deals with learning models to predict patients' disease. data processing applications will greatly profit all parties concerned within the health care trade. for instance, data processing will facilitate aid insurers sight fraud and abuse, aid organizations build client relationship management decisions, physicians determine effective treatments and best practices, and patients receive better and more cost-effective health care services. the large amounts of knowledge generated by aid transactions square measure too advanced and voluminous to be processed and analyzed by traditional strategies. data processing provides the methodology and technology to remodel these mounds of data into helpful information for higher cognitive process.

II. MATHMATICAL MODEL

Let W be the whole system which consists

Input = {U, Q, k, D, P, Sy}.

Let u is the set of number of users or Patients.

$$U= \{U1, U2….Un\}.$$

k is the secret key used for encryption.

Q is the generate QR code for every patient.

D is the set of Doctors.

D= {D1, D2,…,Dn}

Sy is the collection of symptoms.

Procedure:

A. Protocol for generating OTP for Authentication with Random Strings:

Step1: The user connects to the server and sends her ID.

Step2: The server checks the ID to retrieve the users

B. Searching for Symptoms.

1. First Patient will register into system with normal details.
2. Patient will enter the symptoms
3. 3.System will classify the disease using naïve bayes.
4. Patient will search for doctor as per his disease.
5. System will shows number of doctors to patient as per there disease.
6. The system will also show the medicine suggestion to patient based on their disease predict.
7. Doctor scans the QR code and gets the details of patient and gives treatment to the patient.
8. Doctor will give a prescription
9. Doctor will update more information to user's account.

C. Disease prediction.

1. Enter symptoms.
2. Predict disease by Naïve Bayes algorithm.
3. Search doctor by disease as per result shown by systems.

Output: Predict disease, predict doctor, secure authentication.

III. RESULTS AND DISCUSSION
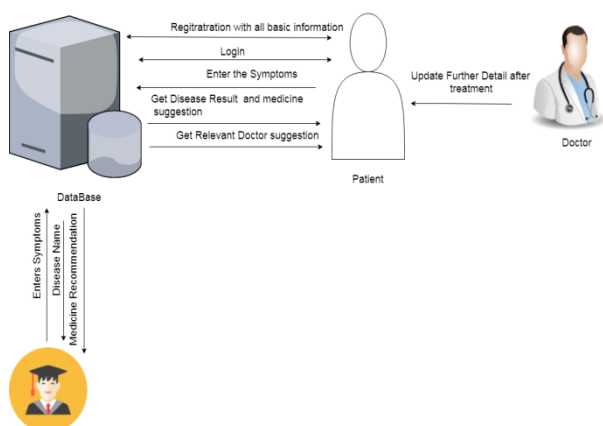
A. Figures

Figure 1. System Architecture

IV. CONCLUSION

The system we have developed will give higher identification for pharmaceutical corporations and patients. Our system integrates profiles of doctors and educational publications within the domain of life science. This paper introduces the planning, implementation, and preparation of our system.

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Travel Route Recommendation

Prof. DN Rathod , Vishal Tad, Kedar Sutar, Atul Todekar, Shubham Pawar

Computer Science, Smt. Kashibai Navale Sinhgad Institute of Technology and Science,

Lonavala, Maharashtra, India

ABSTRACT

When designing a visit, users invariably have specific preferences concerning their visits. rather than limiting users torestricted question choices like locations, activities, or time periods, we have a tendency to regarding|contemplate|take into account discretionary text descriptions as keywords about personalised needs. A various and representative set of counseled travel routes is required. previous works have careful on mining and ranking existing routes from arrival information. to satisfy the necessity for automatic trip organization, we have a tendency to claim that a lot of options of Places of Interest (POIs) ought to be extracted. In this paper, we have a tendency to propose associate economical Keyword-aware Representative Travel Route framework that uses information extraction from users' historical quality records and social interactions. Explicitly, we've designed a keyword extraction module to classify the POI-related tags, for effective matching with question keywords. We have any designed a route reconstruction formula to construct route candidates that fulfill the necessities.To evaluate the effectiveness and potency of the planned algorithms, we've conducted in depth experiments on real location-based social network datasets, and also the experiment results show that our strategies do so demonstrate sensible performance compared to progressive works.

Keywords : Location-Based Social Network, Text Mining, Travel Route Recommendation

I. INTRODUCTION

LOCATION-BASED social network (LBSN) services enable users to perform arrival and share their arrival knowledge with their friends. above all, once a user is traveling, the arrival knowledge area unit in reality a travel route with some photos and tag data. As a result, an enormous range of routes area unit generated, that play an important role in several well-established analysis areas, like quality prediction, urban designing and traffic management. during this paper, we tend to concentrate on trip designing and will discover travel experiences People travel a lot. Most of us have a mobile phone or a navigation device. If they want to make a successful trip they must prepare for it. At beginning a city which will be visited should be chosen. After that those places, buildings and monuments which are important and will be seen need to be selected to include in the trip. Very important is also calculation about the trip cost and the time needed for it. Sometimes people do not have enough time to prepare themselves or they spend few hours in some city without planning this before. Another fact is that people do not have enough time for planning. Most of them ask friends or go for trips organized by tourist companies where a professional guide is involved. It will be very helpful if a system that provides all information needed to visit a city is available. This system should gather data that are presented in brochures, tourist guides and on web pages. A search mechanism and path finding feature are also one of the requirements for this system. It can be difficult for some people to find paths that allow visiting particular places, but if these people have some proposals for trip an appropriate system will be very helpful for them in my opinion. With users having some suggestion is a good base to start organizing and optimizing trips and it is easier to change something than make it from beginning.

This thesis concentrates on the system that was designed. It also determines which of its aspects were implemented, which should be added in near future or commercial version and which are difficult to implement. To better understand environment, possibilities and requirements hardware and software aspects of mobile devices must be taken into consideration.

When visiting a city that you do not know, the first place that will be visited is probably tourist information. We can get maps and obtain information about museums, 2 galleries, tourist attractions, and probably entrance costs. Most of them we can find on the web page designed for this place, but often it is provided in national language only that tourists possibly do not know. Sometimes information is available in English but still this language is not understandable for everybody. Then we must print them to have a hard copy during the journey.

II. RELATED WORK

1)Smart soul guide: A model for guiding soul with image matching algorithmic program J. Sindhu Sri; N. V. Sri Sravani; P. Suresh Kumar

In today's life move has become a passion. however move isn't very easy unless we all know the place and its details. once we visit a replacement place so as to understand the main points of that place, we have a tendency to typically take facilitate of native individuals occasionally there would possibly arise a state of affairs wherever we have a tendency to cannot communicate with them. In different ways in which we have a tendency to browse regarding the place this approach may additionally result in confusion and doesn't solve the matter. once a soul takes a snap offers|and provides|and offers} it's input to the applying then it compares the input with the present pictures in information and it selects the foremost correct image and thereby gives the knowledge associated with the image. thus the soul feels comfy in knowing regarding the place.

2)KAMO - mobile guide for town soul
J. Liikka; J. Lahti; P. Alahuhta; M. Rosenberg

Author gift a mobile public transportation guide application known as KAMO, that offers journey designing and stop-specific timetable info for public transportation passengers. Passengers may get their fare exploitation the application; travel news regarding current issues or changes to the general public transport also are on the market via the KAMO application. Author describe the KAMO service design, compare it with connected work, and illustrate a typical application state of affairs from the user's purpose of read. Our work takes development in combining journey designing and therefore the period of time positioning-based observance of the buses within the same application and advancing the application's usability of the by utilizing the close to Field Communication (NFC) technology. Author summaries initial user trial results, that demonstrate that NFC will be used with public transportation services. supported the user trial results and our own expertise, Author gift the longer term development directions for KAMO.

3)Route alternative decision-marking analysis supported congestion charging
Zhenggang Li; Jian Wang; Qiu Yan; Ling Chou dynasty
The congestion charging would become the necessary issue of travelers' route alternative once cities do the congestion charging. this text issues the matter of route optimisation alternative supported congestion charging of the route. consistent with that, use variable weigh analytic hierarchy method (VWAHP) to investigate the route alternative decision-marking. Results show that the approach of research couldn't solely profit exploitation cheap charging live, however conjointly guide travelers' travel.

4)A Model of Risk-Sensitive Route-Choice Behavior and therefore the Potential advantage of Route steerage
J. Illenberger; G. Flotterod; K. Nagel
In this paper, Author gift a simulation-based investigation of the potential advantage of route-guidance info within the context of risk-sensitive travelers. Author discovered an easy two-route state of affairs wherever travelers area unit repeatedly baby-faced with risky route-choice selections. the chance averseness of the travelers is implicitly controlled through a generic utility operate. Author

vary each the travelers' sensitivity toward risk and therefore the instrumentation fraction with route-guidance devices and show that the advantages of radio-controlled travelers increase with their sensitivity toward risk.

5)Urbis: A touristic virtual guide

Ivaldir First State Farias; admiral Leitão; Marcelo M. Teixeira Currently, we have a tendency to understand that generally tourists pay tons of your time designing their visits as a result of they have to form the foremost of each moment. during this sense, technology has been an excellent ally, particularly to form this designing yet on adapt within the event of some unforeseen throughout the journey. within the last decade, associate increasing trend was ascertained, the soul or holidaymaker is often connected to mobile devices. The emergence of various kinds of mobile devices was conferred as a chance to considerably improve the holidaymaker life in relevance the design of the trip. during this context, this analysis aims to spot the most computing must support the advance of holidaymaker purpose of promotion for the soul, by the means that of a mobile application proposal. To accomplish this, we've got adopted a literature review because the analysis methodology. the most results of this paper is that the proposal of the Urbis paradigm, associate application that aims to assist tourists to understand higher the cities they are visiting, even within the absence of native info or a specialised guide.

III. EXISTING SYSTEM

When coming up with a visit, users continuously have specific preferences relating to their journeys. rather than proscribing users to restricted question choices like locations, activities, or time periods, we tend to think {about|contemplate|take into account} discretional text descriptions as keywords about customized necessities.

Moreover, a various and representative set of suggested travel routes is required. previous works have elaborated on mining and ranking existing routes from arrival information.

Disadvantages

- Plan in step with travel agencies, that isn't match to holidaymaker.
- Sometime packages is just too abundant pricey that isn't cheap by holidaymaker.
- Sometime travel agencies promising sensible quality service to holiday maker, however that not happen really.

IV. FEATURES

We propose associate degree economical Keyword-aware Representative Travel Route framework that uses information extraction from users' historical quality records and social interactions.
Explicitly, we've designed a keyword extraction module to classify the POI-related tags, for effective matching with question keywords.
To provide appropriate question results, we tend to explore Representative Skyline ideas, that is, the Skyline routes that best describe the trade-offs among totally different dish options.
The experiment results show that our ways do so demonstrate smart performance compared to progressive works.

Advantages
-Custom search
-User outlined schedule designing
-Get smart steering
-Recommend user in step with user place of interest.

V. SYSTEM ARCHITECTURE
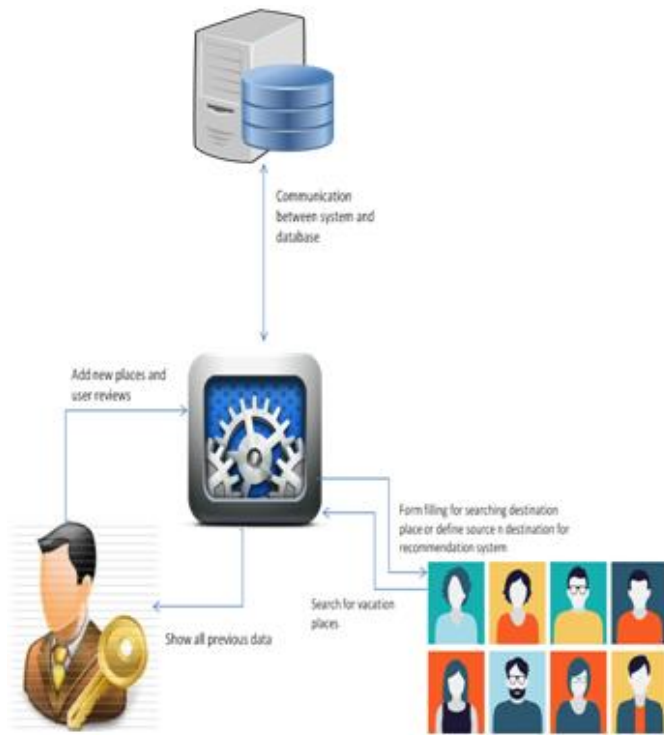
Figuer 1

VI. CONCLUSION

These travel routes square measure associated with all or partial user preference keywords, and square measure counseled primarily based on

i. The attractiveness of the POIs it passes,
ii. Visiting the POIs at their corresponding correct arrival times,
iii. The routes generated by authoritative users. We propose a completely unique keyword extraction module to spot the linguistics which means and match the measure of routes and have designed a route reconstruction algorithmic program to mixture route segments into travel routes in accordance with question vary and fundamental measure.

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Graphical Authentication System

Patil Pramod*, Sagar Said, Ashwini More, Ambikesh Kumar

Computer Engineering, SKNSITS, Lonavala, India

ABSTRACT

Image Authentication or captcha based on passwords is used largely in applications for computer and mobile security and privacy. People logs into web services and applications in public to access their personal and confidential accounts with their laptops, smartphones, tablets or public devices, like bank ATM. All these things bring great convenience but at the same time increase the risk of exposing passwords to unknowns by shoulder surfing attacks. A shoulder surfing is a kind of attack where attackers can observe directly or indirectly with the use of external recording devices to collect user's credentials. To overcome this problem of shoulder surfing attacks, we propose an image-based authentication system along with encryption. With one-time valid login indicator / token, horizontal and vertical bars covering the entire scope of an image, proposed system offers no hint for attackers to figure out or narrow down password even when they conduct multiple camera based attention. In addition to this, the login indicator is completely random and valid only for short period of time. In addition to this to protect the mobile application from theft, only one email id is allowed per application and an easy-to-remember randomly generated password required for logging into the application is also sent to the user. This password is completely encrypted and valid only for single login.

Keywords: Authentication, Shoulder Surfing Attack, Encryption, Decryption, Login Indicator.

I. INTRODUCTION

Over the past few years, TEXTUAL passwords have been the most widely used authentication method for security. To mitigate the brute force attack a strong textual password comprised of numbers, uppercase and lowercase letters and special characters is required. However, a strong textual password is hard to memorize and recollect [1].

Therefore, users tend to choose passwords that are either short or from the dictionary, rather than random alphanumeric strings. Even worse, it is not a rare case that users may use only one username and password for multiple accounts [2]. Various graphical password authentication schemes [3, 4] were developed to address the problems and weaknesses associated with textual passwords. However, most of these image-based passwords were vulnerable to shoulder surfing attacks (SSAs). This type of attack either uses direct observation, such as watching over someone's shoulder or applies video capturing techniques to get passwords, PINs, or other sensitive personal information [6] An image-based authentication system named Pass-Points [4] in which the user picks up several points (3 to 5) in an image during the password creation phase and re-enters each of these pre-selected click-points in a correct order within its tolerant square during the login phase. Comparing to traditional PIN and textual passwords, the Pass- Points scheme substantially increased the password space and enhanced password memorability. Unfortunately, this graphical authentication scheme was vulnerable to shoulder surfing attacks. Hence,

based on the Pass-Points, the proposed system adds an idea of using randomly generated one-time session passwords known as login indicator in an encrypted form that is resistant to shoulder surfing attacks. The proposed system named is a secure graphical authentication system that protects users from becoming victims of shoulder surfing attacks when inputting passwords in public through the use of one-time login indicators. A user has to select a count of images, the number may vary based on confidentiality of account or the information. System discretizes / divides these images into a grid of rows and columns for e.g 7 X 11. A token / login indicator is randomly generated [9, 10] for each image and will be useless after a short period of time. The goal of this random login indicator is to provide better security against shoulder surfing attacks since users will use a dynamic pointer to point out the position of their passwords rather than typing in the password directly. In addition to this, an encryption algorithm is used to avoid login indicator from being compromised.

II. METHODS AND MATERIAL

Mathematical Model

System Description:

Input: Providing input in terms of email id, number of images and image block.

Output: Avoids user accounts from being shoulder surfed.

Let S be the whole system which consists: S = {IP, PRO, OP, A, F}

Identify IP as the input:

IP = {u, n, v}

Where,

u$\rightarrow$ user information.

n$\rightarrow$ number of images required for logging in.

v$\rightarrow$ value of the selected image for verifying graphical password or token.

Identify PRO as procedure applied to the system to process the given input:

PRO = {id, hv, crt, gp, rp}

Where,

id$\rightarrow$ process of image discretization.

hv$\rightarrow$ process of creating horizontal and vertical bar around image.

crt$\rightarrow$ process of creating random token and sending it to users mobile application.

gp$\rightarrow$ process of verifying token / graphical password after user selects a particular image block.

rp$\rightarrow$ process of creating easy-to-remember random password, encrypting it and sending it to mobile application.

Identify OP as the output of system

OP = {di, hv, rtp}

Where,

di$\rightarrow$ discretized image generated by system.

hv$\rightarrow$ horizontal and vertical bar generated by system.

rtp$\rightarrow$ random token and encrypted easy-to-remember random password generated by system.

Identify A as case of success

A = {accept} Where, accept$\rightarrow$ only registered user get access to the system in an environment of shoulder surfing attack.

Identify F as case of failure F = {ip} Where, ip$\rightarrow$ poor network connection.
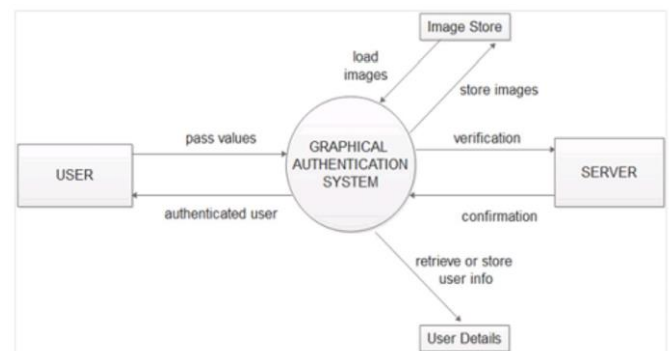
Figure 1. Data flow diagram.

Module Details:

1. Image Discretization Module: This module takes the image as its input and draws the horizontal and the vertical line over it forming a grid of blocks. Each image block thus formed comprises a value which will then be verified when the user clicks on the block.

2. Token / Login Indicator Generator Module: This module generates a token consisting of a single

alphabet and a single number. For example, characters from A to G and numbers from 1 to 11 can be used to form 77 different tokens. Each time when a call is made to this module a different token gets generated. The generated login indicator is delivered to user's mobile android application.

3. Horizontal and Vertical Bars Module: There are two bars: a horizontal bar with a sequence of letters and a vertical bar with a sequence of numbers or vice versa. The bars are used to implicitly point out the location of the block.

4. Communication Module: This module is in charge of all the information transmitted between the client devices and the authentication server. Any communication is protected by SSL (Secure Socket Layer) protocol and AES encryption algorithm thus, is safe from being eavesdropped and intercepted.

5. Password Verification Module: This module verifies the transmitted token with a token generated on click of the image block. The process is repeated for a particular count of the images. If both match, then user is authenticated. On the android application, this module restricts the limit of the email id to only one and hence only one email id is allowed per application. At the same time, this module is also responsible to verify easy-to remember password with user entered password.

6. Database: The database server contains several tables that store each user information and including the count of the image. It also contain dynamic tables which contains information such as which user is currently logged in. On the android application, it stores only one email id and an initial password.

7. Encryption: This module uses AES encryption algorithm to encrypt the easy-to-remember password. On the android application, this module decrypts, the received password and display it to the user. 3.8. Android application: This module consists of two

phases one is registration and other is login phase. In registration phase user need enter the email id and an initial password. This email id is then stored in the database (SQLite). In login phase user need to enter the email id and an initial password. The user will request for then token through this application. Upon receiving the token from server application will display it. Next, it will request for easy-to-remember password. Upon receiving this encrypted easy-to-remember password it will decrypt it and display it to the user.

Algorithms

Following two algorithms are used to generate a random login indicator / token.

1. Fisher-Yates Algorithm: This algorithm is used to randomly shuffle an array of data. Based on the requirement the first input to algorithm is an array consisting of eleven or more alphabets. The algorithm will shuffle this input array and generate a new array consisting same elements but at a new randomly shuffled indices. This newly generated array is than given as input to the next algorithm for further processing. Similarly, a second input to the algorithm is an array consisting of seven or more numbers. The rest of the processing of this array is similar to that of the first one.

2. Reservoir Sampling Algorithm: The output of the above algorithm is given as input to this algorithm. This algorithm is used for choosing a sample of item / items from a large set of items. As, the randomly shuffled array of eleven or more alphabets is given as input to this algorithm it will randomly select only one element from the subsequent set. Similarly, as the second input to the algorithm is a randomly shuffled array of seven or more alphabets it will randomly select only one element from the subsequent set. Than this chosen elements are that is one alphabet and one number are clubbed together and sent to android application. For example, if A is randomly choose

alphabet and 7 is randomly chosen number than they are clubbed together as A7 and sent to the application.

3. Advanced Encryption Standard Algorithm: AES algorithm is used to encrypt the easy-to-remember random password being sent to user's mobile application. It can be 128 / 192 / 256 bit.

It has following steps:

STEP 1: Derive the set of round keys from the cipher key.

STEP 2: Initialize the state array with the block data (plaintext).

STEP 3: Add the initial round key to the starting state array.

STEP 4: Perform nine rounds of state manipulation.

STEP 5: Perform the tenth and final round of state manipulation.

STEP 6: Copy the final state array out as the encrypted data (cipher text).

III. RESULTS AND DISCUSSION

- Introducing a Graphical authentication system, based on graphical passwords to resist shoulder surfing attacks.

- With a one-time valid login indicator and circulative horizontal and vertical bars covering the entire scope of pass-images, system offers no hint for attackers to figure out or narrow down the password even they conduct multiple camera-based attacks.

SYSTEM ARCHITECTURE
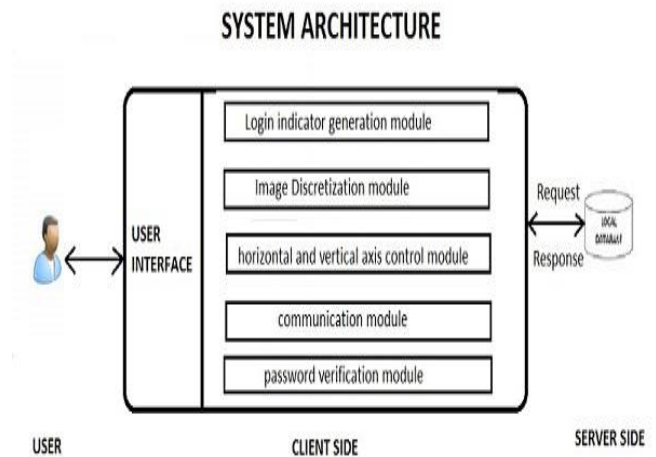
Figure 2

IV. CONCLUSION

- The proposed system is a novel and easy-to-use graphical password authentication system, which can effectively alleviate shoulder-surfing attacks.

- In addition, system can be applied to any authentication scenario and device with simple input and output capabilities.

- The survey data in the user study also showed that system is practical in the real world.

- The proposed system is an image-based authentication system which is resistant to shoulder surfing attack. It generates a one-time random login indicator per image which eliminates the need to memorize the complex passwords. An android application is created where the user receives their random password for logging in. In addition to this, the random password is encrypted due to which it is unable to compromise the password when it is being sent to the user. Hence, with the use of proposed system user can log in to their confidential, personal accounts in public places without exposing their passwords to shoulder surfing attackers. The proposed system will provide a greater freedom for users to

authenticate themselves in a vulnerable environment.

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Face Recognition Based Attendance Management System

Prof. N. R. Gavai¹ , Pranay Doshi² , Vishal Bende² , Kalpesh Mahajan² , Kavita Mahadik²

¹Assistant Professor, Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India

²U.G. Student, Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

One of the major challenges in a smart classroom system environment is to develop a computer vision based unobtrusive classroom attendance management system. Already existing traditional attendance system uses a manual attendance system to mark attendance of students by forwarding attendance sheet or by calling names of students. Both of these methods interrupts the teaching as well as learning process and also consume a lot of time of faculty. It has some basic problems such as students proxy etc. which can result in wrong attendance marking. In this paper, we propose an face recognition based smart classroom attendance management system using the high definition camera for capturing the faces of students The system will capture faces of students sitting in a classroom and will recognize face of each student using pre-trained dataset and will mark the attendance of students in an excel sheet.

Keywords: Face detection, Recognition, Attendance

I. INTRODUCTION

In traditional classroom environment, students' attendance management is one of the key factors to analyze the students' learning process and also to keep track of other factors like discipline, engagement and leads to effective learning and increase success rate. There are several works in attendance management system to overcome the difficulties faced in a traditional classroom environment.

To solve the issues of traditional attendance management system an application solution has been found which will use face detection and recognition for attendance management. According to the system, there will be a high definition camera placed in a classroom. The camera will be connected to a computer system in which a GUI will be present to control the whole process. Faculty will have to enter their details, subject name and the class standards and than just to trigger on track images so that camera

starts tracking images of the students and than the system will track the image will compare the images with the dataset and will mark the attendance and this attendance will be saved in excel sheet with the student's name , roll number and the respective subject.

II. LITERATURE SURVEY

A. Computer Vision Based Unobtrusive classroom attendance management system:

In this paper a system is proposed which tracks the real time attendance of students sitting in class using face detection and recognition.

Authors of this paper has used a high definition camera which is being installed in a classroom. This camera is used to capture the faces of all the students present in classroom and then attendance is marked.

This paper gives us the overview about how to use the existing technology of face detection in attendance management system.

In this system, authors have used Max Margin face detection technique. And the face recognition is take place by using Inception-V3 model.

The flow of system is simple. First the trained database created through enrolment process and then this data compare with the real time data of students present in class and if data of particular student is matched then attendance is marked accordingly.

In this system they have implemented a high definition rotating camera in a classroom. Due to this there accuracy has increased. And as the camera is rotating it is able to capture the whole class.

B. Smart Attendance Monitoring System: A Face Recognition Based Attendance System for classroom environment:

In this paper a system is described which manages attendance of students in classroom with the help of face detection technique.

Authors of this paper has used correlation tracker for face detection which is present in dlib library. They have used a pose estimation technique so that wide verity of head poses can be tracked in real time.

In this system main two drawbacks of traditional system are removed by implementing the system. Those drawbacks are:

1.Traiditional system takes away lot of time from lectures.
2.And it is also prone to proxies.
This system is using a specific face detection and recognition algorithm i.e Viola And Jones Algorithm. This system creates a face-log which is precise representation of face of student in the video captured by camera.

The main problem is with different poses of head in front of a real time camera. In above system Roll, YAW and Pitch these three angles are used to overcome above head poses problem. All these three angles are in between 90 to +90. During face-log generation Roll and pitch are adjusted. So the main concern in Yaw.

Yaw is calculated using the formula:
$Yaw = abs(arctan2(y_2-y_1, x_2-x_1))$
Where (X_1, X_2) is the coordinate of nose and (y_1, y_2) are the point between eyebrows.

This system also giving attention on sharpness of image and its brightness too. As the images captured are sometimes too high-dimensional for classifier to take them directly as a input, In this system Convolution Neural Network(CNN) is used to convert the high-dimensional into low-dimensional distinct features.

III. METHODS AND MATERIAL

A. Face Detection :
Face-detection algorithms detects the human faces from captured images. It is analogous to image detection in which the image of a person is matched bit by bit. The data of captured image gets matched with the image stores in pre-trained database. Any facial feature changes in the database will invalidate the matching process. Face Detection is used in video surveillance, human computer interface and image database management.

B. Feature Extraction :
Feature extraction is the process of converting high-dimensional images into low-dimensional so that it can be provided as input to classifier, where an initial set of raw variables is reduced to more manageable groups (features) for processing, while still accurately and completely describing the original data set.

When the input data to an algorithm is too large to be processed and it is suspected to be redundant then it

can be transformed into a reduced set of features. Selecting a subset of the initial present features is called feature selection. The selected features are expected to contain the relevant information from the provided data, so that further desired processes can be performed successfully by using this reduced information instead of the complete initial data.

C. Face Recognition :

A face recognition is a technology which is able to identify or verify a person's face from a captured image or a video which will be converted into frames. There are multiple methods present in today's technological world in which facial recognition systems work. There general mechanism is that they compare selected facial features from captured images with faces within a database.

IV. PROPOSED SYSTEM

In this, we have proposed a system to manage the attendance of students present in classroom.

We are using a camera which is connected to our system. This camera is used to capture a small video of a classroom. Then this video gets converted into multiple frames so that faces of students can be extracted from them.
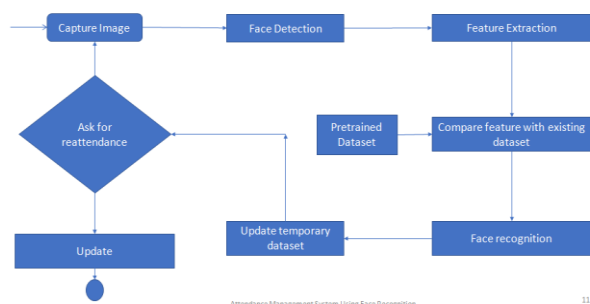
Figure 1

We are using a OPENCV library which is used for computer vision based applications. In openCV cascade classifier is used for face detection and

recognition. This cascade classifier uses haar features to process facial data.

The images captured are processed to detect faces from them. Haar features get extracted from these detected faces and used for further processing.

A. Enrolment process:

This process is only have to be done in the starting of new academic year. When new students are taking admission in their specific year and courses, they are provided with their unique ID's. So this data is entered in the system.

Enrolment process is all about creating a training dataset for system. Students faces are captured while enrolment process in different positions. These images are provided, with their respective ID's and name of student, to the system. Then the system is trained using this data. The system extracts HAAR features from those provided images and saves these features in database with students name and ID. For this purpose it uses a inbuilt face recognizer to extract features from images and train the database accordingly.

All this database get stored in .yml file which is used as a pre-trained database for further processes.

B. Attendance Marking:

This is the process that we are going to execute throughout the year.

To mark the attendance in real time, a camera will be implanted in a classroom. This camera captures the video of classroom. From this video students faces are detected. The faces are also get converted to HAAR features.

Then this data is compared with the pre-trained database which is already present in system. This comparison is done to recognize the faces of students. If the face of student present in classroom matches

with the pre-trained database then the attendance of that student is marked in system.

In our system we are providing log in for admin so that only admin can handle the whole process enrolment.

There are partitions for different branches. In that there are also partitions for particular year of study in each branch. The attendance of students is stored in database according to their respective branch and year.

Same Options are present for enrolment process.

V. RESULTS AND DISCUSSION

A. FINDINGS:

In this we are using a simple process for face detection and recognition. We are using a cascade classifier to process all images. The system is not using any particular algorithm for face detection and recognition.

While developing this system we came to know that face detection system is better for attendance management that other systems.

B. Comparison With Prior Studies:

This system uses face detection for attendance management.

In previous systems, different methods of biometric like finger print is used. But when we talk about implementing a attendance management system based on biometric, then face detection is the best choice.

Because, face detection is far better than finger print system in all manners like time, etc. Face detection also give solution to many problems as while using finger print for attendance student can mark the attendance and leave the class. But in face detection system student have to be present in class as student actually don't know when his/her attendance is being marked.

C. LIMITATIONS:

The system is working fine in it's currents stage. But there are some limitations in our systems like :

1. If there are twin present in the class then there will be problem in differentiating them.
2. The system is bounded by the quality of the camera used for image capturing. With better resolution camera result of the system will be better.
3. In this stage the system can be fooled by a 3D face of a student. In further development more features of faces can be added in it to resolve this problem.

VI. CONCLUSION

To solve the issues of traditional attendance management system an application solution has been found which will use face detection and recognition for attendance management. According to the system, there will be a high definition camera placed in a classroom. The camera will be connected to a computer system in which a GUI will be present to control the whole process. Faculty will have to enter their details, subject name and the class standards and than just to trigger on track images so that camera starts tracking images of the students and than the system will track the image will compare the images with the dataset and will mark the attendance and this attendance will be saved in excel sheet with the student's name , roll number and the respective subject.

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Social Network Mental Disorders Detection Via Online Social Media Mining

Prof. S . B . Kothari[1], Harsh Bhat[2], Tanmay Priyadarshi[2], Suraj Palve[2], Pallavi Shivekar[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Mental disorders are becoming a threat to people's health now days. With the rapid pace of life, more and more people are feeling stressed. It is not easy to detect users mental disorders in an early time to protect user. With the popularity of electronic long range interpersonal communication, people are accustomed to sharing their step by step exercises and interfacing with companions by means of online systems administration media stages, making it conceivable to utilize online informal community information for stress discovery. In our system we find that users mental disorders state is closely related to that of his/her friends in social media, and i employ a large-scale dataset from real-world social platforms to systematically study the correlation of users' stress states and social interactions In our system, we find that users stress state is closely related to that of his/her friends in social media, and we employ a large-scale dataset from real-world social platforms to systematically study the correlation of users' stress states and social interactions. I first define a set of stress-related textual, visual, and social attributes from various aspects in social network mental disorders (SNMDs), I proposed system using CNN we can sentiment analysis of facebook post after Formation of topic using Transductive Support Vector Method(TSVM) we can classified user are in detecting mentally disorders or not. After classification user are in mentally disorders or not k-nearest neighbor's algorithm (KNN) is used for recommendation hospital on a map as well as Admin can send mail of precaution list for user for become healthy and happy in life.

Keywords: Feature Extraction, Healthcare, Online Social Network, Mental Disorder Detection, Social Media, Social Interaction.

I. INTRODUCTION

A mental disorder is turning into a risk to individual's well-being these days. With the fast pace of life, progressively and more individuals are feeling stressed. Though mental disorders itself is non-clinical and common in our life, excessive and chronic stress can be rather harmful to people's physical and mental health. Users' social interactions on social networks contain useful cues for mental disorders detection. Social psychological studies have made two interesting observations. The first is mood contagions: a bad mood can be transferred from one person to another during social interaction. The second Social

Interaction: people are known to social interaction of user. The advancement of social networks like Instagram Post dataset, Facebook post dataset, an ever increasing number of people will share their every day events and moods, and interact with friends through the social networks. We can classify using support vector method user are in stress or not. Due to leverage both facebook post content attributes and social interactions to enhance stress detection. After getting mental disorders level, system can recommended user hospital for further treatment, Admin can show that hospital on map and system also recommended to take precaution for avoid mental disorder.

II. LITERATURE SURVEY

H. Lin et al [1] states the around a programmed pressure recognition strategy from cross-media microblog data. Structure of three levels for pressure location from cross-media microblog information. By consolidating a Deep Sparse Neural Network to fuse distinctive highlights from cross-media microblog information, the system is very possible and effective for push detection.This structure, the proposed technique can help to consequently recognize mental worry from informal organizations. H. Lin intend to examine the social relationships in mental worry to additionally enhance the identification execution.

Liqiang Nie et al [2] proposed about Bridging the vocabulary hole between wellbeing searchers and human services information with a worldwide learning approach .A The rapeutic phrasing task plan to connect the vocabulary holebetween wellbeing searchers and social insurance information. The plan includes two segments, neighborhood mining and worldwide learning .Extensive assessments on a true dataset show that our plan can create promising execution when contrasted with the overarching coding techniques. Liqiang Nie will explore how to adaptably compose the unstructured restorative substance into client needs-mindful cosmology by utilizing the suggested therapeutic wordings.

Chi Wang et al [3] introducing an find out around an impact boost issue,which expects to locate a little subset of hubs (clients) in an interpersonal organization that could expand the spread of impact. A Pairwise Factor Graph (PFG) model to formalize the problem in probabilistic model, and Chi Wang extend it by incorporating the time information, which results in the Dynamic Factor Graph (DFG) mode.The proposed approach can effectively discover the dynamic social influences. Parallelization of our algorithm can be done in future work to scale it up further.

Lexing Xie and Xuming He.[4] have presented about Picture labels and world information: taking in label relations from visual semantic sources examines the utilization of regular words to depict pictures. The proposed labeling calculation sums up to concealed labels, and is additionally enhanced joining tag-connection highlights acquired by means of ICR.Techniques to better fuse multi-word terms and out-of vocabulary words; propelled NLP procedures for taking in word relations from freestyle content; assessment of idle idea connection recommendation, and anticipating the kind of relations.

Yuan Zhang et al [5] proposed learn a novel problem of emotion prediction in social networks. A strategy alluded to as Moodcast for demonstrating and foreseeing feeling flow in the informal organization. The new approach can enough show each customer's inclination status and the desire execution is better than a couple of benchmark procedures for feeling forecast.It is used to as a result of the set number of individuals.For display learning, it utilizes a Metropolis-Hastings calculation to get a rough arrangement. Trial comes about on two diverse genuine informal communities exhibit that the proposed approach can successfully display every client's feeling status and the forecast execution is superior to a few standard strategies for feeling expectation.

Michela Ferron et al [6] presented Studies about Daily pressure acknowledgment from cell phone information, climate conditions and individual attributes. That step by step pressure can be constantly seen in perspective of behavioral measurements.This is got from the customer's mobile phone activity what's more, from additional markers, for instance, the atmosphere conditions (data identifying with fleeting properties of the condition) and the character characteristics. Stress has turned into a major issue influencing profitability in workplaces, prompting word related issues and causing wellbeing diseases.This framework could be broadened and

utilized for early discovery of stress-related clashes and stress virus, and for supporting adjusted workloads.

Dan C Ciresan et al [7] introduced an new deep CNN architecture, MaxMin-CNN, to better encode both positive and negative filter detections in the net. Dan C Ciresan propose to adjust the standard convolutional square of CNN keeping in mind the end goal to exchange more data layer after layer while keeping some invariance inside the system.Our fundamental thought is to abuse both positive and negative high scores got in the convolution maps.This conduct is acquired by altering the customary enactment work venture before pooling1.Time required for this is more. It is time consuming process.

Jennifer Golbeck et al [8] presented an inspired by the personality of customers. Character has been seemed, by all accounts, to be appropriate to numerous sorts of collaborations. Jennifer Golbeck are occupied with the personality of customers. Character has been had all the earmarks of being pertinent to numerous sorts of collaborations; it has been seemed, by all accounts, to be useful in suspecting work fulfillment,relationship accomplishment, and even slant . Cristina Robles are charmed in the character of customers. Character has been gave off an impression of being pertinent to numerous sorts of interchanges; it hasbeen seemed, by all accounts, to be important in predicting work satisfaction, master and nostalgic relationship accomplishment, and even slant for different interfaces. Michon Edmondson can start to answer more modern inquiries concerning how to introduce trusted, socially-important, and top notch data to clients.

Quan Guo et al [9] introduced about an adapting intense uniform features for cross-media socia ldata by using cross autoencoders. To handle learning models to address issue handle the cross-strategy associations in cross-media social segments. Quan Guo propose CAE to learn uniform strategy invariant features, and

Jia propose AT and PT stages to utilize immense crossmedia data tests and set up the CAE. Adapting effective uniform features for cross-media social data by using cross autoencoders take an extra time.

Sepandar D. Kamvar [10] have introduced an studies about any person feel fine and searching the emotional web. Feel fine to suggest a class of visualizations which is called as Experiential Data Visualization. The focus is on immersive item-level interaction with data.The implications of such visualizations for crowdsourcing qualitative research in the social sciences. Repeated information in relevant answers requires the user to browse through a huge number of answers in order to actually obtain information.To date, most research in assessment examination has been engaged on calculations to extricate, order, and condense conclusion.

III. METHODOLOGY USED IN PROPOSED SYSTEM

1 Methodology

- The field of study that focuses on the interactions between human language and computers is called Natural Language Processing. In Natural Language Processing contain different techniques like:
- **Sentiment Analysis:** Sentiment analysis is the process of determining whether a piece of writing is positive, negative or neutral. It is also known as opinion mining, deriving the opinion or attribute of a user. This techniques is used to discover of how people feeling about particular topic Natural Language Processing for sentiment analysis focused on emotions is extremely useful.
- **Topic Extraction:** Extracting topic is one of the most important tasks when working with text. In this technique, clustering about a similar topic occur in a collection of a documents or an information, from this we get more accurate information. Readers benefit from topic keywords because they can judge more quickly

whether the text is worth reading. Website creators benefit from topic keywords because they can group similar content by its topics.

- **Part-Of-Speech Tagging:** A Part-Of-Speech Tagger is a piece of software that reads text in some language and assigns parts of speech to each word, like noun, verb, and adjective. In this technique, given a sentence, determine the part of speech for each word. Many words, especially common ones, can serve as multiple parts of speech. For example, "book" can be a noun ("the book on the table") or verb ("to book a flight"); "set" can be a noun, verb or adjective; and "out" can be any of at least five different parts of speech.

- **Stemming:** Stemming is the process of reducing inflected words to their word stem, base or root form generally a written word form. A stemmer for English, for example, should identify the string "cats" (and possibly "catlike", "catty" etc.) as based on the root "cat", and "stems", "stemmer", "stemming", "stemmed" as based on "stem". A stemming algorithm reduces the words "fishing", "fished", and "fisher" to the root word.

1. Support Vector Machine Algorithm

In machine learning, support vector machines (SVMs, likewise support vector machines systems) are administered learning models with related learning calculations that examine information utilized for order and relapse investigation. Given an arrangement of preparing cases, each set apart as having a place with either of two classes, a SVM preparing calculation fabricates a model that doles out new cases to one class or the other, making it a non probabilistic two fold straight classifier (in spite of the fact that strategies, for example, Platt scaling exist to utilize SVM in a probabilistic arrangement setting). Utilizing this calculation we can characterized the positive or a negative post .after characterization we predict user are in stressed or not.

Input:-User facebook post

Algorithm Steps:

Step1: SVMs augment the edge around the separating hyperplane. Assume linear separability for now: in 2 dimensions, can separate by a line in higher dimensions, need hyperplanes Can find separating hyperplane by linear programming (e.g. perceptron):separator can be expressed as ax + by = c

Step2: The decision function is fully specified by a subset of training samples, the support vectors.

Step3: Quadratic programming problem

Step4: Text classification method For example, A combinationof these 0s and 1s in the feature vector along with the known label will be the Training input to our SVM classifier. It should be noted that the label in the feature vector should be numeric only or the SVM classifier. Finally we can get 0 for positive, 1 for negative and 2 for neutral labels.

Output:-Classified user stress positive post or negative post

2. KNN (K Nearest Neighbours) algorithm

In design acknowledgment KNN is a non-parametric method used for classification and regression. In both cases, the input consists of the k closest training examples in the feature space. The output depends on whether k-NN is used for classification or regression. Using this KNN algorithm we can recommendation of hospital to user on a map also show shorted distance from a current location to that hospital on goggle map.I also recommendation of precaution according to level of user stress.

Step1 :-Find k most similar users (KNN).

Step2:-Identify set of items, C, Visited by the group of user together with their frequency.

Step3:-Recommend the top N- most frequent items in C that the active user visited or not.

3. A Convolutional Neural Network (CNN)

A Convolutional Neural Network (CNN) is contained at least one convolutional layers (frequently with a

subsampling step) and after that took after by at least one completely associated layers as in a standard multilayer neural system. The engineering of a CNN is intended to exploit the 2D structure of an information picture (or other 2D information, for example, a discourse flag). This is accomplished with nearby associations and tied weights took after by some type of pooling which brings about interpretation invariant highlights. Another advantage of CNNs is that they are less demanding to prepare and have numerous less parameters than completely associated systems with a similar number of concealed units.

Input: - User facebook post.

Output:- Extraction of topic.

In a proposed system architecture we can detect user are in mental disorders or not due to interaction social network.In a social network contain facebook, twitter.on a facebook user are interact with other people.User can different posts on a facebook . There are three types of information that we can use as the initial inputs, i.e,facebook-level attributes, user-level posting behaviour attributes, and user-level social interaction attributes. I first define a set of stress-related textual, visual, and social attributes from various aspects in social network mental disorders (SNMDs), Facebook-level attributes describe the linguistic i.e. positive and negative words and visual content like brightness, cool color, dull color,as well as social attention factors (being liked, commented,) of a single facebook post. User level posting behavior attributes as summarized from a user's montly Transductive Support Vector Method(TSVM) we can classified user are in stress or not. After classification user are in stress or not k-nearest neighbours algorithm (KNN) is used for recommendation hospital

facebook postings, post time ,post type; social interaction attributes extracted from a user's social interactions with friends.

In a proposed system architecture we can detect user are in mental disorders or not due to interaction social network.In a social network contain facebook, twitter.on a facebook user are interact with other people.User can different posts on a facebook . There are three types of information that we can use as the initial inputs, i.e,facebook-level attributes, user-level posting behaviour attributes, and user-level social interaction attributes. I first define a set of stress-related textual, visual, and social attributes from various aspects in social network mental disorders (SNMDs), User level posting behavior attributes as summarized from a user's montly facebook postings, post time ,post type; social interaction attributes extracted from a user's social interactions with friends. In particular, the social interaction attributes can further be broken into: (i) social interaction content attributes extracted from the content of users' social interactions with friends like words and emotions; and (ii) social interaction structure attributes extracted from the structures of users' social interactions with friends.On this user input post we can fetch user level facebook post features On that input of facebook post .Conventional neural network(CNN) is used for topic extraction.Using CNN we can sentiment analysis of facebook post after Formation of topic Using

on a map as well as Admin can send mail of precaution list for user for become healthy and happy in life.
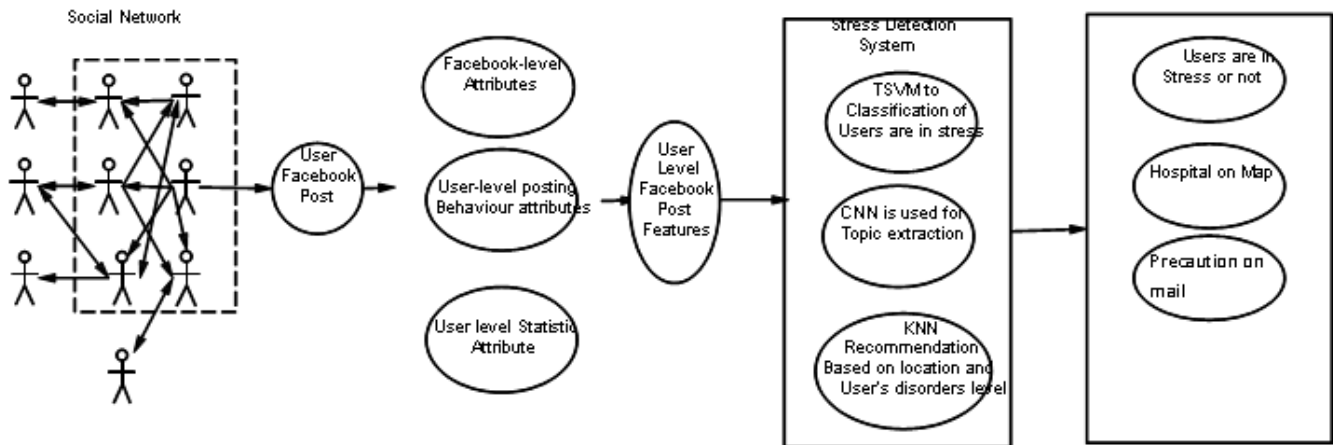
Figure 1. Proposed System Architecture

In proposed system experimental setup, we identified that in proposed system number stressed user and number of non-stressed. In a following table, 35 user are in stressed and 40 non-stressed user.

Table1. Stressed and Non-Stressed User

Sr.No	No. Stressed User	No. Non-Stressed User
1	35	45

In proposed system experimental setup, we identified total 75 posts from Facebook in that in proposed 25 post are positive 15 post are negative and 35 post are neutral as given follow table 2.

Table 2. Number of Facebook Posts

Sr.No	No. Positive Post	No. Negative Post	No.Neutral Post
1	25	15	35

From above table, in proposed system,following graph shows The stressed and non-stressed user in the graph; we see 35 users are in stressed and 45 users in the non-stressed user.In graph 1 shows number of stress user in the graph 1.
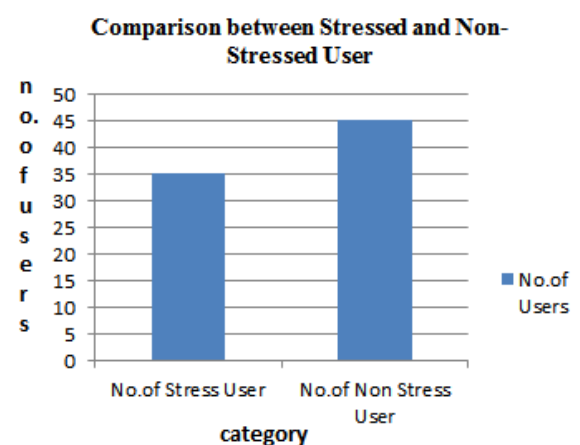
Graph 1. Stressed and Non-Stressed User

From below graph 2, in proposed system, number of post from facebook where In proposed system above graph we identified total 75 posts from Facebook in that in proposed 25 post are positive 15 post are negative and 35 post are neutral
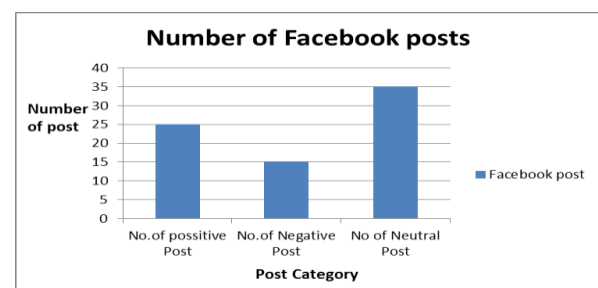
Graph 2

IV. CONCLUSION

Mental disorders is threatening people's health. It is non-trivial to detect mental disorders or stress timely for proactive care. Therefore we presented a framework for detecting users' psychological stress states from users' montly social media data, leveraging facebook post ' content as well as users' social interactions. Employing real-world social media data as the basis, we studied the correlation between user' psychological stress states and their social interaction behaviors.I recommended the user for health consultant or doctor.I can show the hospitals for further treatment on a graph which locate shortest path from current location user to that hospital.I recommended the user for health precaution send on mail for user interaction purpose.

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Modern Logistics Vehicle system using Tracking and Security

Prof. Kailash Karnekar[1], Tushar Babar[2], Akanksha Dubey[2], Rajeev Mewati[2], Saikrishna Pamu[2]

[1]Assistant Professor, Information Technology, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

[2]U.G. Student, Information Technology, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

The Movers and Packers systems have emerged recently with the development of Global Positioning System (GPS), mobile communication technologies, sensor and wireless networking technologies. The Movers and Packers systems are very important as they can contribute to several benefits such as suggesting right places for getting customers, increasing revenue of truck drivers, reducing waiting time, traffic jams as well as minimizing fuel consumption and hence increasing the number of trips the drivers can perform. The main purpose of this system would be supplying required vehicles that would be used to meet customer demands through the planning, control and implementation of the effective movement and storage of related information and services from origin to destination. We have to provide end to end security for customer and provider data by using QR code concept. We are recommendation of nearest best service provider according to user interest and detect spam service provider. Logistics management refers to the responsibility and management of design and administer systems to control the movement and geographical positioning of raw materials, work-in-process, and finished inventories at the lowest total cost. Coordination's includes the administration of request preparing, stock, transportation, and the blend of warehousing, materials dealing with, and bundling, all incorporated all through a system of offices.

Keywords: Intelligent Transportation, Logistic system, QR Code, Request allocation, Vehicle routing

I. INTRODUCTION

Collaborations imply the commitment to design and direct structures to control improvement and land arranging of rough materials, work-in-process, and finished inventories at the most decreased total cost. Collaborations incorporates the organization of demand getting ready, stock, transportation, and the blend of warehousing, materials giving, and packaging, all consolidated all through an arrangement of workplaces. As demonstrated by the determined characters, collaborations information the official's systems join modules, for instance, structure the administrators, resources the board, customer the board, get the board, exceptional organization, amassing the officials, trade the board and invoicing the board. Each subsystem has particular helpfulness

and the determined information structures are the string that joins collaborations practices into a fused technique. Vital information structures begin activities and track information as for methodology, and help the administrator's essential authority. The essential worry in our system is, we have to offer end to end security to customer and provider data by using QR code concept.in QR code twofold picture we have to cover customer and provider data. Simply endorsed customer can see data. For customer energy mining we used aggregate filtering technique. The crucial principle of this system is proposition of vehicle as shown by provider advantage. Proposition is used to find customer interest and give related event. We are proposition of nearest best pro association as shown by customer interest and recognize spam authority centre. Customer Advice is a term which is used in

the sense to energy mining. One can give direction for the issue or can simply give an answer. Direction, is apparently a supposition with course or control and even control. Proposition looks like, a customer eagerness opening about organization is used for new customer to use master association vehicle.

II. METHODOLOGY USED IN PROPOSED SYSTEM

Euclidean distance:

Euclidean distance is the straight-line distance between two points. Euclidean space becomes a metric space. This algorithm is used for finding optimal distance on map.

Input: -Source and destination location name.
Output: -Shortest path on map.

Collaborative Filtering: -

This algorithm is used to filter the stored records according to user's request query.

Input: - Location, Cost.
Output: - Query result

Stop-word-removal: -

A stop word is a commonly used word that (the, is, a, about, more etc.) a search engine has been programmed to ignore, both when indexing entries for searching and when retrieving them as the result of a search query. This algorithm is used in search engine, Natural language processing (NLP)

Input: - "The vehicle should be truck"
Output: -Display the list of truck ignoring other words in sentence.

QR Code: -

Quick Response Code is a type of 2D barcode that is used to provide easy access to information through a smartphone. It also provides security to the customer details.

Input: - Barcode image with customer details.
Output: - Customer details displayed after barcode scan.

III. PROPOSED SYSTEM
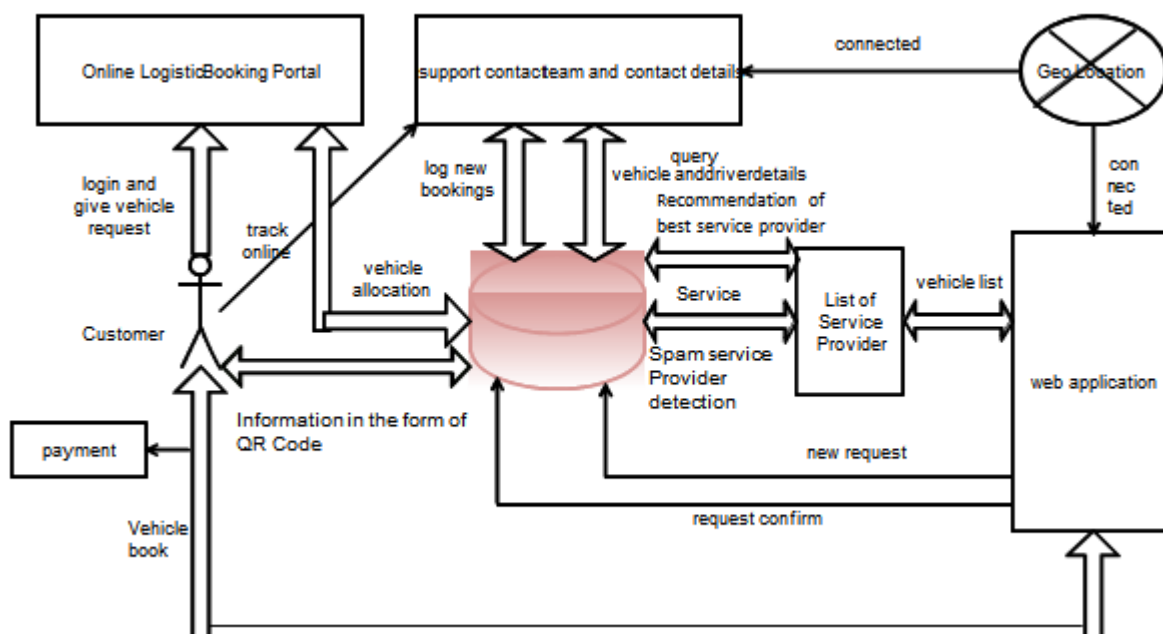
Figure 1

In the traditional system for movers and packers, customers need to search for providers and the required vehicles to make transportation successful. This leads to increase in waiting time for customer and also the customer is unable to trace out the current location of transported material. The main thing in our system is, we have to provide end to end security for customer and provider data by using QR code concept. In QR code binary image we have to hide customer and provider data. only authorized customer can view data. For customer interest mining we used collaborative filtering method. The main principle of this method is recommendation of vehicle according to provider service. Recommendation is used to find user interest and provide related event. Customer Advice is a term which is used in the sense to interest mining. One can give advice for the problem or can simply give a solution. Advice, seems to be an opinion with command or control and even manipulation. Suggestion is like, a customer interest opening about service is used for new user to use service provider vehicle. We have to provide end to end security for customer and provider data by using QR code concept.

IV. RESULTS AND DISCUSSION

System modules will do the following: -

◆ **Admin: -**
In this system admin have to provide authentication permission to provider and can view vehicle, customer, provider, Spam service provider detection as well as ranking of service provider.

◆ **Service Provider**: -
In this system provider can add vehicle and driver, also view customer request and send notification to driver. Provider can view schedule vehicle as well as history.

◆ **Customer**: -
In this system customer can view vehicle and search vehicle, customer can request vehicle and track vehicle on map, Payment to service provider. Customer can review on the system. View or send information in form of QR code.

◆ **Driver: -**
In this system driver can view request as schedule the vehicle.

In our experimental setup, as shown in table, total numbers of positive review were 10 and among negative review are 5 to service provider.

Table1 1. Number of Review

Sr. No	Category	Number of Review
1	Positive Review	15
2	Negative Review	5

From above data, as shown in graph 1, the numbers of positive review found to be 15 and number of negative reviews is 5.
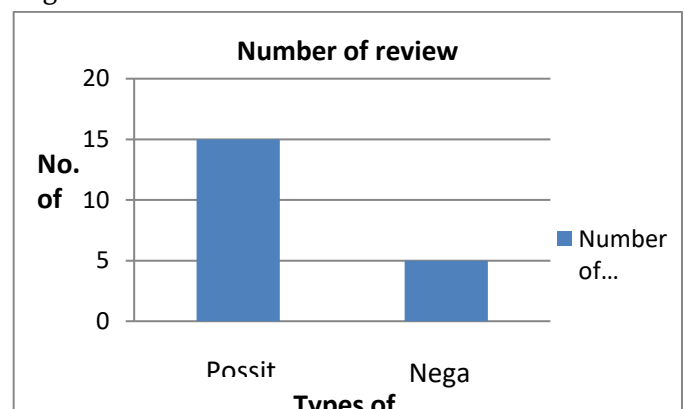
Graph 1. Number of Review

V. CONCLUSION

The proposed system consists of service provider, customer and admin, driver where admin is one of the

most important part in system. Here customer will book the vehicle and trace the current location using GPS tracking. Logistic alludes to the duty to plan and oversee frameworks to control development and land situating of crude materials, work-in-process, and completed inventories at the least aggregate expense. The proposed system focuses on delivery of goods, raw materials, shifting home appliances, furniture while relocation. It also includes management of order processing, inventory, transportation, and the combination of warehousing, materials handling, and packaging, all integrated throughout a network of facilities. We have to provide end to end security for customer and provider data by using QR code concept. We are recommendation of nearest best service provider according to user interest.

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Smart Shopping Trolley

Prof. S. N. Uke, Komal Bhalerao, Reshma Nikam, Srushti Sabale

Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Shopping in malls is a frequent activity now a days. Once the shopping is done people have to wait in a long queue for billing. Due to the huge waiting in line lot of time is wasted for billing because of existing Barcode technology. To reduce the time and the manpower required at the marts,to improve the time management of users, we are proposing a system where it can improve the existing billing system and experience of users. This system helps in automating the billing process which also has the functionality of setting a budget via an application. It uses QR code on the products. The Smart Shopping System is fair and attractive to both customers and sellers.

Keywords: Barcode, QR code, Shopping, Bill, Budget.

I. INTRODUCTION

People tend to overshoot their budget when they are shopping at a big shopping centre. Moreover they end up in long queues at the end of their shopping waiting for the products to be scanned and billed. The Smart Shopping Cart solves the above problems with ease. It helps the customer in ensuring that he/she does not overshoot his pre decided budget and only buys the essential commodities actually needed by him, also the system aids in eliminating the long queues at the billing counter as the products are already scanned and the customer just has to pay the bill and bag the items purchased. The system is profitable for the shopping centres as it can help in reducing the number of billing counters and in turn will help in reducing employee costs significantly.

The aim is to design a microcontroller-based shopping cart aiding the customers in their shopping and reducing the queue at the billing counter. The device must be user friendly and have an interface via which the customer can scan the products he/she intends to buy, also the system must have a LCD display so that the customer can know the total cost of the commodities purchased. The system must also have a feature to delete a purchased product in case the customer changes his/her mind.

II. METHODS AND MATERIAL

SYSTEM BLOCK DIAGRAM
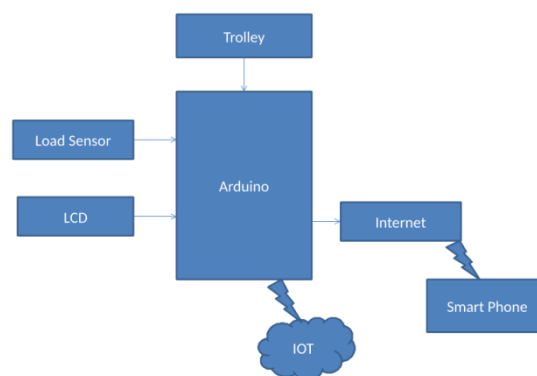
Fig: Block diagram of Smart Shopping Trolley

A. ARDUINO

ATmega328 is an eight (8) bit Microcontroller. It is a micro-controller. Its built in internal memory is around 32KB. It operates ranging from 3.3V to 5V. Its excellent features include the cost efficiency, low power dissipation programming lock for security purposes, and real timer counter with separate oscillator. Arduino uno board has sets of analog and digital input/output pins also voltage regulator circuit.

B. LCD16*2

A 16 x 2 LCD means it can display 16 characters per line and there are 2 such lines. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

C. LOAD SENSOR

Load sensor weighs the weight we put on it. Here, Load sensor will display the total weight of the trolley after we put the products in the trolley. The weight carried out by load sensor will be displayed on LCD.

III. LITERATURE REVIEW

A. Smart Shopping cart Observations:

 Two arduinos were used. One was used to store database and the other one for the cart. RFID tag was used on the products. Zig-bee is used for high-level communication which created personal area networks.

Arduino acted as a middle component between the trolley and database for communication.

Limitations:

As two arduinos were used here, if one arduino fails to work amongst the two the system fails. Hardware requirement was much more.

B. Robust low-cost passive UHF RFID based smart shopping trolley

Observations:

The UHF antenna mounted shopping trolleys are defined "Smart Trolleys" while shopping items are tagged using   UHF RFID tags with unique identification codes.

Limitations:

The cost was much higher for this system. The size of the basket was limited.

C. Smart Shopping Cart for Automatic Billing in Supermarket.

Observations:

RFID system can be used in shopping malls for various ranging food products, Electrical appliances,clothing etc and can be used for security applications by keeping data confidential.

Limitations:

Higher the cost of the load cell ,higher the precision.Lightning in the store is expected to be bright

IV. RESULTS AND DISCUSSION

USER MODULE

1. LOGIN.
2. REGISTRATION.
3. QR CODE SCANNING.
4. BILL GENERATION.
5. TOTAL AND REMAINING BALANCE DISPLAY.

LOGIN

REGISTRATION

QR CODE SCANNING

BILL GENERATION

Name   **Price Qty Total**

Total:
Remaining Balance: 5000

SYSTEM MODULE

1. LOAD SENSOR
2. LCD DISPLAY

WORLFLOW OF THE SYSTEM

1. The user will login to the application if he/she is already an existing user or has an existing account.
2. The user will register to the application if he/she does not have an account.
3. After login/registering to the system, the user will enter budget up to his wish.

4. After entering budget, the user will then start scanning products which will be a QR code.
5. Simultaneously putting the items into the cart. The load sensors will then act.
6. The LCD display will display the total weight carried by the trolley.
7. The bill will be automatically generated on the application which will display the product name, price and weight.
8. The user can also delete item if he wishes to.
9. For billing, the user will go to the counter to pay the bill either cash or card.
10. At the billing counter, the cashier will login to the server side with the user's id and their own specific password.
11. The cashier will then confirm your bill and check the required aspects.
12. He will either select Cash or Card as per the user's wish
13. After that the user will get an SMS saying "Bill Paid" as a confirmation at the exit.

ADVANTAGES

1. To avoid queue for billing and reduce the time taken for shopping.
2. To implement the system for simplifying billing process and to reduce manpower required.

V. CONCLUSION

Thus the Smart shopping trolley application creates an automated central billing system in malls. By using the load sensors and controller, the total weight is displayed on LCD and in the app same scanned products are displayed with price and weight to compare . So that the bill will generate on app and customers wont need to wait in a long queue. It is trustworthy,highly dependable and time efficiency.

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Anomaly Based Detection and Prevention of Phishing Attack in An Online Banking System

Prof. C. S. Pagar[1] , Nihal Rajpurohit[2], Devendra Patil[2], Manish Ganeshkar[2]

[1]Assistant Professor, Information Technology, SKNSITS, Lonavala, Maharashtra, India

[2]U.G. Student, Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Now days online banking and electronic payment gateways are the trending factor. Day by day more technologies invented to hack accounts as well bank servers. Phishing is one type of attack in which attacker gain access to users account using respective stolen credentials. Many commercial products are there for providing banking cloud security (CS) for these online banking activities. But no such noble tool or system till date invented to prevent phishing attacks. These types of attacks increased now days. Internet banking is mostly used by everyone. Generally, each bank has got its own service of contract with respect to internet banking. Due to this the online banking application have become more challenging.

In our system we developed anomaly-based detection. It decreases the chances of getting account hacked through a phishing technique. In advance we have to provide additional security with the help of IP detection and device detection.

Keywords: Cloud Security, Internet Banking, Internet Protocol, Anomaly Based Detection

I. INTRODUCTION

Online banking has become a most reliable trend now-a-days and security related to the same is becoming a challenge to us. Authentication using passwords is vulnerable to attacks like phishing; thus we have to invent the system known anomaly based detection and prevention of phishing attacks. Providing security to a customer's financial information is vital and therefore banks and other financial institutes offer different security mechanisms to reduce the risk of unauthorized access to their online customer accounts. Most of the attacks on online banking systems are based on deceiving the user to reveal their login details and then the attacker will use those stolen credentials to gain unauthorized access to the customer accounts. Phishing attacks and social engineering methods are mostly used to deceive

the online account users. As most of the phishing attacks are targeting the financial sector, protecting online banking systems from phishing attacks is a major concern. Failing to provide a proper security assurance will reduce the growth and damage the reputation of online banking services. Even though there are several researches already being carried out and commercial products are available to secure online banking systems, they have their own ups and downs.

II. LITERATURE SURVEY

Surbhi Gupta et al., [1] examines about the Phishing social building assault hypothetically and their issues in the life of human beings. Phishing is regularly completed by Email caricaturing or texting. It focuses on the client who has no learning about social building assaults, and web security, similar to people

who don't deal with protection of their records points of interest, for example, Facebook, Gmail, credit banks accounts and other money related records. The paper talks about different sorts of Phishing assaults, for example, Tab-resting, parodying messages, Trojan steed, hacking and how to avert them. In the meantime this paper additionally gives diverse procedures to distinguish these assaults so they can be effortlessly managed in the event that one of them happens. The paper gives an intensive investigation of different Phishing assaults alongside their focal advantages and disadvantages.

SANS Institute et al, [2] presented an inside and out examination of phishing: what it is, the innovations and security shortcomings it exploits, the risks it stances to end clients, and bits of knowledge into what should be possible to check the impacts of this wrongdoing. In this investigation I will clarify the ideas and innovation behind phishing, indicate how the risk is significantly more than only a disturbance or passing pattern, and examine how groups of lawbreakers are utilizing these tricks to make a lot of cash. I will give a few insights and proposals you can use to shield yourself from these tricks utilizing barrier inside and out procedures, and clarify a maybe a couple of the devices and advances being produced to battle the genuine danger of wholesale fraud what's more, online misrepresentation.

Ibrahim Waziri et al, [3] exhibits that attempt to identify the different types of website forgery phishing attacks and non-technical countermeasure that could be used by users, (mostly by non IT users) that lack the understanding of how phishing attack works and how they can prevent themselves from these criminals. In this technological era, everyone connects to the internet either using a computer or some sort of a mobile device. Financial transactions, academic registrations etc. are mostly conducted online. Later in this paper we will characterize what phishing assault is, the means by which phishers

actualize phishing assaults and how clients can separate between a real site and a pernicious one.

Guardian Analytics et al,[4] finds that anomaly detection solutions are promptly accessible, are sent rapidly (particularly SaaS arrangements), and instantly and consequently ensure all record holders against a wide range of misrepresentation assault with negligible disturbance to genuine web based keeping money movement. Executing peculiarity discovery won't just meet. Business and retail account holders at money related establishments of all sizes are under assault by refined, sorted out, very much supported digital lawbreakers. These assaults have brought about billions of dollars lost and harmed connections between monetary foundations and their record holders.

LongfeiWu et al, [5] examines report on the security vulnerabilities caused by portable phishing assaults, including the web page phishing assaults, the application phishing assaults, and the account library phishing assaults. Existing plans outlined for web phishing assaults on PCs can't adequately address the different phishing attacks on cell phones. Henceforth, we propose MobiFish, a novel computerized lightweight enemy of phishing plan for versatile stages.

Patrick Lacharme et al, [6] has been finds user authentication is typically based on two or more factors.
Nevertheless, the development of various malwares and social engineering attacks transform the user's PC in an untrusted device and thereby making user authentication vulnerable. This paper investigates how user authentication with biometrics can be made more robust in the online banking context by using a specific device called Off PAD. This context requires that authentication is realized by the bank and not only by the user (or by the personal device) contrary to standard banking systems.

Markus Goldstein1 et al, [7] investigates anomaly detection is the process of identifying unexpected items or events in datasets, which differ from the norm. In contrast to standard classification tasks, anomaly detection is often applied on unlabelled data, taking only the internal structure of the dataset into account. This challenge is known as unsupervised anomaly detection and is addressed in many practical applications.

S. Manasa et al. [8] has been introduced that phishing is an online criminal activity using the collection of social engineering methods such as messages and emails to make the users to disclose their sensitive information such as personal details, username /password4, etc. Since 2007 Net-Banking transactions are the target of the phishers. The strong techniques are required to avoid phishing attacks. In our paper, we proposed Multi Factor Authentication (MFA) and secure session key generation using Gaussian distribution to reduce the attacks caused by the phishers.

Priyanka Mahajan1et al. [9] has been studied that the banking and financial systems have been totally changed due to the environment and globalization changes and competition of business services . Internet Banking or Web Banking or Online banking is used to describe banking transactions through internet application. Online Banking means user can get connected to his bank's website by using his personal computer system and web browser. But there are many security problems like fraudulent websites, fake emails from banks, capturing user IDs and passwords, hacking personal bank accounts and steal money etc.

Abhida Shende et al. [10] has been examined that biometric recognition systems are nowadays playing important role in authentication field. The physiological features like Fingerprint and hand geometry, Iris, DNA, Palm print, Retina, face, Ear, etc. are used to differentiate between individuals. Among

these iris is unique organ which can be used for secured authentication and avoids unauthorized access.

III. METHODOLOGY USED IN PROPOSED SYSTEM
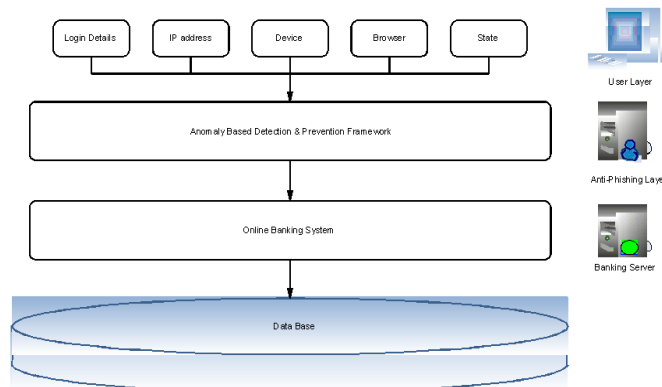
Figure 1. System Architecture

Step1:- When Costumer first time login to System that time all details IP address, current device, OS, time, location stored user log files at bank server for future anomaly detection.

Step2:- Next time when user want to login that time these details compared with users current details if matched then access granted otherwise security Questions asked to user if ok with this then n only then access granted.
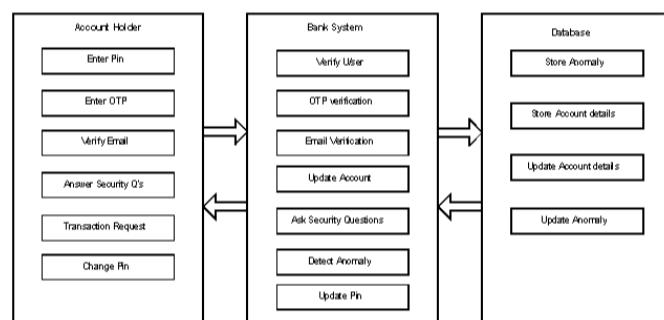
Figure 2. Block Diagram

All security steps completed then all 3 mechanisms applied to verify user is valid or not.

A. Anomaly Based detection:-

It is the process of detection of unusual or suspected behaviour of user or a system. If user or system

detected suspected that time anomaly breaks so user gives another chance to prove its authenticated user by asking Security Questions and Mail Confirmation as well as OTP confirmation.

eg. Spam Asian provides Bayesian mechanism for email spam detection.

B. IP Address Based Detection:-

User try to access via Foreign IP(Out of range IP) instead Local IP(range is predefined) that time user will confirmed via a mail.

C. Device Based Detection:-

If user trying to access with new device that time also security check needed .Security Questions asked plus OTP confirmation applied. Every user should be register his device as a default device means cookies stored in his device and should be update cookies for security. Above all three steps fails then 3 chance given to user for proving his identity if yes then ok else blocked account

IV. RESULTS AND DISCUSSION

Table 1. Results

Security	Primary Action	Secondary Action	Access
IP Detection	Set IP	Check IP	No
OS Detection	Set OS	Check OS	No
Browser	Default Browser	Check Browser	No
Device Detection	Default Device	Check Device	No
Security Token	Set Token	Get Token	Yes

In Our proposed work we worked on the challenges already faced by existing system. To overcome the drawbacks in existing work we have to implement the anomaly based detection and prevention of phishing attacks. In this first of all we need to some additional information from users at time of account opening or new registration of account through an online banking system. At time of account opening we have to get information such as user details, IP address of user's system, device of user (make it default), browser of user, user base location etc. After that this all information should be stored in user log files of banks servers and also stored in users default devices in the form of cookies. When next time user or any other person should try to access the information that time previously stored anomalies matched then and only then users get access to its account. There is rare chance that the person who is trying to access the account is authenticated user. But some kind of issue he can't use his own device or his location as well IP changed. That time our anomaly based detection system give chance to user that he prove his identity by using mobile OTP confirmation as well as mail verification. In advance the security question should be faced and should be giving the correct answers otherwise user's account gets blocked. User should go to respective bank to activate it again.

Figure 3. Activity Of System

1. User Module:

- User login to the system, after login user gets authentication permission to access or view system.
- At a time of login user details get stored in user log files and this log file stored in banks server.
- User current location, browser, Operating system, device, IP address stored as a anomalies. .
- User has to set security question at first time login.

2. System Module:

- System gets logged in after that user having already successfully registered.
- System is responsible for giving access to user by simply matching anomalies if matched then ok otherwise check for identity.
- First of all OTP get verified then email confirmation gets verified after that security question gets asked to user.
- All these steps get successfully verified by respective users then get access to user otherwise user gets blocked.
- If user gets blocked then user needs to go to respective bank to reopen the account.

Security Rate Graph
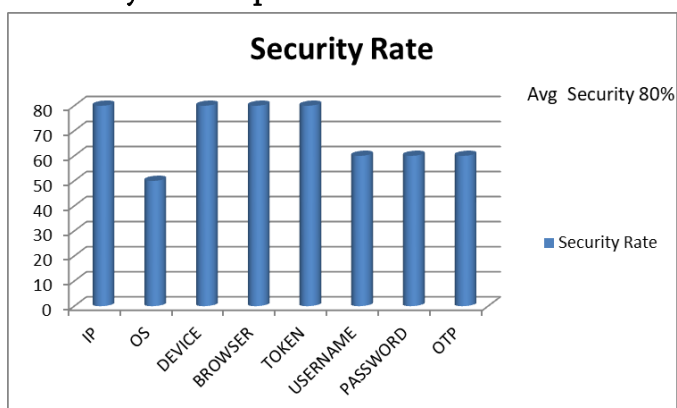
Graph 1. Increased Security Rate

Advantages:

- The objective of the proposed system is to provide high security to user's account as well as users credentials.

- Although credentials get stolen but user gets surety that account get secured by anomaly framework.
- We are recommendation of anomaly based detection schema for gets better security and reliability.
- Security in our system is very high as compared with existing schema.
- This is proved that our system get differentiate actual user and attacker even though both having same username and password.

V. CONCLUSION

Thus we implemented the anomaly based detection and prevention frame work to accurately detect phishing attacks before they happened. We reduced the harm of these attacks as much as possible. The overall system will not only detect the unauthorized login attempts but also prevent it, notified to authorized users and safeguard online banking customers from fraudsters.

In future we have to implement the multi factor authentication with the reduction of verification steps by taking advantage of anomaly based detection. We would try to detect and prevent unauthorized login attempts by biometric multifactor authentication.

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Real Time Hand Gesture Recognition Using Different Algorithms Based on Indian Sign Language

Prof. C. S. Wasvand[1], Anurag Rai[2] , Shubham Raje[2] , Naveen Kumar Singh[2]

[1]Assistant Professor, Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India
[2]U.G. Student , Department of Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Sign Language research field is based on human interaction with computers. In this system, we are working on the different sign data samples to be making our system more accurate with help of Artificial Neural Network (ANN). Today, lots of research has been going on the field of sign language recognition but existing study failed to invent noble technique. The purpose of this system is to represent a real time HGR system based on Indian Sign Language (ISL) recognition with higher accuracy. Indian Sign Language (ISL) used by Deaf peoples community in India, does have acceptable, meaningful essential and structural properties.

Keywords: Artificial Neural Network, Indian Sign Language, Hand Gesture Recognition, Deaf community

I. INTRODUCTION

There are so many languages in India calculating official as well all living languages. Such waste diversity in languages has its challenges when it comes to communicating over different villages, societies and states. Indian Sign Language (ISL) is one of the living languages in India used by the Deaf community peoples.

This system acquires gesture images of ISL with black background from mobile video camera for feature extraction. There are analysing phase, pre-processing unit the noise removal, grey scale conversion, binarization of images followed by feature extraction. In future extraction five steps followed in which fingertips searches by eccentricity. Next are elongations of images, measured by considering pixel segmentation as well as rotation of images. In feature extraction, algorithmic study used to find the feature vectors of systematic results combines K curvature and convex hull algorithms. In present work "K convex hull" algorithm which is used to detect

fingertip with greater accuracy. In our system, Artificial Neural Network (ANN) is used for future recognition in which we having the input unit of training data set of images. Next we have hidden unit which acts upon this training dataset to evaluate the output unit results data set. This entire ANN works by considering the factors namely textures of images, colours, shapes, spatial rotations.

In present work Sign language is the primary language of the people who are deaf or hard of hearing and also used by them who can hear but cannot physically speak. It is a complex but complete language which involves movement of hands, facial expressions and postures of the body. Sign language is not universal. Every country has its own native sign language. Each sign language has its own rule of grammar, word orders and pronunciation. The problem arises when deaf and dumb people try to communicate using this language with the people who are unaware of this language grammar. So it becomes necessary to develop an automatic and interactive interpreter to understand them. People want something more natural. Another

one is based on computer vision based gesture recognition, which involves image processing techniques. Consequently, this category faces more complexity.

II. LITERATURE SURVEY

Sharmila Konwar et al, [1] states This System is aimed to design an automatic vision based American Sign Language detection system and converting results in to text. The work introduced in this paper is meant to outline a programmed vision based American Sign Language recognition framework and interpretation to content. To distinguish the human skin shading from the picture, HSV shading model is utilized. At that point edge recognition is connected to distinguish the hand shape from the picture. An arrangement of morphological activity is connected to get a refined yield for the gesture based communication acknowledgment This work is mainly focussed on the colour model and edge detection phenomenon. Edge detection algorithm the hand gestures are detected successfully for the alphabets in American language. Some images are not detected successfully due to geometric variations, odd background and light conditions.

Yo-Jen Tu et al, [2] presented a face and signal acknowledgment based human-PC communication (HCI) framework utilizing a solitary camcorder. Not the same as the traditional specialized strategies among clients and machines, we consolidate head posture and hand motion to control the hardware. We can recognize the situation of the eyes and mouth, and utilize the facial focus to assess the posture of the head. Two new techniques are displayed in this paper: programmed signal territory division what's more, introduction standardization of the hand signal. It isn't compulsory for the client to keep signals in upright position, the framework fragments and standardizes the signals consequently. The explore demonstrates this technique is extremely precise with motion acknowledgment rate of 93.6%. The client can control different gadgets, counting robots all the while through a remote system.

Angur M. Jarman et al, [3] exhibits another calculation to distinguish Bengali Sign Language (BdSL) for perceiving 46 hand signals, including 9 motions for 11 vowels, 28 motions for 39 consonants and 9 motions for 9 numerals as indicated by the similitude of elocution. The picture was first re-sized and after that changed over to double configuration to edit the locale of enthusiasm by utilizing just best most, left-most and right-most white pixels. The places of the fingertips were found by applying a fingertip discoverer calculation. Eleven highlights were extricated from each picture to prepare a multilayered feed-forward neural system with a back-spread preparing calculation. Separation between the centroid of the hand area and each fingertip was ascertained alongside the points between every fingertip and flat x pivot that crossed the centroid. A database of 2300 pictures of Bengali signs was developed to assess the viability of the proposed framework, where 70%, 15% and 15% pictures were utilized for preparing, testing, and approving, separately. Exploratory outcome demonstrated a normal of 88.69% exactness in perceiving BdSL which is particularly encouraging contrast with other existing techniques.

Javeria Farooq et al,[4] finds Hand motion acknowledgment is a characteristic and natural way to connect with the PC, since cooperation's with the PC can be expanded through multidimensional utilization of hand motions as contrast with other information techniques. The reason for this paper is to investigate three unique strategies for HGR (hand signal acknowledgment) utilizing fingertips location. Another methodology called "Arch of Perimeter" is given its application as a virtual mouse. The framework exhibited, utilizes just a webcam and calculations which are created utilizing PC vision, picture and the video handling tool stash of Mat lab.

Guillaume Plouffe et al, [5] examines the advancement of a whiz signal UI that tracks and perceives progressively hand signals in light of profundity information gathered by a Kinect sensor. The intrigue space relating to the hands is first portioned based on the suspicion that the hand of the client is the nearest protest in the scene to the camera. A novel calculation is proposed to move forward the checking time with a specific end goal to recognize the main pixel on the hand form inside this space. Beginning from this pixel, a directional scan calculation takes into account the recognizable proof of the whole hand form. The k-arch calculation is then utilized to find the fingertips over the form, and dynamic time twisting is used to choose motion competitors and furthermore to perceive motions by contrasting a watched motion and a progression of pre-recorded reference motions. The examination of results with cutting edge approaches demonstrates that the proposed framework beats a large portion of the answers for the static acknowledgment of sign digits and is comparable regarding execution for the static and dynamic acknowledgment of well-known signs and for the communication through signing letter set. The arrangement at the same time manages static and dynamic motions also similarly as with various hands inside the intrigue space. A normal acknowledgment rate of 92.4% is accomplished more than 55 static and dynamic signals. Two conceivable utilizations of this work are talked about furthermore, assessed: one for elucidation of sign digits and signals for friendlier human– machine cooperation and the other one for the normal control of a product interface.

Zafar Ahmed Ansari et al, [6] has been finds individuals with discourse inabilities convey in gesture based communication and accordingly experience difficulty in blending with the healthy. There is a requirement for a translation framework which could go about as a scaffold among them and the individuals who don't have the foggiest idea about their gesture based communication. A utilitarian

unpretentious Indian gesture based communication acknowledgment framework was executed and tried on true information. A vocabulary of 140 images was gathered utilizing 18 subjects, totalling 5041 pictures. The vocabulary comprised for the most part of two-gave signs which were drawn from a wide collection of expressions of specialized and every day utilize starting points. The framework was executed utilizing Microsoft Kinect which empowers encompassing light conditions and question shading to have irrelevant impact on the effectiveness of the framework. The framework proposes a technique for a novel, minimal effort and simple to-utilize application, for Indian Sign Language acknowledgment, utilizing the Microsoft Kinect camera.

Sonali N Jadhav et al,[7] investigates the different parts of hand sign images continuously utilizing neural systems. Hand sign can be a indispensable path for the client to interface with any framework. In this framework we catch a hand motion from the client and after that play out the activity identified with it. This gives us a choice to mouse and console to control a framework. Hand signal acknowledgment can be useful in different fields and territories where connecting with the framework without contact is imperative.

Vaishali.S.Kulkarni et al. [8] has been introduced in these paper objectives to build up a framework for programmed interpretation of static motions of letter sets in American Sign Language. In doing as such three highlight extraction techniques and neural system is utilized to perceive signs. The framework manages pictures of uncovered hands, which enables the client to interface with the framework in a common way. A picture is prepared and changed over to a highlight vector that will be contrasted and the component vectors of a preparation set of signs. The framework is revolution, scaling of interpretation variation of the signal inside the picture, which makes the framework increasingly adaptable.

Sabaheta dogic et al. [9] has been studied that Sign language plays a great role as communication media for people with hearing difficulties. In developed countries, systems are made for overcoming a problem in communication with deaf people. This encouraged us to develop a system for the Bosnian sign language since there is a need for such system. The work is done with the use of digital image processing methods providing a system that teaches a multilayer neural network using a back propagation algorithm. Images are processed by feature extraction methods, and by masking method the data set has been created. Training is done using cross validation method for better performance thus; an accuracy of 84% is achieved.

Noor Adnan Ibraheem et al. [10] has been examined that Hand gesture is a method of non-verbal communication for human beings for its freer expressions much more other than body parts. Hand gesture recognition has greater importance in designing an efficient human computer interaction system. Using gestures as a natural interface benefits as a motivation for analysing, modelling, simulation, and recognition of gestures. In this paper a survey on various recent gesture recognition approaches is provided with particular emphasis on hand gestures. A review of static hand posture methods are explained with different tools and algorithms applied on gesture recognition system, including connectionist models, hidden Markov model, and fuzzy clustering. Challenges and future research directions are also highlighted.

III. METHODOLOGY USED IN PROPOSED SYSTEM
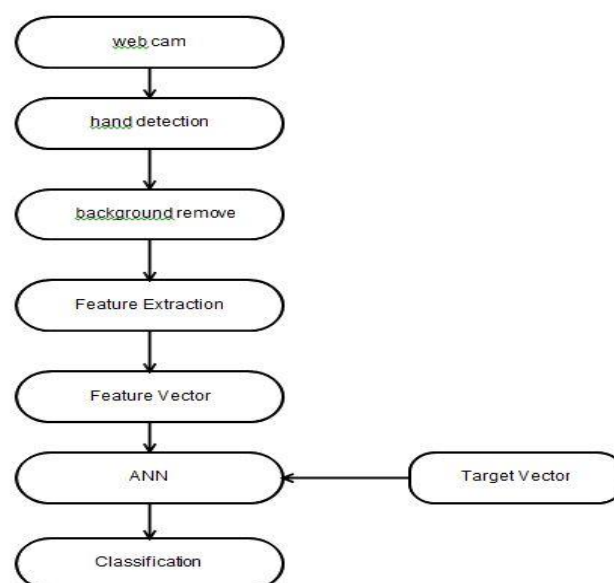
Figure 1. System Architecture

A. Image Processing :-

An image is made up of RGB colours. Pre-processing unit consists of noise removal, grey scale conversion, binary conversion of images followed by feature extraction. In future extraction five steps followed in which fingertips searches by eccentricity. Next elongations of images are measured by considering pixel segmentation as well as rotation of images.

B. Feature Extraction:-

In feature extraction, algorithmic study used to find the feature vectors of systematic results combines K curvature and convex hull algorithms. In present work "K convex hull" algorithm which is used to detect fingertip with greater accuracy. In our system, Artificial Neural Network (ANN) is used for future recognition in which we having the input unit of training data set of images.

C. Segmentation :-

Image segmentation is the way toward apportioning an advanced picture into various portions (sets of pixels). All pixels in an area share a typical property. Least complex property that pixel can share power. The objective is to disentangle and change the

portrayal of the picture into something that is increasingly important and less demanding to break down.

D. Edge Detection :-

Edge defines the boundaries between regions in an image which helps in object detection. There are many edge detection operators and algorithms available. Edge Detection Operators and Algorithms used in our research like Convex hull method.

E. Feature Recognition:-

Brain-inspired systems used to replicate how humans learn. Consist of input, hidden and output layers that transform the input into something that the output layer can use. Excellent for finding patterns which is complex to human for extract and teach the machine to recognize. ANN gathers their knowledge by detecting the patterns and relationships in data and learns (or is trained) through experience, not from programming.

IV. RESULTS AND DISCUSSION

In Sign Language Recognition system we have been implemented highly trained model that can accurately recognize hand gesture signs. In this system we used Gaussian blur for gray scale conversion, Otsu's method for binary conversion of images after that we used convex hull for edge detection.

F. Gray scale conversion

In gray scale conversion colour image is converted into a gray form using Gaussian blur. Colour image containing noise and unwanted background which is removed or blurred by using this method.

Figure 2. Gray Image

G. Binary conversion

Gray scale image is given to input for Otsu's method for binary conversion. In Binary form of images converted in 0 and 1 form means black and white.

Figure 3. Binary Image

H. Edge Detection

In Edge detection binary image get dimensions by counters using convex hull algorithm. In which eccentricity finding drawing edges around white portion of binary image.
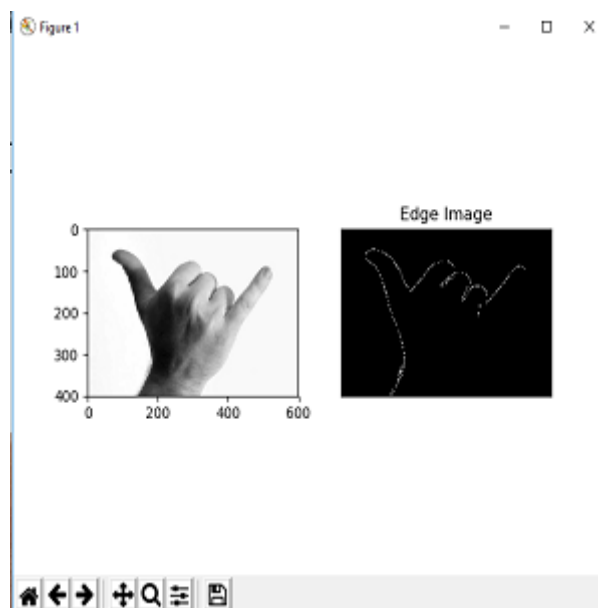
Figure 4. Edge Detection Image

I. Training Model

In our system we are using tensor flow for extracting feature's of training dataset. In which 87000 image samples are trained by using training model. Finally plot files generated as an output of our trained model.

J. Testing Model

In final phase of data testing in which real time hand gesture images matched by our training model with higher percent of accuracy.

After matching hand gestures respective alphabets display on console and stored in text file as well. Finally we have been used Google text to speech for converting into a voice.

In our experimental setup, In table 1 describe our system modules and respective generated output.

Table 1. Modules of System

Sr.No	No of Input Sign Sample's	Output Generated
1	1 to 5 Hand gesture Images	Finger tip counts 1 to 5
2	26 Hand gesture's	A-Z or a-z
3	N No of Words	Voice

K. Comparative Study Graph
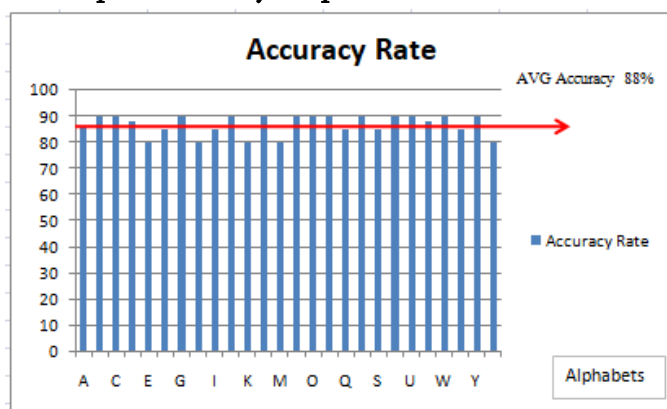
Graph 1. Sign sample Average Accuracy Rate

L. Accuracy Rate of Sign Recognition

All sign sample images trained by our trained model approximately 3000 images per alphabet. Total around 87000 images trained so we have been conclude the accuracy rate average 88%.

V. CONCLUSION

Thus we implemented the Indian sign language system to accurately recognize the real time hand gestures and generate alphabets to form words. Many algorithms are applied to achieve greater accuracy in recognition system. Image samples taken by camera vision with the computer are tested by our trained ANN. Thus we have achieved accuracy 88%.

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A Secure Encryption Scheme for Data Sharing in Unreliable Cloud Environment

Prof. R. S. Gutte[1], Bhushan Patil[2], Gajanan Kuntewad[2], Imran Chaman Shaikh[2], Siddhesh Rane[2]

[1]Assistant Professor, Information Technology, SKNSITS, Lonavala, Maharashtra, India

[2]U. G. Student, Information Technology, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

In cloud computing environment there are many users of cloud stores there data and accessing of large data stored on cloud. But these users face some of major issue causing loss of data in cloud and facing a problem in authority and privacy of users. Cipher text-Policy Attribute based Encryption (CP-ABE) is a promising encryption technique that enables end-users to encrypt their data under the access policies defined over some attributes of file and upload encrypted file with encrypted attribute with key provided by attribute authority. Cloud consumers want to download and only allow data consumers whose attributes satisfy the access policies to decrypt the data. In CP-ABE, the access policy is attached to the cipher text in plaintext form, which may also leak some private information about end-users. Existing methods only partially hide the attribute values in the access policies, while the attribute names are still unprotected, these issues are modify in our scheme to provide more security. While uploading a file time server is associated with file to provide access to file for limited time only after that time file is unavailable for consumers. Also attribute bloom filter generate attributes of file while uploading and this attributes are store with file. Attribute authority in our scheme assign public key to user while uploading files on cloud and also files secret key and private key to data consumer while uploading. After entering keyword consumer will get top rank result depends upon attribute and time and can download that file if consumer having key of that file and can decrypt file.

Keywords: OTP verification, Encryption, Decryption, Secure Data Sharing, Authentication

I. INTRODUCTION

In the era of big data, a huge amount of data can be generated quickly from various sources (e.g., smart phones, sensors, machines, social networks, etc.). Towards these big data, conventional computer systems are not competent to store and process these data. Due to the flexible and elastic computing resources, cloud computing is a natural fit for storing and processing big data. With cloud computing, end-users store their data into the cloud, and rely on the cloud server to share their data to other users (data consumers).

In order to only share end-users data to authorized users, it is necessary to design access control mechanisms according to the requirements of end-users. When outsourcing data into the cloud, end-users lose the physical control of their data. Moreover, cloud service providers are not fully-trusted by end-users, which make the access control more challenging. For example, if the traditional access control mechanisms (e.g., Access Control Lists) are applied, the cloud server becomes the judge to evaluate the access policy and make access decision. Thus, end-users may worry that the cloud server may make wrong access decision intentionally or unintentionally, and disclose their data to some

unauthorized users. In order to enable end-users to control the access of their own data, some attribute-based access control schemes are proposed by leveraging attribute-based encryption. In attribute-based access control, end-users first define access policies for their data and encrypt the data under these access policies. Only the users whose attributes can satisfy the access policy are eligible to decrypt the data. In an efficient and ne-grained big data access control scheme with privacy-preserving policy. Specially, we hide the whole attribute (rather than only its values) in the access policies. However, when the attributes are hidden, not only the unauthorized users but also the authorized users cannot know which attributes are involved in the access policy, which makes the decryption a challenging problem.

To assist data decryption, we also design a novel Attribute Bloom Filter to evaluate whether an attribute is in the access policy and locate the exact position in the access policy if it is in the access policy. Security analysis and performance evaluation show that our scheme can preserve the privacy from any LSSS access policy without employing much overhead. We introduce a time server in our scheme to assign particular time with each file which is uploading on cloud. So while user uploads file on cloud particular time is associated with it. So this file is accessible to data consumer only for that specific time period then after that time files are not available for user to In improved Cipher text policy attribute base encryption scheme, as our scheme is an efficient encryption scheme and also file is upload on cloud with its attribute access policy and encrypted file upload on cloud.

Our scheme also hide whole attribute of file and upload encrypted attributed on cloud so safety of file store on cloud are ensure. Attribute authority in our scheme generate public key while uploading file on cloud and also provides secret key of file for downloading file from cloud. Our scheme also provide multi keyword rank search, in this scheme while

uploading file on cloud user enter multiple keyword while uploading file so that when consumer want search file then result is exact matching to consumers keyword. Also while uploading file time server in our scheme assign time duration with file so that file is accessible to user only for that particular time period after time expire files are not display to user or not accessible. Data consumer of cloud enter keyword and attribute of file to search require file on cloud and consumer get to rank file and after entering secret key of file user can download that file and decrypt file In scheme overview, we get the proper system for storing and accessing.

Data owner of cloud store their files in cloud and generate access policy of files according to attribute and then upload _le on cloud after receiving keys from Attribute authority. User want to download file from cloud then attribute bloom filter first match attributes of users with files attribute and also check user according to access policy. Data file on cloud are uploaded with access policy and time specified with that file for proper search and access also for providing an efficient results to user.

The organization of this document is as follows. In Section 2 (**Methods and Material**), I'll give detail of any modifications to equipment or equipment constructed specifically for the study and, if pertinent, provide illustrations of the modifications. In Section 3 (**Result and Discussion**), present your research findings and your analysis of those findings. Discussed in Section 4(**Conclusion**) a conclusion is the last part of something, its end or result.

II. LITERATURE SURVEY

The efficient and fine-grained big data access control scheme with privacy-preserving policy. Speci_cally, we hide thewhole attribute (rather than only its

values) in the access policies. To assist data decryption, and also design a novel Attribute Bloom Filter to evaluate whether an attribute is in the access policy and locate the exact position in the access policy if it is in the access policy. Security analysis and performance evaluation show that our scheme can preserve the privacy from any LSSS access policy without employing much overhead[1]. An expressive, efficient and revocable data access control scheme for multi-authority cloud storage systems, where there are multiple authorities co-exist and each authority is able to issue attributes independently. Specifically, and also a revocable multi-authority CP-ABE scheme, and apply it as the underlying techniques to design the data access control scheme. And also attribute revocation method can efficiently achieve both forward security and backward security. The analysis and simulation results demonstrate the data access control scheme is secure in the random oracle model and is more efficient than previous works[2]..

How to securely share text contents to a certain group of people during a particular time period in cloud-based web application, and propose a cryptographic approach, a provably secure time domain attribute-based access control (TAAC) scheme, to secure the cloud-based text content sharing. Specifically, firstly proposed a provably secure time-domain attribute-based encryption scheme by embedding the time into both the ciphertexts and the keys, such that only users who hold sufficient attributes in a specific time slot can decrypt the text file contents, and also propose an efficient attribute updating method to achieve the dynamic change of users attributes, including granting new attributes, revoking previous attributes, and regranting previously revoked attributes. And how to control those text file contents that can be commonly accessed in multiple time slots and how to make special queries on text file contents generated in previous time slots. The security analysis and performance evaluation show that TAAC is provably secure in generic group model and efficient in practice[3].

Developing the fine-grained multi-keyword search schemes over encrypted cloud data are three-fold. First, the relevance scores and preference factors upon keywords which enable the precise keyword search and personalized user experience. Second, a practical and very efficient multi-keyword search scheme. The proposed scheme can support complicated logic search the mixed AND, OR and NO operations of keywords. Third, the classified sub-dictionaries technique to achieve better efficiency on index building, trapdoor generating and query. Lastly, we analyze the security of the proposed schemes in terms of confidentiality of documents, privacy protection of index and trapdoor, and un-likability of trapdoor. Through extensive experiments using the real-world dataset, we validate the performance of the proposed schemes. Both the security analysis and experimental results demonstrate that the proposed schemes can achieve the same security level comparing to the existing ones and better performance in terms of functionality, query complexity and efficiency [4].

Attribute-Based Access Control with Hidden Policies and Hidden Credentials, present protocols that protect both sensitive credentials and sensitive policies. That is, Alice gets the resource only if she satisfies the policy, Bob does not learn anything about Alice's credentials (not even whether Alice got access), and Alice learns neither Bobs policy structure nor which credentials caused her to gain access. And the protocols are efficient in terms of communication and in rounds of interaction [5].

Ciphertext-Policy Attribute-Based Encryption: An Expressive, Efficient, and Provably Secure Realization, create a method for directly embedding any LSSS structure M^* into the public parameters in our reduction. In the proofs of this system a simulator can program" the LSSS matrix M^* of the challenge ciphertext (in the selective model of security) [6].

The fingerprinting technique facilitates with security against the ownership theft and a provision for traitor tracing (if any unauthorized copy is found). The insertion of fingerprint bits in numeric databases may change the numeric data to some extent. the work in is extended by finding a novel way for inserting a fingerprint in the database along with the assurance of information preservation. The information preservation is shown in terms of effect on mean, variance and standard deviation after fingerprinting, which is found to be minuscule[7].

III. EXISTING SYSTEM

The existing techniques on is only encrypt file and upload that file on cloud. There is no such access policy for file that particular authenticated users can only access that file. Also in that system whole attribute is not hidden only name of attributes are hidden. This cause some security issues and also some of storage issues.

IV. PROPOSED SYSTEM

We propose an efficient and fine-gained big data access control scheme with privacy-preserving policy, where the whole attributes are hidden in the access policy rather than only the values of the attributes Cloud Servers. Cloud Servers are employed to store, share and process big data in the system with time server. Attribute Authority: Assign attribute, and its key generation, and also grant different access privileges to End-users. End-user: End-users are the data owners/producers who outsource their data in encrypted with CP-ABE, time and with keyword store on cloud securely. Data Consumers: Data consumers request the data from cloud servers. data consumers decrypt the data verification done by OTP.

V. SYSTEM ARCHITECTURE
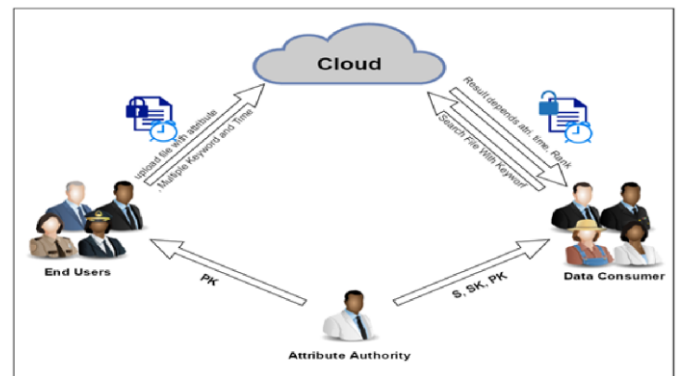
Figure 1

VI. METHADOLOGY & ALGORITHMS

- We used the AES Algorithm for the Encryption format for the storing the data on cloud.
- We also used for Data sharing OTP for unauthorized access of the users.

A. AES Algorithm

- AES steps of encryption for a 128-bit block:
- Derive the set of round keys from the cipher key.
- Initialize the state array with the block data (plaintext).
- Add the initial round key to the starting state array.
- Perform nine rounds of state manipulation.
- Perform the tenth and _nal round of state manipulation.
- Copy the _nal state array out as the encrypted data (ciphertext).

B. MD5 Algorithm

MD5 Algorithm

Step 1. Append Padding Bits

Step 2. Append Length

Step 3. Initialize MD Buffer

Step 4. Process Message in 16-Word Blocks

VII. CONCLUSION

In this paper propose a mechanism for cloud computing. In cloud users upload their Files and also access files from cloud .So scheme provides an efficient encryption scheme for security of data stored on cloud and then efficient access policy on data files. While uploading files on cloud user request for key to attribute authority after receiving key user upload file with specific time associated with it. While downloading file trapdoor is generated and multi-keyword search is perform on cloud data cloud gives top rank results and attribute authority gives keys for downloading files.

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Electrical Attachment of Wheelchair for Handicapped Person

Girish Khope[1] , Rajesh Pundlik Mali[2], Onkar Pramod Mahamuni[2], Rahul Rangnath Korde[2], Raja Narsappa Nandiwale[2]

[1]Asst. Prof. Department of Mechanical Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India

[2]Department of Mechanical Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

This project involves simple design of wheelchair attached electric front wheel power drive that can be attached to manual wheelchair for better mobility on road. The front wheel power drive consists of electric bike motor, rechargeable battery, a controller electric throttle, solar panel and mechanical brakes. The front wheel power drive is designed to be safe, light weight and aesthetic look. This electric hand bike can be easily detachable for wheelchair. This explains how an electric hand bike is made within limited budget for handicapped people. This report covers the background for the project, design development, an in-depth description of the final design, a testing plan, a project management plan, and the conclusion to date.

Keywords: Electric Wheelchair, Electric Attachment, E bike, Eco-tricycle, Solar Wheelchair, front wheel power drive

I. INTRODUCTION

For the disabled people who use manual wheel chair they often experience shoulder pain due to steering wheel chair with only the upper limb muscles for a long time. The sprocket chain drive tricycle which is used from several decades and still heavily consumed in Indian market, is also not appropriate as manual efforts are required there which causes extreme discomfort the handicapped person. Some disable peoples need medical treatment and also have surgical treatment in serious case, to this potential muscle disorders several type of electrical hand bike have been recently introduced in which docking method is easy and it is possible to easily move by using electrical system after docking.

In case of relatively high speed on various terrains after easy installation using a connecter, the mechanical loads are continuously applied to the connecting parts between manual wheel chair and electric front wheel drive and the resultant force accumulated at the connecting parts is determined to affect the structural stability of connecting parts. However related research on this area are still rear therefore this study aims to implement a three dimensional dynamically model that can simulate durability test through computational analysis, and to evaluate dynamic structure stability of parts between manual wheelchair and electric front wheel drive during durability experiment by verifying model through motion analysis

II. LITERATURE SURVEY

Firefly electric attachable wheelchair bike Sherpa electric power bike this companies are producing E-hand bike for disable peoples. This companies are developing new technology to hand bike. The company's focus on Safety Performances Handling Maintains etc, factors. George Klein invented the first PW for people with quadriplegia injured in world war II while he was working as a mechanical engineer for the National Research Council of Canada. By 1956 Everest & Jennings and the American Wheelchair Company began producing PWs for mass sales. Co-author, Dr. Jesse Leaman, began a quest to improve the PW user experience in 1998 while a summer intern at NASA's Marshall Space Flight Center. By 2007, an invention, the information technology upgrade package for PWs, dubbed "Gryphon Shield", was recognized as one of the the year's top 25 inventions by the History Channel and the National Inventors Hall of Fame

Motorized Hand bike for Manual Wheelchair:
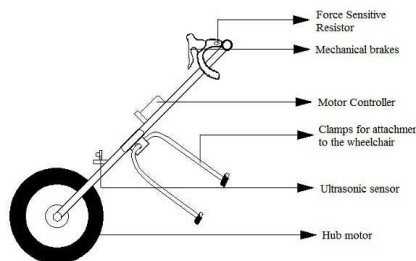
Figure 1. basic model of attachment

III. PROBLEM STATEMENT

1. Range of the vehicle is limited because of the limited capacity of battery.
2. The chances of toggle are there for the vehicle while taking stiff corners at higher speeds.
3. The brakes if applied at front wheels only, it can create the imbalance and drift which can cause injuries to the person.

IV. GOALS AND OBJECTIVES

1. Simple initial goal is, to convert the ordinary wheelchair in to composite electrical power wheelchair , Ability to convert the wheelchair into a performance oriented tricycle for disable users without the need to get out of the chair.
2. Designing a proper clamping mechanism.
3. When mechanism is attached the front two wheels of wheelchair should be lifted up
4. Engagement & disengagement should be easy.
5. To increase the range of the operation using a alternative power source of solar energy.
6. Providing the mechanisms to avoid the issues of imbalance and the toggle.
7. To provide the facility for carrying day to day things with the system for the convenience of the one who is using it.

V. PROPOSED SYSTEM

The team selected this subject for the project because it is the need for disable peoples who cannot move from one place to another place at long distance and require an extra person to push the wheel chair.

Main reason behind making the project is we watched the video and we thought that we should bring this type of concept in our city for disable people. This project can be made at as possible as low cost so that the disables can afford it and the need of pushing the wheel chair may eliminate.

❖ **Part Requirements:**
- Motor
- Controller Circuit
- Solar Panel
- Connecting Frame
- Clamping Mechanism
- Wheel
- Arduino Board

❖ **CAD Model:**
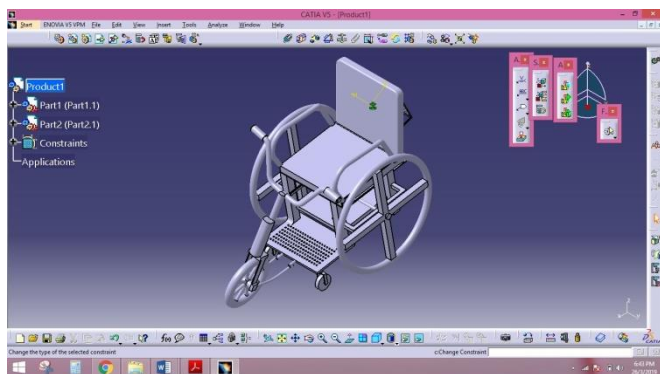
Figure 2. CAD model of the wheelchair created using the CATIA V6

The electric hand is to be attached to the wheelchair with the help of suitable clamping mechanism so the wheelchair can be converted into a three wheeled bike which can be driven without any manual efforts. The arrangement will pull the wheelchair at the required speed. The direction of movement can be controlled using the handle. The handle can be detached from the system to make the wheelchair more convenient to use indoor.

VI. ADVANTAGES AND APPLICATIONS

Advantages

i. Adding a power assist unit to a three-wheel base chair will increase the weight and may offset the distribution of mass or balance and centre of gravity possible making it more difficult for the user to propel when power assist is disengaged, the present innovation eliminates all these and simplify the propulsion.

ii. This unit can be used for handicap and normal people also.

iii. Individuals who have lower extremity weakness, paralysis, or amputation making walking unsafe or difficult, patients, can use this propulsion which is easy to operate and will be not require more effort.

iv. This is inexpensive, portable unit, light weight and easy carried or shifted.

v. This becomes a best alternate to powered propulsion or hand push propulsion, which has good control with less energy expenditure.

vi. Lower running cost and higher range of operation because of the solar powered alternative at daytime.

vii. Brakes are there for the rear wheels also which eliminates the chances for drift and the imbalance.

viii. Camber is provided to the rear wheel which makes the system safer while taking stiff turns at higher speeds.

Applications

i. It can be used in the campus for the drive for the normal persons, to move within the campus in the smooth road.

ii. It is best useful for the small city drive for anybody including the handicap.

iii. It can be used for material transportation without using fuel propulsion.

iv. It can be used by the handicap for the normal transport and even for the self-employed handicap persons for their daily livelihood.

VII. CONCLUSION

As we are preparing the attachable electrical front wheel power drive for wheel chair we faced certain problem. As the foreign companies are manufacturing it to their standards they have the mass production in which they have proper machines with them to create mechanism for connecting the wheel chair with the hand bike. The team are creating it and manufacturing it to our standards with good quality of material. We have tried to match the standard with foreign companies. Main advantage is we have added another power source as solar energy, which also contributes to the increased operational range other than the reduction in operational cost. Along with that we have added the camber angles to the rear wheels of the wheelchair to solve the problem of toggle while taking sharp corners at higher speeds. The brakes are

applied to the rear wheels to avoid the imbalance rather than the front brakes. The carriage is also attached to make it easier to carry the materials especially for the handicapped person. Now we will analysis that how companies can price their product (hand bike) and how can we manage to make or develop it at affordable price.

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Digital Fuel Level Indicator System

Onkar Deokate, Abhijit Kolekar, Nikhil Shinde, Akshay Khanapure

Mechanical Engineering, Savitribai Phule Pune University, Pune , Maharashtra, India

ABSTRACT

In today's era this digitalized world, if the fuel level indicator in the vehicles is also made digital it will indicate actual amount of fuel present in the fuel reservoir tank. The above furnished fact is considered in our project and we found out a proper solution for indicating the accurate availability of fuel in the tank digitally. A potentiometer transducer is used to find out the fuel level which is economic and also accurate. The improvement   in this fuel indicator is that, the reserve condition is pre-indicated to the user with a buzzer, which helps to adjust it to the reserve position before the engine stops and this helps to avoid knocking and detonation. This project mainly concentrates about the indication of fuel level in irregular tanks (two wheeler and four wheeler tanks). Various other features like the distance covered, mileage obtained, can be added with this arrangement which explains the clear performance of the vehicle and the fuel used. We can also predict the time for refuelling the vehicle and also to check the amount while fuelling can be done in future. By using this digital fuel level indicator device the amount of fuel available in the tank at any position of the vehicle is predicted. The calculation is based on the principle of displacement of lever depends upon the float displaced in the fuel tank. The lever output connects the microcontroller board & it converts the digital form & displayed in the scale of litter's or percentage.

Keywords: Float Arrangement, Sensors, Fuel Measurement System

I. INTRODUCTION

Now a days the fuel indicator system for the two wheelers are digital but they do not shows the exact fuel amount which is present in the tank i.e. they shows the amount of fuel in terms of bars and not in numbers or digits like liter or milliliter. So this problem is taken into consideration for our project work of developing the digital (numeric) fuel indicator system for two wheelers which shows exact amount of fuel in fuel tank in terms of liter. In this project at firstly we examined the existing fuel indicator system and fuel tanks of different bikes and scooters. But during this survey we examined that the design (shape and size) fuel tanks are in irregular fashion. But due to irregular shape of the tanks there were much complexities arises for the installation of the

electronics kit and level sensor which are used for the calibration of fuel level/amount. So we redesign a tank as a conceptual model in a regular shape like rectangular by using design software like PRO-E. Hence due to this regular design the installation of electronics kit would became easier also this whole system will gives us the fuel amount in terms of liter or milliliter, for example 1L, 2L, 1.2L, 500 mL, 800mL.vehicle is moving the fuel in the tank fluctuates continuously, as this is our first attempt to solve such a problem we made the assumption that the vehicle is in a stable position for the indication of the exact fuel amount in tank. We have study and survey the different tanks of bikes as well as scooters. Our electronics kit only work in a regular shape like square, rectangles, circle etc. Hence we design the tank in the rectangular shape. We design the fuel tank

by using the cad cam software like Pro-E because now a day this software is more using in the designing field. And the software is easy to design and can be understand easily.

II. PROJECT COMPONENTS

1. Float Arrangement
2. Microcontroller
3. Display Unit
4. Hall Effect Sensor

1. Float Arrangement

The system consists of two important parts that is for sensing and indication of fuel level. The sensing unit usually uses a float type sensor to measure fuel level while the indicator system measures the amount of electric current flowing through the sensing unit and indicates fuel level. There are many methods to do sensing and indicating measurement system.
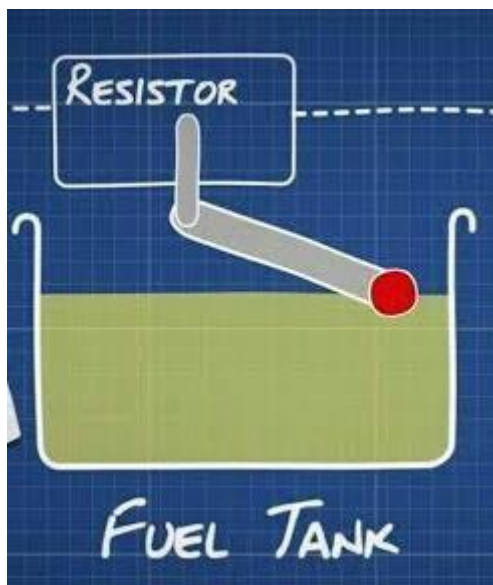
Figure 1. Float Arrangement

- Traditional float type measurement technique
- Microcontroller based fuel measurement technique

Presently the most common and traditional fuel level indicator technique implement the resistive float type sensors to measure the level in fuel storage tank and this system consists of two units i.e., the sender unit responsible to measure the level of fuel in the tank, the gauge until responsible to display the measured fuel level to the driver. Artistry is termed as the Smart fuel gauge system, which is similar to the traditional technique but also makes use of embedded systems such as microcontrollers or microprocessors for providing better accuracy.

2. Microcontroller

A microcontroller is an single integrated circuit. In recent terminology, it is similar to, but less advanced than, a system on a chip (SOC); a SOC may include a microcontroller as one of its component. A microcontroller contains many more processing units along with memory and programmable input/output peripherals. Program memory in the form of ferroelectric RAM, flash or OTP ROM is usually included on circuit board, and also a small amount of RAM. Microcontrollers are employed for embedded circuit's applications, in opposite to the microprocessors used in personal computers or other general purpose applications.

3. Display Unit

A 16 x 2 character LCD is interfaced with the micro-controller port using 4 data wire mode. Different meter readings like current month kWh, total kWh, voltage, current, date, time, etc. are sequentially displayed here.

Figure 2. Display Unit (LCD)

4. Hall Effect Sensor

The flow meter works on the principle of the Hall effects. According to the Hall effects, a voltage difference between conductor transverse and induced electric current and the magnetic field across to it. Here, the Hall Effect is employed in the flow meter using a normal fan/propeller-shaped rotor, which is placed in the route of the liquid flowing. The liquid propel against the fins of the rotor, causing a rotating action of the rotor. The shaft of the rotor is attached to a flow sensor. The setup of a current flowing coil and a magnet attached to the shaft of the rotor, thus a voltage is induced as this rotor rotates. In this flow meter sensor, for every litter's of liquid passing through it per second, it outputs about 4.5 pulses. This is due to the magnet connected to rotor, changing magnetic field, as seen in the picture below. We can identify the number of pulses using an arduino and then calculate the flow rate in litters per hour (L/sec) using a simple conversion formula.

$$Flow\ Rate = N/T$$

Where,

N=No. of revolution

T= Time in sec

Figure 4. Hall Effect Sensor

III. WORKING

Fuel indicator system consists of float with variable resistance, Microcontroller, LCD display and buzzer. All this components perform together to indicate the amount of fuel in tank. A float with variable resistance is installed in the tank at the base. Initially with no fuel in tank the float is at its lower position.

When float is at its lowest position, rheostat offers maximum resistance and no current passes. As we start filling fuel in tank float starts rising up. Float is attached to a vertical column with fulcrum and supports rheostat. One end of the float is attached to the rheostat, as float rises up results in varying resistance, as resistance decreases flow of current increases. The output current from the rheostat is analog signal which is feed to the analog to digital converter i.e. ADC. ADC processes this analog signal into digital pulses. Output from ADC sends to the microcontroller. The Hall Effect flow measurement sensor sense the amount of fuel transferred to engine & output from flow measurement sensor send to the microcontroller. And subtract the indicating initial fuel level & flow rate. Microcontroller further processes digital signals obtain from ADC and flow measurement sensor. Thus the combination of both displayed the numeric form that is in percentage. Buzzer is also provided with system, this buzzer is activated when fuel in the tank reaches reserve level i.e. 15%. After every 3% reduction in fuel quantity periodic buzzer activates up to zero position.

Also indicator is provided with system, this buzzer is activated when fuel in the tank reaches reserve level i.e. 15%. Every time periods of 10 seconds indicator blinks.

IV. CONCLUSION

The existing conventional and the microcontroller based float type measurement system are far from exact and are on the conservative, however the

microcontroller based approach is more accurate compared to the conventional technique but still least accuracy due to fuel overflow in the tank unless float sensor is calibrated with respect to the size and aesthetic of the tank. So by using any one of the level measuring sensor described above will most likely be more accurate, more reliable, and cheaper than other analog meters, and will allow for added features that benefit both the customer. In the near future, the different vehicle company manufacturers will implement this kind of fuel system which also provides security for the vehicle owners. Using calibration with a minimum amount of software, the required reliability, resolution and accuracy for an automotive fuel level system design can be achieved. Calibration result of the liquid pressure sensor is linear than the Float level sensor and hence it can be used to measure level of the tanks. Also the size of the pressure sensor setup is very small.

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Seed Sowing Mechanism

Pratik Tupe, Omkar Kutwad, Vaibhav Kardule, Omkar Kohok

Mechanical Engineering, SPPU, Pune, Maharashtra, India

ABSTRACT

Agriculture plays an important role in the life of economy. It is the backbone of our economy system. In this project work focused on Cotton Seeding processes and tried to solve the problem with saving timing for seeding process. The basic objective of seed sowing action is to put the seed and fertilizer in rows at desired path and seed to seed proportion, cover the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields. Seed sowing mechanism plays a broad role in horticulture field. In this project we use the simple mechanical mechanism to fulfill these all requirements with minimizing the effort and time. No need of any electronic device and tractor to power the mechanism. The Cotton Seeding mechanism is developed in this proposed work we have focused on Cotton Seeding process. In this Cotton Seeding process to avoid the drawbacks we use the bullock cart to attach our mechanism. The Cotton Seeding machine is developed which has very less cost. Also, the unskilled farmer can easily operate cotton seeding mechanism.

Keywords: Compaction, Optimum Yields, Seed Sowing Devices.

I. INTRODUCTION

Mechanization of the horticultural industry in India is still in a stage of beginning due to the lack of knowledge and the absence of leading tools and machinery. In traditional methods Cotton Seeding is done by broadcasting manually, opening furrows by a plough and dropping seeds by hand.

In India the effect of inaccuracies is greater as set to be in agricultural based country approximately 75% of the population is dependent on farming directly or indirectly. Farmers are using the same procedure and apparatus for ages. E.g. seed sowing, spraying, weeding etc. There is a need for the development of effective spraying and weeding machine for increasing the productivity. Asian countries have the problem of high population and low land fertility as compared to the developed nations. One of the main reasons for low outcome is lack of power supply on the farms and low farm technology. This is especially true for India. It is now realized the world over that in order to meet the food requirements of the growing population and rapid industrialization, modernization of agriculture is inescapable. On many farms, production suffers because of improper seedbed arrangement and delayed seed sowing, harvesting. Mechanization enables the proper sowing through precision in metering ensuring better distribution of seeds, reducing quantity needed for better response and prevention of losses or wastage of inputs applied. This mechanism reduces the unit cost of production through higher productivity and input conservation.

Cotton Seeding mechanism is a device which wills hells in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. The main aim of sowing mechanism is to put the seed and seed in rows at desired depth and path, seed to seed proportion, cover the seeds with soil.. The paper

discusses different aspects of Cotton Seeding machine which will be helpful for the agriculture industry to move towards mechanization.

The Cotton Seeding mechanism is developed in this proposed work we have focused on Cotton Seeding process. In this Cotton Seeding process to avoid the drawbacks we use the bullock cart to attach our mechanism. The Cotton Seeding machine is developed which has very less cost. Also, the unskilled farmer can easily operate cotton seeding mechanism.

II. METHODS AND MATERIAL

- Interviewed of local farmers
- Field observation of local agricultural practices
- Visited to Agricultural Transformation Agency and concerned bodies.

Secondary data sources
- Design text books (PSGDB) and Data book of Machine Design, reference books, previous researches and papers.
- Relevant documents from Agricultural Transformation Agency.

2.1 Problem Statement:
Based on current situation of agricultural system, the cultivation of crops is still laid on traditional oxen driven. During farming the most over looked steps are ploughing, seeding and fertilizing as shown in fig (1). To work with this system one person is required to control the straight line path, one person to put the seeds and other person to distribute the fertilizer. Similar methods are adopted for ploughing, seeding and fertilizing the whole surface area. As a result, there is high wastage of human energy, time and effort. All these lead to insufficient productivity and tiredness of farmers.

III. EXPERIMENTAL SETUP
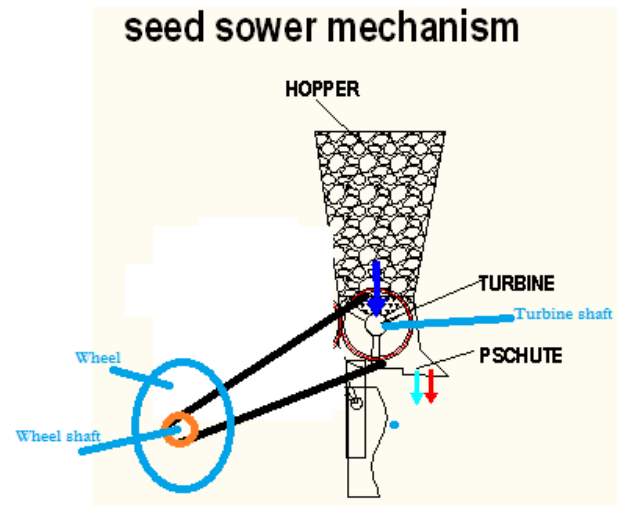
Figure 1. Seed sower Mechanism

The designed linkages converted into experimental set up. Input wheel coupled to the turbine by chain sprocket at one end. Turbine shaft is the element which takes the motion from input wheel. Hopper stores the seed as required quantity. The seed comes in the turbine one by one; and dropped inside the soil at the desired distance. The motion from input wheel to output turbine is as shown in Figs.

IV. WORKING

Seed sower mechanism comprises of the following parts:

a. Hopper: Hopper holds the seeds to be sown the hopper is sheet metal component made in trapezoidal shape. It drops the seeds into the distributor mechanism, i.e. in between two blades of the turbine.

b. Turbine or distributor: This mechanism decides the number of seeds to be dropped per turn such that the gap between toe blades is to accommodate only given quantity of seeds. The turbine is rotated with such speed that the gear train will adjust the distance between to droppings.

c. Seed sower drive mechanism:
With a gear train in between pinion and the turbine the gear train drives the earth covering mechanism.

d. Earth covering mechanism:

This comprise of the slider crank mechanism with the gear train gear acting as a crank, the earth covering plank as a piston. Thus the mechanism moves to cover the seeds after each dropping.

V. CONCLUSION

This Seed sowing mechanism has remarkable influence in agriculture. By using this mechanism we can save more time required for sowing process and also it reduces lot of labourer cost. It is very helpful for small scale formers as it weighs less. After comparing the different agricultural methods of the existing equipment's, it is concluded that this seed sowing mechanism can maintain row spacing and controls seed dropping at particular distance. Maintain the seed depth and proper use of seeds can be done with less loss. Perform the various simultaneous operations and hence saves labour requirement so as labour cost, labour time and also save lots of energy hence it is easily affordable by farmers. So we feel that this project serves something good to this world and we would like to present it before this prosperous world.

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Automatic Prefeeder of Corrugated Paper Printing Machine

Mogal Shahebaz Gafar, Surendra Singh Rao, Nitish Kumar Singh, Himanshu Rai

Mechanical Department, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

In industry there are many machines which working on Automatic prefeeder but the cost of these machines are very high. So automatic prefeeder is used in many industries to transport goods and materials between stages of a process at low cost. Conveyors are a powerful material handling tool. They offer the opportunity to boost productivity, reduce product handling and damage and minimize labor content in a manufacturing or distribution facility. Conveyors are generally classified as either Unit Load Conveyors that are designed to handle specific uniform units such as cartons or pallets, and Process Convey-ors that are designed to handle loose product such as sand, gravel, coffee, cookies, etc.

I. INTRODUCTION

Conveyor is used in many industries to transport goods and materials between stages of a process. Conveyors are   a powerful material handling tool. They offer the opportunity to boost productivity, reduce product handling and damage and minimize labour content in a manufacturing or distribution facility. Conveyors are generally classified as either Unit Load Conveyors that are designed to handle specific uniform units such as cartons or pallets, and Process Convey-ors that are designed to handle loose product such as sand, gravel, coffee, cookies, etc. which are fed to machinery for further operations or mixing. It is quite common for manufacturing plants to combine both Process and Unit Load conveyors in its operations. Gravity Roller conveyor is not subjected to complex state of loading still we found that it is designed with higher factor of safety. There is definitely an economic need not only to control the conveyor speed and the number of parallel machines, but also to find the optimum solution in reach-ing the maximum profit of a deterministic production quantity. Through this study, the control of the conveyor speed in optimizing the production of the machines and conveyors be-comes concretely solvable Corrugated Kraft Paper Board Box, technically called Corrugated Fibre Board Box is the most popular shipping container, now-a-days. The box is manufactured from corrugated board which consists of 3 or more layers of Kraft paper. The middle fluted layer is pasted with two flat parallel sheets of paper. The boxes find their number of applications in the packaging of chemicals & drugs, tobacco, engineering goods, canned & bottled goods, food products, lamps, electrical   appliances, glassware's etc. Packaging plays very important role in the country's economy. Till recently only the western world, more particularly the developed countries cared about proper packaging. However, now even developing countries like India have changed their outlook towards packaging and in the last few years increasing stress has been laid on improved and proper packaging. In fact, today, packaging is as important as the contents.

Corrugated boards were first produced in India in early fifties. Since then the production of corrugated boards has increased steadily. Corrugated boxes have replaced wooden boxes & crates in many applications.

Today, about 80% of all shipments in the world are being made in fibre board boxes. In India, about 60% of the packaging is being done with corrugated fibre board boxes.

II. METHODS AND MATERIALS

The Automatic Paper prefeeder Machine works under the methodology of the mechatronics system with the objective to provide automation. Generally the automation deals with the elimination of manual work using electronic processing of mechanical work control mechanism. It consists of three main units which include:

A. Input unit
B. Processing unit
C. Output unit

Input Unit:
The input unit of the automatic paper Prefeeder machine comprises of the components required to receive the Paper from the manpower to the driving roller. Processing unit: The processing unit comprises of the components required to ensure the transfer of paper one by one by various sensors to other rollers. It further, signals the output unit to deliver the number of paper to the customer. Output unit: The output unit comprises of the components required to deliver the paper to the customer. It works on the instruction from the processing unit.
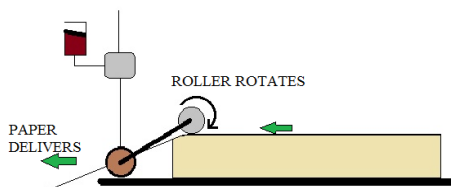
Figure 1.1. Working process

MATERIALS:
Different component and their materials are as follows

1. shaft > mild steel
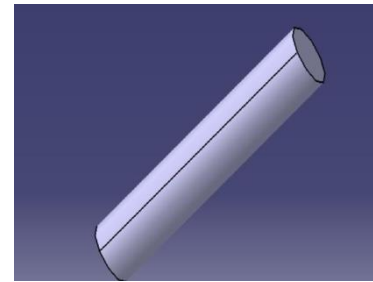
Figure 1.2

2. bearing> stainless steel

Figure 1.3

3.belt>leather

WORKING :
working process categorised in 4 steps
1. Putting bunch of paper on table
2. Take up rollers takes paper one by one
3. Driving rollers drives another feeding rollers
4. Printing rollers print the corrugated papers.
5. Behind the printing machine all printed rollers gathered
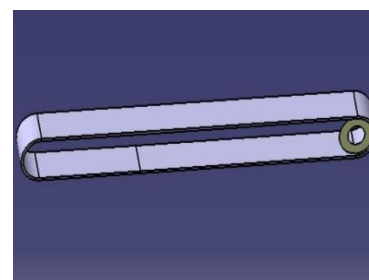
Figure 1.4

4. DC MOTAR

Figure 1.5
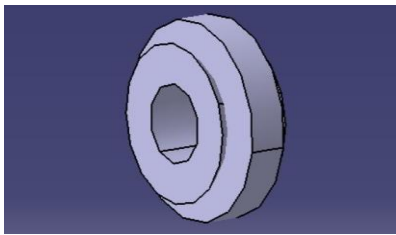
Figure 1.6

5. Roller> hardened steel/high speed steel
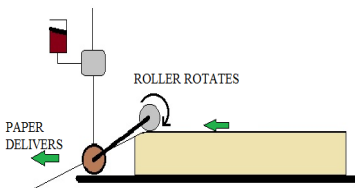
Figure 1.7

III. LITERATURE STUDY:

The literature review is divided in three parts as mentioned below

1. World Class Manufacturing
2. Offset printing process
3. Heat augmentation technique for rollers

1.5.1 World Class Manufacturing

1. Reduce Operational Costs.
2. Satisfy Customer's Expectations.
3. Increase Visibility to Business Performance.
4. Manage Global Operations.
5. Streamline Outsourcing Processes.

6. Reduce Lead Time.
7. Reduce Time To Market.

The relevant parameters of the present research problem are discussed in more details.

• Reduce Operational Cost

Although recent developments in planning and customer relationship management have focused more on top-line benefits (increased revenue), the bottom line is still greatly dependent on controlling costs. Companies with a lower operational cost structure enjoy an obvious advantage in profitability and the ability to adjust pricing to meet competitive pressures if necessary to maintain or gain market share. Costs are really just part of the scoreboard. This approach contrasts with a pure cost reduction focus without associated business process change, which can negatively impact other operational measurements.

• Satisfy Customer's Requirements

The ultimate key to success in any business enterprise is to please your customers. The most successful companies don't just meet customer expectations, they exceed them and beat the competition by setting the bar at a level that makes it difficult if not impossible for others to surpass.

Successful manufacturers manage the entire customer relationship—from prospect to post-sales service and support—this involves the entire organization in a customer focus. Whether or not they have direct contact the customer, contributors must keep the customer's need in mind as they plan and carry out day to- day operations. It is important to truly understand the customer's goals and objectives. Your products and services must strive to support the customer's vision. wit

• Increase Visibility to Business Performance

Today's fast-moving, ever-changing manufacturing environment demands faster responsiveness to changes in the market, product innovation and supply chain events. In this environment, ignorance is one of

the greatest threats to a manufacturing company's health and success. Executives and senior managers must understand how the enterprise is meeting strategic objectives. Middle-level managers need visibility into how they are performing against tactical objectives. Responsible individuals must be notified immediately when supply chain issues threaten the completion of objectives, so actions can be taken to ensure customer delivery and quality requirements continue to be met.

A well-implemented and effective enterprise information system delivers overall visibility into the health of the company and its operations and provides detailed information for performance measurement, process management, and problem identification and remediation. Such a system can help to improve revenue through competitive advantage, can help you understand your business and therefore, manage it better, reduce operational costs, improve performance and improve results for all stakeholders-owners, executives, managers and employees.

• **Managing Global Operations:**

There is no question the world is shrinking, and virtually every business is now involved in some form of international trade—whether marketing and selling to customers in other countries or simply using parts or materials that are produced elsewhere. The "glass is half full" crowd will view these developments as the onset of unlimited opportunity. If you tend towards the half-empty-glass crowd, you are likely to see significant threats in virtually unlimited competition from literally any place on earth. The Internet is a key tool for joining the global business community and conducting business around the globe. Globalization and e-commerce have changed traditional business.

IV. RESULT AND DISSCUSION

From these project we have discussion on that the paper thickness of corrugated paper for printing purpose is only in the range 9mm to 15mm.these

project is suitable only for medium scale industry not for large scale industry because capacity of automatic prefeeder is low as compared to conventional conveyor system.

V. CONCLUSION

The Automatic Prefeeder system is suitable for mass production. By using the automatic prefeeder the efficiency of printing machine is increases and accuracy of machine also increases.

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Booster Bike with Interchangeable Regenerative Front Wheel

Girish Khope[1] ,Rushikesh Chaudhari[2], Mohammadrafiq Sayyad[2], Shubham Sonje[2], Yuvaraj Kaple[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Mechanical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

The aim of this review paper is to present a close compact system for Electric Vehicles. There are many substitutions available in the market for electric vehicles, but in our revolutionary project we have designed a system consisting of all parts in one compact wheel assembly which is interchangeable and regenerative.This is multi-purpose application wheel as it can be used in hand kart, bicycle, tricycle, stretcher, trolleys, wheel chair for handicapped persons. There will be several charging stations, If battery of wheel is fully discharged then one can easily recharge, interchange or replace it with recharge battery. As pollution is increasing day by day we need substitution of petrol based vehicle which should be economical, eco-friendly, durable, efficient, less time consuming.

Keywords: Electric bike , Compact system, Interchangeable Wheel , BLDC hub motor , Regenerative.

I. INTRODUCTION

An electric bike, also known as an e-bike or booster bike, is a bicycle with an integrated electric motor which can be used for propulsion. In electric bike a motor is used which utilized the DC power supply which is obtain from DC battery. This motor is connected to rear wheel of cycle through chain drive or belt drive.

When the motor is energized it rotate the wheel and forward motion is obtained. The important part is motor which is a driving member mostly a DC motor is used which has brushes through which power supply goes to the winding, the speed of DC motor is not too high. The shape of motor is of cylindrical or pot type is placed on the Frame.

The upgradation in electric cycle is to replace the motor.As we know Dc motor is not too much efficient during heavy working the new concept is bring i.e. BLDC (Brush less DC motor) the name itself indicate

that it does not have any brush for transferring current to winding because of this reason it has very high speed as well as give greater torque during running. Also it is more compact and light in weight.

By adding electric motor, battery, regeneration system in a close compact unit, we can reduce required spacewhich will result in smoother, convenient,less strenuous cycling experience and will provide extra boost of power.

II. PROBLEM STATEMENT

As we know that all e-bicycles, electric wheel chair are design in such a way that it required to installed motor in wheel and all separate components like battery, controller at various location of system to make electric system.

Design and fabrication of an electrical wheel which consists all components like motor, battery, controller in itselfthat wheel can be easily attached to any cycle,

wheel chair, and trolley to convert it into electric system.

We can increase efficiency of the bicycle by regeneration system. Also can be recharge by charging station available on highways and roads, while in remote locations solar panels are useful for recharging.

III. OBJECTIVES

- ❖ Design a front Wheel.
- ❖ Design Regeneration system.
- ❖ Design a compact electric wheel.
- ❖ Increases fuel efficiency.

IV. WORKING PRINCIPLE
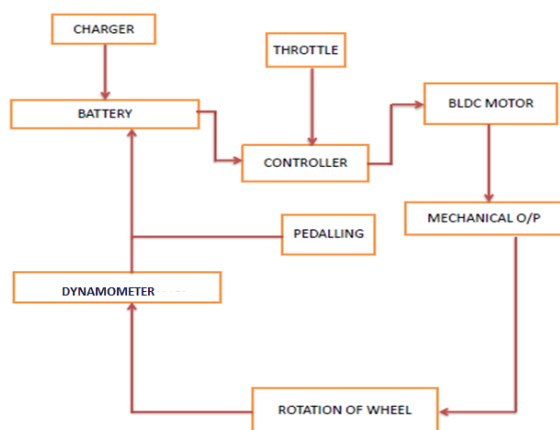
Figure1. Working Principle.

There are many different components shown in a block diagram. The main components are brushless DC motor, motor controller, Li-Ion battery, throttle and dynamo. The power source for this system is given by Li-Ion battery.

The output of Li-Ion battery is 36V. There are multiple forms of charging source is used such as AC voltage through an outlet, dynamo energy and mechanical pedal charging system. The dynamo output is 12V and 20 watt. Once a voltage and current is generated through the dynamo and it give to battery source. Also we use mechanical pedal charging system, so dynamo is use for this charging system. A dynamo

is an electrical generator that produces direct current by rotate with wheel. This Li-ion battery block connected with a controller block. So this controller block control the all function of the system.

The controller is to regulate the amount of applied power on brushless DC motor. Also there are many functions for this controller that over current protection, under voltage protection and also throttle are used to control the speed of a brushless dc motor. These functions are beneficial to the system and also provide a solution to any troubleshooting and damages that may occur. Throttle are also connected to the controller by which speed of cycle can regulate.
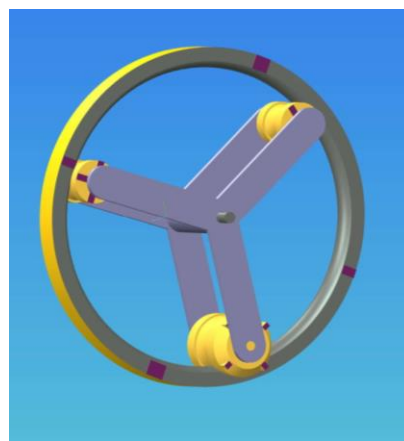
Figure 2. Working Principle Diagram.

It works on same principle of planetary wheel. Wheel consisting motor and two idler connected by means of frame structure in such a way that they are connected to frame at an angle of 120 degree. Motor and pulley have concave surface it meshes internally with rim having convex surface.

Motor runs on battery by controlling throttle and it rotates to the rim and drive system. Both idler works as support and regeneration of power. Idler is rotated by rim. Alternator is mesh with idler which generates electricity. Structure is stationary and only rim is rotating.

a] BLDC MOTOR
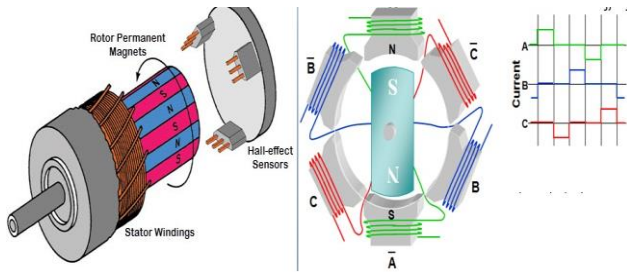
Figure 3. Construction of BLDC Motor.

BLDC motor works on the principle similar to that of a conventional DC motor, i.e., the Lorentz force law which states that whenever a current carrying conductor placed in a magnetic field it experiences a force. As a consequence of reaction force, the magnet will experience an equal and opposite force. In case BLDC motor, the current carrying conductor is stationary while the permanent magnet moves.

ADVANTAGES OF BLDC MOTOR

- It has no mechanical commutator and associated problems.
- High efficiency due to the use of permanent magnet rotor.
- High speed of operation even in loaded and unloaded conditions due to the absence of brushes that limits the speed.
- Smaller motor geometry and lighter in weight than both brushed type DC and induction AC.
- Quite operation (or low noise) due to absence of brushes DC motors.
- Long life as no inspection and maintenance is required for commutator system.
- Higher dynamic response due to low inertia and carrying windings in the stator.
- Less electromagnetic interference.

b] LITHIUM ION BATTERY

Figure 4. Lithium Ion Battery.

Compared to other mature battery technologies, Li-ion offers many benefits. For example, it has excellent specific energy (140 Wh/kg) and energy density, making it ideal for battery electric vehicles. Li-ion batteries are also excellent in retaining energy, with a self-discharge rate (5% per month) that an order of magnitude lower than NiMH batteries. However, Li-ion batteries also have some drawbacks as well.

Comparatively, Li-ion batteries have been a very expensive battery technology. There are also major safety concerns regarding the overcharging and overheating of these batteries. Li-ion can experience a thermal runaway, which can trigger vehicle fires or explosions. There had been serval instances where the Tesla Model S, which utilized Li-ion batteries, had infamously caught on fire due to issues with fluctuating charging or damage to the battery. However, great efforts have been made to help improve the safety of vehicles that use Li-ion batteries.

c] CONTROLLER

The mechanism of an electric speed controller varies depending on whether you own an adaptive or purpose-build electric bike. An adaptive bike includes an electric drive system installed on an ordinary bicycle. A purpose-built bike, more expensive than an adaptive bike, provides easier acceleration and affords more features. The mechanism of electric bike speed controller varies in these two types.
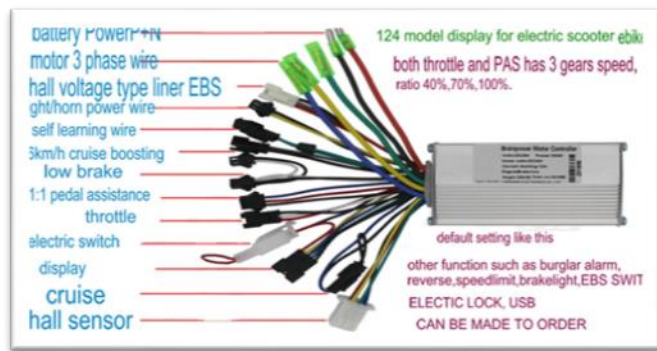
Figure 5. Controller.

The speed controller of an electric bike is an electronic circuit that not only controls the speed of an electric motor but also serves as a dynamic brake Function

The electric bike speed controller sends signals to the bike's motor hub in various voltages. These signals detect the direction of a rotor relative to the starter coil. The proper function of a speed control depends on the employment of various mechanisms

d] DYNAMOMETER
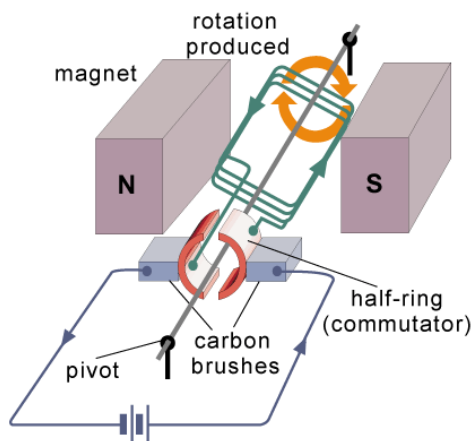
Figure 6. DYNAMOMETER.

It is device which is used to convert the mechanical rotation into electrical energy it works on faraday's law. According to the Faraday's law of Electromagnetic Induction. whenever a conductor moves in a magnetic field EMF gets induced across the conductor. If the close path is provided to the conductor, induced EMF causes current to flow in the circuit.

V. CALCULATION

m = mass, bike weight + your weight, g = gravity constant (acceleration)
F = force, you exert with your muscles, through the drive train
Rolling resistance is a very small force that is a function of the road or trail surface.
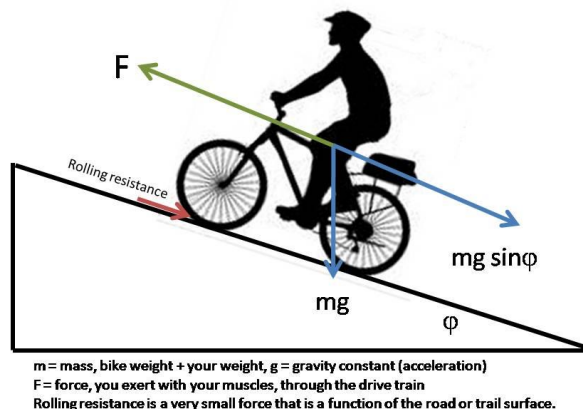
Figure 7. Analysis of propulsion force.

Cycle works on newton 2nd law

$Fp - (Fr + Fs + Fw) = M \times a$

Where,

Fp= Propulsion force

Fr= Rolling resistance force

Fs= Slope resistance force

Fw= Wind resistance force

a = Acceleration of cycle

M= Mass of cycle with Rider

1) To calculates Resistance forces

$Fr = 9.81 \times M \times Cr \times \cos(\alpha)$

$Fs = 9.81 \times M \times Cr \times \sin(\alpha)$

$Fw = \dfrac{C_d \times \rho \times A \times (V_W + V_B)^2}{2}$

Where,

M=Total Mass of cycle in Kg,

α = slope angle in degree,

Cr=Rolling resistance coefficient
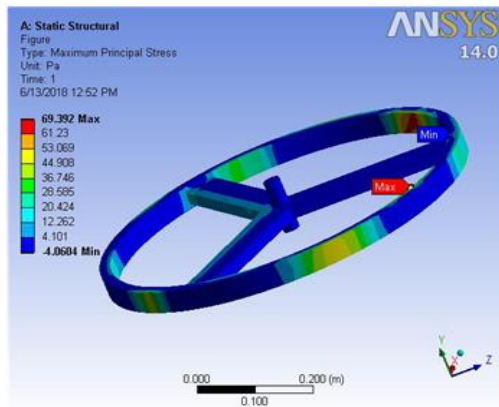
Figure 8. Analysis of Maximum Principle stress.
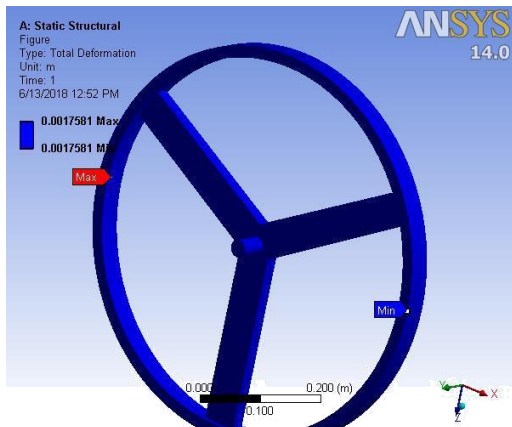
Figure 9. Analysis of Total Deformation

Table 1. Motor Selection Table.

Sr. no.	Rider weight (kg)	Total mass (kg)	Power (W) at $\alpha = 5°$	Power (W) $\alpha = 30°$
1	55	80	180.24	205.36
2	60	85	193.58	219.29
3	65	90	210.68	230.78
4	70	95	230.38	252.6
5	75	100	251.49	269.5486
6	85	110	270.32	285.35
7	95	120	288.35	310.075

From above table Power selected for motor is 350 watt for better performance at slope with high load.

VI. FUTURE SCOPE

- Solar Panel [Remote area].
- Recharge Stations at road side [solar, wind, tidal].
- Exchange Recharge wheel.
- Increases efficiency [Regenerative System].
- Monowheel.
- Improvising front wheel as unicycle[gyroscopic].

VII. CONCLUSION

In this project concluded that the design and fabricated electrical wheel can be easily attached to any cycle and runs system with high load and impact condition.

From the testing results obtained it is important to point out that the torque of system has increased due to eccentric power transmission from motor to rim. Bicycle is able to climbing gradient easily. Generator are able to generate electricity so that system works as regenerative system.

In the further work, the increased weight will be analysed taking into account. Necessary to focus on amount of weight of wheel to be reduced to make system light weight.

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A Review on Regenerative Electromagnetic Suspension System

Sanket Bansode, Aniket Shirgupe, Yuvraj Gondil, Utkarsh Taware

Mechanical Engineering, SKN sinhgad Institute of technology and Science, lonavala, Maharashtra, India

ABSTRACT

Now a days, automobile industries and machinery parts uses incompressible fluid as a shock absorber in order to absorb sudden shock and vibrations during motion. The moto of provide these absorbers to reduce damping effect by converting kinetic energy of sudden shock in heat energy and then dissipated. Our aim to replace this shock absorber by electromagnets using concept of polarity. In this study, an electromagnetic regenerative shock absorber is analysed. The device is capable of converting the vibrational energy, usually wasted as heat in conventional dampers, into electrical energy. This converted energy then stored in battery for the further use. This system can be used for increase the comfort of travelling and is helpful for hybrid cars too.

Keywords: Renewable Energy, Electromagnets, Dissipated Heat

I. INTRODUCTION

The main purpose of the project is to utilise the kinematic energy wasted from suspension system for energy generation. For that purpose, we are replacing normal shock absorbing system with electromagnetic regenerative suspension system.

Actual function of suspension system is to absorbs the vibrations and its supports the vehicle weight and which gives passengers comfort and improves riding qualities of vehicles by minimizing the damages to the vehicle components.

Basic components of conventional suspension system are spring and damper. Due to road excitations vibrations are transferred in the vehicle those vibrations are absorbed by damper using principle of heat dissipation's, that dissipated heat is in the form of energy but in conventional suspension system that heat get wasted We can use this wasted energy as renewable energy. Now days renewable energy is the need in today's energy scenario. Dissipated heat can be used to increase fuel efficiency of the vehicle by converting kinetic energy of shock absorber to electrical energy and it also can be stored for further applications, which is beneficial for electrical appliances in the vehicle and to improve the overall efficiency.

1] Energy Dissipation

All form of energies is the source of power for the conducting various types of applications. but in conventional suspension system this energy gets wasted in order to utilise this energy as a source of energy for generation of dissipated heat some factors should be considered and those are vehicle speed, road roughness, suspension stiffness and damping coefficient for conventional suspension system.

2] Energy Regeneration

It is important that how much amount of energy we are producing by using this technique because it defines is our system capable for handling heavy vibrations. Also, it is important that this technique will increase the fuel efficiency of vehicle. By

implementing shock absorber 10 % of energy can be recovered.

3] Configuration of Regeneration Suspension System

Two main types of regeneration system – mechanical and electromagnetic

a. **Mechanical regeneration system: -**

In the mechanical regeneration system traditional system is being used like hydraulic and pneumatic system. Accumulator is used to store the energy. it absorbs the vibrational energy and convert it into potential energy. This system has some disadvantages like for hydraulic pipeline it takes lots of space also its complex to design, small leakage in pipe may spoiled whole system.

b. **Electromagnetic regeneration System: -**

To overcome the limitations of mechanical system Traditional suspension system can be replaced by Electromagnetic regeneration System because of its advantages over traditional system. it absorbs energy from shock and vibrations moreover stores and reuse it. it has high performance and increases efficiency.

II. LITERATURE SURVEY

Energy absorbed by the vibration is get wasted but power generation by shock absorber bring new hope for recycling and reuse the energy. If we improve the technology it will become the new trend in automobile industry. [1]

The conversion of kinetic energy from suspension is very efficient and useful also it can be fulfilling the need for the auxiliaries in vehicle. If we install electromagnetic regeneration system for all 4 wheels then we can generate high amount of electric power. This amount of electric power can be stored and further used for the working of vehicle air conditioner or electrical appliances of vehicles. This suspension system will be mostly useful for heavy compressed vehicles, fire brigade trucks, milk trucks. [9]

III. METHODS AND MATERIAL

1] Components:

1.1 Spring:

Spring is used to store the mechanical energy. Material for spring is oil hardened and tempered spring steel wire.

Figure 1. Spring

Table 1. Specifications of Spring

Parameters	Values
Spring Displacement	85.26 mm
Spring Rate	33.36 N/mm
Wire Diameter	9 mm
Coil Mean Diameter	100 mm
Number of coils	2 actives + 2 inactive
Solid length	36 mm
Free length	127.26 mm

1.2 Shock absorber:
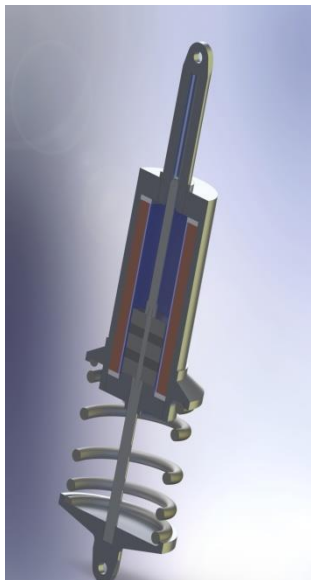
Figure 2. Cad model of Cross section of Electromagnetic Shock Absorber

Figure 3. Actual electromagnetic Shock Absorber

Material:

Material used for this shock absorber are Aluminum 6061 And stainless steel

1.3 Magnet:

Figure 4. Set of Magnet and iron core
We used N45 neodymium Magnets.

1.4 Copper Coil:

Figure 5. Copper coil

Gauge size = 18awg
Normal wire diameter =0.0403
Ohms/mgt normal =6.386

5.Battery:

Figure 6. Battery

2] Working Principle:
2.1 Electromagnets:

An electromagnet is a type of magnet in which the magnetic field is produced by an electric current. The magnetic field disappears when the current is turned off. Electromagnets usually consist of wire wound into a coil. A current through the wire creates a magnetic field which is concentrated in the hole in the centre of the coil. The wire turns are often wound around a magnetic core made from a ferromagnetic or ferrimagnetic material such as iron; the magnetic core concentrates the magnetic flux and makes a more powerful magnet. The main advantage of an electromagnet over a permanent magnet is that the magnetic field can be quickly changed by controlling the amount of electric current in the winding. However, unlike a permanent magnet that needs no power, an electromagnet requires a continuous supply of current to maintain the magnetic field.

2.2 Faraday's Law:

Any change in the magnetic environment of a coil of wire will cause a voltage (emf) to be "induced" in the coil. No matter how the change is produced, the voltage will be generated. The change could be produced by changing the magnetic field strength, moving a magnet toward or away from the coil, moving the coil into or out of the magnetic field, rotating the coil relative to the magnet

$$EMF = -N\frac{\Delta\emptyset}{\Delta t}$$

2.3 Lens Law:

When an emf is generated by a change in magnetic flux according to Faraday's Law, the polarity of the induced emf is such that it produces a current whose magnetic field opposes the change which produces it. The induced magnetic field inside any loop of wire always acts to keep the magnetic flux in the loop constant. In the examples below, if the B field is increasing, the induced field acts in opposition to it. If it is decreasing, the induced field acts in the direction of the applied field to try to keep it constant.
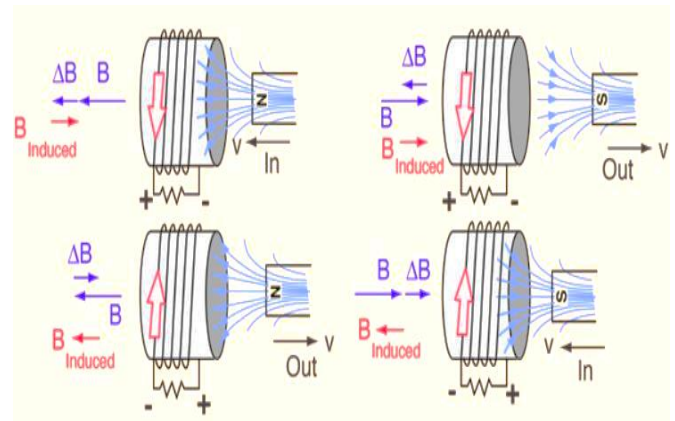
Figure 7. lens law

2.4 Block Diagram
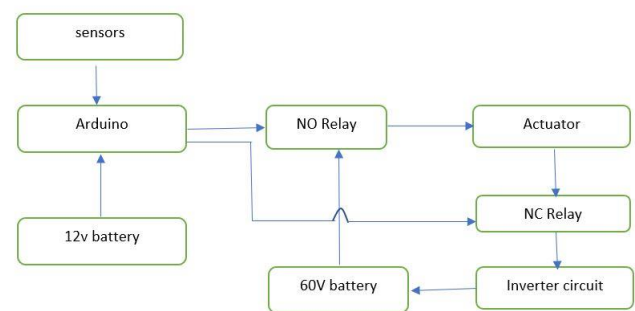
Figure 8. Block Diagram

2.5 Working Process

1. As the vibrations occurred spring get compressed.
2. Because of fixed and moving magnet emf is generated in coil
3. The generated voltage is stored in battery.

IV. CONCLUSION AND FUTURE SCOPE

This review paper is all about discussion and development of energy regeneration opportunities in suspension system. While studying, we focused on how to reuse the dissipated heat to create green energy also we designed a regenerative electromagnetic suspension system whose fuel efficiency of vehicle is more traditional suspension system. This system can be implemented in 4-wheeler vehicle by using this we can regenerate high amount of electrical power which further can be used for Air conditioning and other electric appliances of vehicles

For heavy vehicle's it gives more energy generation so it can be seen in vehicle's like Truck, containers in upcoming years and also it can be used in hybrid vehicles to increase their performance and efficiency of vehicles.

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Dynamic Suspension Stability System

Piyush Bhosale, Pratik Dolare, Kushal Patil, Akshay Shelar

Mechanical Engineering, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

Conventional Suspension systems are based on passive oil dampers having many drawbacks. These drawbacks are overcome by Dynamic suspension stability system. The stiffness of the damper in this system can be varied automatically using sensors while the vehicle is in motion. This accounts for the stability during cornering and increases ride control. Anti-dive and Anti-squat of the vehicle can also be controlled using this system. The energy that was lost in the equivalent conventional suspension system during bumps can be regained using the damper of the new system. This system as a whole replaces the conventional suspension system. This system is more efficient than the conventional system and the overall efficiency of the vehicle (mileage) increases.

Keywords: Active Suspension System, Electromagnetic Actuator, Cornering, Ride Control.

I. INTRODUCTION

The Dynamic suspension stability system is a major upgrade over the conventional suspension system. In a Conventional suspension system, it is not possible to achieve stability during various dynamic conditions of vehicles such as during cornering, acceleration or braking because of the reason that in conventional system a mechanical oil damper is used which just dampens the shocks and its value of damping is fixed and cannot be changed according to the required conditions. The stiffness cannot be varied as required, it is tuned beforehand. One of the drawbacks of this system is that the vibration energy produced in the system during bumps or potholes is lost in the form of heat.

Our project deals with these disadvantages and stabilizes the vehicle by adjusting the stiffness of the damper while the vehicle is in motion. For various dynamic conditions the ECU automatically processes the data from the sensors and the required stiffness is achieved. The setup being complicated is time consuming and costly and hence is not being used in commercial vehicles. However, advances in technologies and new inventions happening all over the world daily this system proceeds towards perfection.

The Conventional suspension system has many drawbacks like lack of vehicle stability during cornering, loss of energy produced due to vibrations in the form of heat, lack of Anti-dive and Anti-squat stability. It gives comparatively less ride comfort, less driver and passenger safety. If the system is replaced by Dynamic Suspension Stability System then control over all these defined parameters is possible. It will be a better replacement over the conventional system.

The design of the system is such that when a force or load in applied in a certain direction the stiffness of the suspension is changed accordingly. Considering the dynamic forces acting on the vehicle the required calculations are carried out and processed by a powerful electronic control unit.

II. LITERATURE REVIEW

Suspension system installed in a vehicle gives a support to vehicle body and provides ride quality[1]. There is need to develop a system which is inexpensive compared to conventional system and also gives better ride quality[5]. Electromagnetic suspension system (active suspension system) helps in minimizing the shocks on vehicle body due to uneven load and while cornering[8]. This system could help in achieving high safety in vehicle and also there is future scope for regeneration.

III. COMPONENTS

The components used in this setup are as follows

2.1 The Control Unit:

1) Sensors: The hall effect Mh-series speed sensor and an accelerometer ADXL345 are placed in the vehicle.
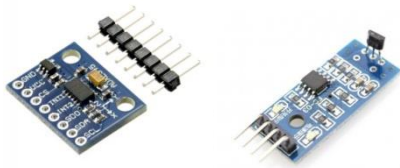
Figure 1. ADXl345 and Mh series sensor.

2) Processor: Arduino Nano comes with a powerful ATmega328 microcontroller which gathers data from the sensors used and sends the required output according to the code.

Figure 2. Arduino Nano.

3) Relays: Two relays of input 5V and output 30V DC are used in the circuit which are controlled by the processor which in turn control the power output from the battery.

Figure 3. Two Relay modules.

4) Battery: 12V batteries connected in parallel to get the required voltage output.
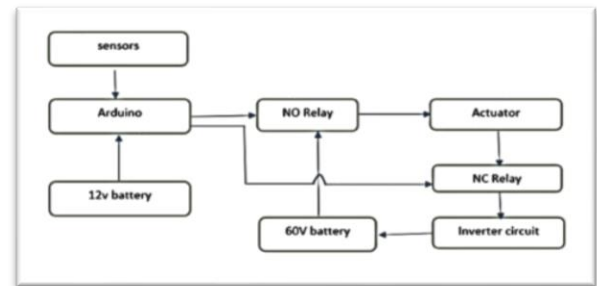
Figure 4. The Block diagram of the control unit

2.2 Electromagnetic Actuator:

1) Permanent magnets: Neodymium N-45 magnets.

Remanence field	1.75T
Outer diameter	40mm
Inner diameter	5mm
Thickness	12.5mm
Iron core thickness	8mm

Figure 5. Stack of neodymium and iron core

2) Copper Winding: 18-gauge insulated copper wire.

Figure 6. Winding of copper wire

3) Actuator Frame/Body with Spring: Aluminium casing with a spring made up of oil hardened tempered spring steel wire.

Figure 7. Electromagnetic actuator casing with spring.

IV. RESULTS AND DISCUSSION

The Electromagnetic Actuator is designed using CAD software (Solid works in this case) and appropriate material selection is done. Aluminium 6061 was selected for the casing and as for the piston rods stainless steel was used. The coil is winded on PVC pipe inside this casing and piston head made up of permanent magnets reciprocates inside this pipe due to force applied.
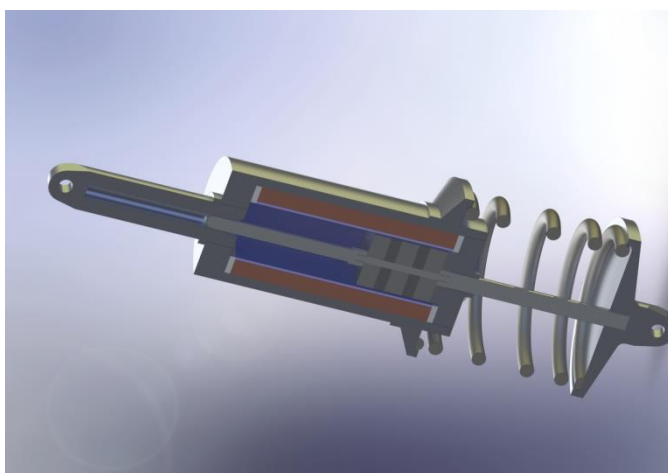
Figure 8. Cross sectional view of the electromagnetic actuator

The electromagnet produces magnetic field which produces an equal and opposite force to repel the piston head keeping the vehicle stable.

Analysis of the casing cylinder considering spring forces and electromagnetic forces is shown in figure 9.
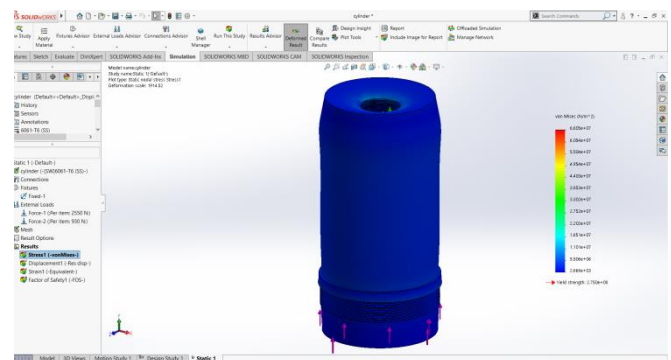
Figure 9. Force analysis of the casing cylinder (aluminium 6061)

The spring analysis considering the forces on the rear wheel of the wheel of the vehicle is shown in the figure 10.
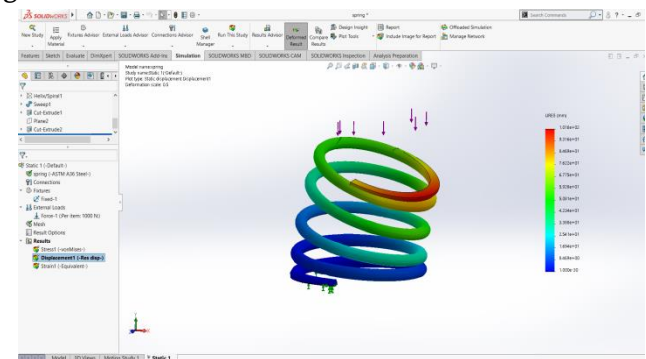
Figure 10. Force analysis of spring (spring steel wire)

The following results (forces) were obtained after successful experimentation of the electromagnetic actuator after applying a range of voltages.

Table 1

Volts	Amps	Force (kg)	Force (N)
10	2.5	0.4	3.924
20	5	0.7	6.867
30	7.5	1.2	11.772
40	10	1.8	17.658
50	12.5	2.4	23.544
60	15	4.2	41.20
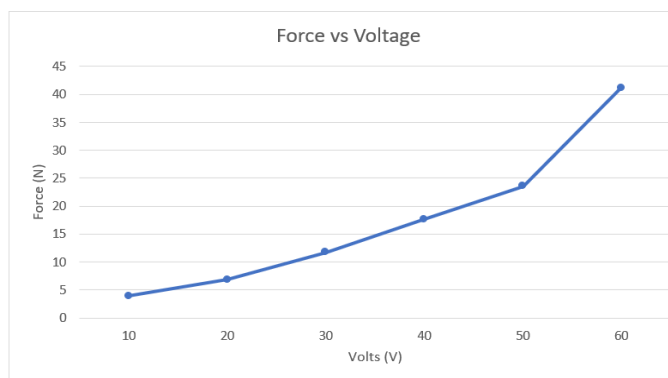
Figure 11. Voltage Vs Force graph

V. CONCLUSION AND FUTURE SCOPE

Considering the technological advances and improvements in electronics it can be safe to say that the scope for the dynamic suspension stability system is very high in the upcoming years in the field of automobile industry. The complications present today can be completely eradicated due to development of technology which promises a simple setup and a low-cost system. Thus, it can be safely assumed that the use of Dynamic suspension stability system in commercial vehicles can and will be implemented in the not so distant future.

Due to limitations in materials, components, lack of certain resources fewer goals were achieved. More optimizations and changes could be achieved in a newer model to obtain certain goals to get satisfactory results.

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Pneumatic Speed Breaker with Day and Night Control

Prof. Ganesh A. Kadam, Paresh Shimge, Gaurav Jogare, ShubhamPatil, Vishal Patil

Department of Mechanical Engineering, SKNSITS LONAVLA, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

On roads, speed breakers provided to control the speed of traffic in rushed areas. The potential energy in terms of weight of vehicle is loss on speed breaker can be utilized for useful purposes. This paper describes the potential energy of such type of energy available on roads and its utilization for useful work. The stages of development of a speed breaker device are described and the mechanism to generate electricity using rack, pinion and speed increasing gear box and generator and store compressed air with the help of piston cylinder compressor arrangement. Whenever the vehicle is allowed to pass over the speed breaker dome, it gets pressed downwards. As the springs are attached to the dome, they get compressed and the rack, which is attached to the bottom of the dome, moves down in reciprocating motion

Keywords- Speed Breaker, Rack &Pinion, Gear, Air Compressor, Generator.

I. INTRODUCTION

On road vehicles waste a tremendous amount of energy on speed breakers, where there is a necessity to provided speed breaker to control the speed of the vehicles. The annual rate of growth of motor vehicle population in India has been almost 20 percent during the last decade. There is tremendous vehicular growth in year by year. The increasing traffic and number speed breakers on roads motivate to manufacture an innovative device which can channelize the energy of vehicles that is wasted on speed breakers to some useful work. In this practical manufacturing processes and steps of speed breaker device for generation of compressed are described which can be used to generate compresses air on highways in remote areas. The reciprocating air compressors are used for pressurized air generation taking advantage of design simplicity and also these are the most common type of compressors found in various applications. This paper based on the principle of reciprocating air compressor in which compressor compresses the air by reducing the volume of air that has been isolated. we put our machine underground of road exactly below speed barker, the head of piston rod is bring up to level of road surface. When vehicles move on rack it will be pushed down. The piston is reciprocating in the cylinder. The piston and cylinder arrangement convert reciprocating motion in to air compression. The second part is specially planned to design and fabricate the conversion unit for utilizing the available unconventional energy source. That is tremendously available energy in low intensity with ample quantity can be utilized. This machine converts reciprocating motion in to rotary motion. The rotational power is converted into the electrical energy by using speed increasing gear box and generator that generate electricity. And this generated electricity is used in various applications.

II. LITERATURE SURVEY

PNUEMATIC SPEED BREAKER WITH DAY AND NIGHT CONTROL

S.Vigneswari1, V.Vinodhini (2014), "Compressed Air Production Using Vehicle Suspension" in this paper Nonconventional energy system is very essential at this time to our nation. Compressed air Production using vehicle suspensor needs no fuel input power to produce the output of the air. For this project the conversion of the force energy in to air. The control mechanism carries the air cylinder (vehicle suspensor), quick exhaust valve, and Nonreturn valve and spring arrangement. We have discussed the various applications and further extension also. The initial cost of this arrangement is high.

III. PROBLEM STATEMENT

- Design and develop a prototype model of showing the concept of PNEUMATIC SPEED BREAKER WITH DAY NIGHT CONTROLLER which will show the working of application of brakes speed breaker while driving on speed breaker.
- Also fabricate the model of the same which will show the working desired by emergency braking on slopes in hill station roads.

IV. GOALS & OBJECTIVES

- To Design and develop a prototype model of showing the concept of Pneumatic speed Breaker with day night controller while driving on speed breaker.
- To fabricate the model of the same which will show the working desired by emergency braking on slopes in hill station roads.
- To provide safety options while driving in speed breaker.

- To test the model under different conditions of speed.

V. PROPOSED SYSTEM

Our project automatic speed breaker is a new concept in this field and its innovative too. The device mainly consists of a speed breaker which is operated with the help of electric power. This system is mainly employed in the areas where the need of speed breaker is restricted to certain specific timings in areas like school and collage roads, theatre roads etc. and during the other hours the inconvenience of the speed breaker can be removed by folding down the speed breaker below the road surface. Hence they seem to be more effective in against over speeding and helps in traffic management.

We know that the number of automobiles, especially in cities is increasing at a tremendous rate so as the number of accidents due to over speeding. We consider this topic for not only with the academic interest but also we take it as our moral and social responsibility to reduce accidents with effective traffic management. Mostly the speed breakers are employed near sensitive and highly crowded areas like near schools and colleges, theater roads, shopping malls etc which will be crowded with vehicles too. So continuous employment of ordinary speed breakers creates much traffic block . but in such areas the use of speed breakers is needed only for few peak hours .So this project can be effective and useful in such areas.

This system is employed in countries like Germany, Austria, Swedenetc and was found very effective there. Researches are in progress by various agencies of government for the practical application of automated speed breaker in India. Modifications in the automated speed breaker can be used by police and other security agencies as they can be used as a big hindrance on the road against the motion of vehicles in the cases of emergency situations. Researches are also in progress to substitute the

electrical power from battery or other electric sources with renewable form of energies like solar energy, wind energy etc.
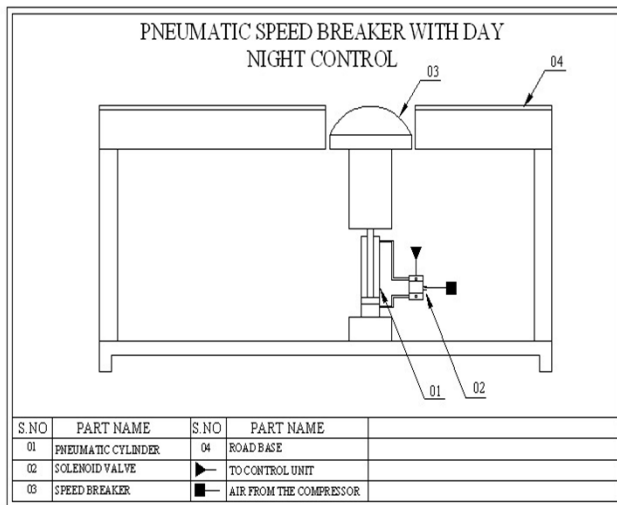
VI. SYSTEM ARCHITECTURE
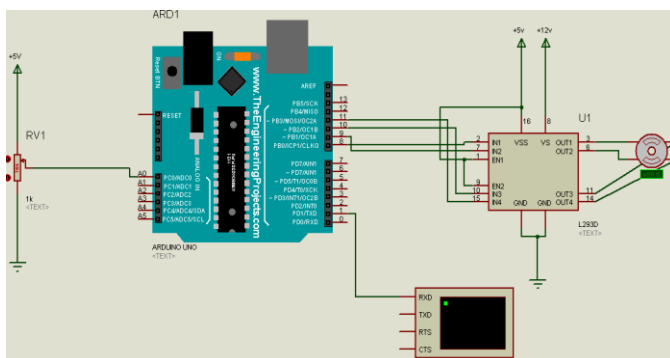
Fig.2 Architecture Diagram

<u>DESIGN</u>
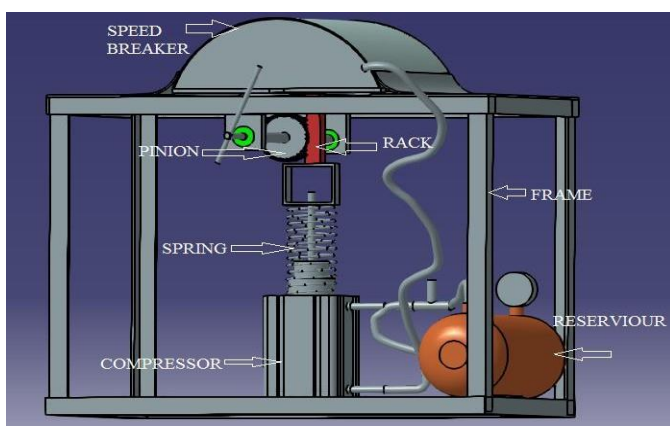
Fig. 3 Cad design

3.1 REQUIREMENTS SOFTWARE AND HARDWARE:

Hardware Requirements Specification:
- speed breaker
- rack and pinion
- spring
- frame
- compressor
- Pneumatic cylinder

Software Requirements Specification:
- Arduino Ide

3.2 HARDWARE REQUIREMENT

A.   BASE FRAME
L Channel- MS Angles are L-shaped structural steel represented by dimension of sides & thickness. For e.g. 25x25x3 means, both the sides of angles are 25 mm & thickness is of 3 mm. There are various sizes of angles which are as follows :-(there are also equal & unequal angles). Equal angles: - They are angles having both the sides of equal dimensions.
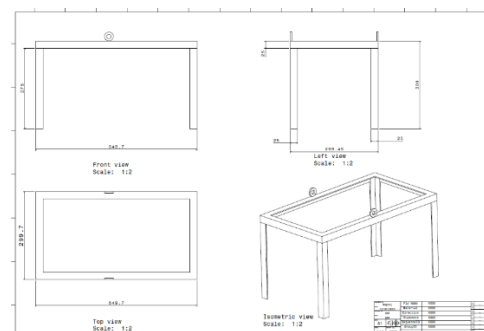
Fig. 4 Base Frame

B.   LCD DISPLAY
LCD stands for Liquid Crystal Display. LCD is finding wide spread use replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

1.   The declining prices of LCDs.

2. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters.

3. Incorporation of a refreshing controller into the LCD, thereby relieving the CPU of the task of refreshing the LCD. In contrast, the LED must be refreshed by the CPU to keep displaying the data.

4. Ease of programming for characters and graphics.

These components are "specialized" for being used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.

Fig.5 LCD Display

MANUFACTURING AND SELECTION OF MATERIAL

The proper selection of material for the different part of a machine is the main objective in the fabrication of machine. For a design engineer it is must that he be familiar with the effect which the manufacturing process and heat treatment have on the properties of materials. The choice of material for engineering purpose depends upon the following factors.

1. Availability of the materials.
2. Suitability of materials for the working condition in service.
3. The cost of materials.
4. Physical and chemical properties of material.
5. Mechanical properties of material.

The mechanical properties of the metals are those, which are associated with the ability of the material to resist mechanical forces and load. We shall now discuss these prosperities as follows. Required properties for the selection of material are Strength, stress, stiffness, elasticity, plasticity, ductility, brittleness, toughness, resilience, creep, hardness. The science of the metal is a specialized and although it overflows in to realms of knowledge it tends to shut away from the general reader. The knowledge of material and their properties is of great significance for a design engineer. The machine elements should be a material which has properties suitable for the conditions of operations. In addition to this a design engineer must be familiar with the manufacturing processes and the heat treatments have on the properties of the materials. In designing the various part of the machine it is necessary to know how the material will function in service. For this certain characteristics or mechanical properties mostly used in mechanical engineering practice are commonly determined from standard tensile tests. In engineering practice, the machine parts are subjected to various forces which may be due to either one or more of the following.

1. Energy transmitted
2. Weight of machine
3. Frictional resistance
4. Inertia of reciprocating parts
5. Change of temperature
6. Lack of balance of moving parts

The selection of the materials depends upon the various types of stresses that are set up during operation. The material selected should with stand it. Another criterion for selection of metal depends upon the type of load because a machine part resist load more easily than a live load and live more easily than a shock load. Selection of the material depends upon factor of safety which in turn depends upon the following factors.

1. Reliabilities of properties.
2. Reliability of applied load.
3. The certainly as to exact mode of failure.
4. The extent of simplifying assumptions.
5. The extent of localized.
6. The extent of initial stresses set up during manufacturing.
7. The extent loss of life if failure occurs.
8. The extent of loss of property if failure occurs.
9. Materials selected in machine.

3.3 APPLICATIONS AND ADVANTAGES

APPLICATIONS

Our project has wide range of applications like:

- All Road ways.

ADVANTAGES
- Easy for maintenance.
- Non polluting energy sources.
- Multipurpose.

VII. CONCLUSION AND FUTURE WORK
- The bearings can be replaced with more durable plumber bearings reducing the chance of failure.
- The material of the rollers can be made lighter so as to increase the efficiency. The mild steel used in this model can be replaced by aluminium alloy 6063 or 6061.
- Such speed breakers can be designed for heavy vehicles.
- More suitable and compact mechanisms to enhance efficiency.

VIII. ACKNOWLEDGMENT

Development and commercialization of technologies are needed in this field. India, unlike the top developed countries has very poor roads. Talking about a particular road itself includes a number of speed breakers. By just placing a unit like the Pneumatic speed Breaker with day night controller", so much of energy can be tapped. This energy can be used for the lights on the either sides of the roads and thus much power that is consumed by these lights can be utilized to send power to these villages.

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Review on Onion Plantation Mechanism

Surve Akshay, Khatmode Akshay, Sali Rahul, Sutar Sumit

Mechanical Engineering, Savitribai Phule Pune University, Pune , Maharashtra, India

ABSTRACT

The onion (Alilum cepa L.) is one of the important commercial vegetable crops grown on a large area in India and abroad for local consumption as well as export purpose. Onion growers are facing lot of problems in transplanting of onion seedlings with the shortage of farm laborers during transplanting seasons. Therefore, efforts were made to develop power operated semiautomatic onion transplanter. The elemental uses for small scale cropping appliances are, they should be suitable for small farms, simple in design and technology and versatile for use in different farm operations. This reduces the labor requirements which have been the principal motivating force in mechanization. This paper provides guidelines for developments in onion Trans-planters used in India. Onion planting is very old method from many years ago & having long history since many years & their methods of onion planting are changed in this decade. Use of onion Trans planter machines is new trend but current machines having high cost of purchase. So the main focus of this project is to minimize the cost of that machine. In the agricultural field, onion planting operation is very time consuming in farming process. Also more labors are required for onion planting. Hence the total cost of the farming increases. The conventional onion transplanting machines requires more onions and quantity of onions per unit area increases and this affects the yield. But to reduce the risk of draught due to unpredictable rainy season and for irrigation purpose farmers accepts ridge and furrow method. Here in this study efforts are taken to design and develop a onion planting machine which is suitable for ridge and furrow method.

Keywords: Onion, Mechanical Transplanter, Chain Transplanter, Power Operated Transplanter.

I. INTRODUCTION

Onion is one of the most important commercial bulbous vegetable crop grown in India from ancient times. The area under onion is about 7 per cent of total area under vegetables in the country (Anonymous 2004-05). In terms of area, India ranks first in the world with over 0.48 mha accounting for around 21 per cent of the world area planted with onion. Globally, the country occupies the second position after China in onion production with a production share of around 14 per cent. Productivity, however, is around 11.72 t/ha, which is lower than the world average of 18.45 t/ha as well as Asian average of 16.80 t/ha. The production share of different vegetables in 2004-05 shows a wide variation. The potato with share of 28.8 % had maximum contribution whereas pea had minimum contribution of 1.9% in vegetable production. The onion crop contributed 7.4 % in total vegetable production thus, had an important place in vegetables. In India, the top ten onion producing states contribute about 90 per cent of total production. Maharashtra is the largest onion producing state followed by Gujarat and Bihar.

Traditional Methods: Traditional methods include broadcasting manually, opening furrows by a country plough and dropping onions by hand and dropping

onion seed in the furrow through a bamboo/metal funnel attached to a country plough. For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand, is practiced. Multi row traditional seeding devices with manual metering of seeds are quite popular with experienced farmers.

II. PROJECT COMPONENTS

1. Supporting frame
2. Drive system
3. Metering mechanism
4. Onion-set placement mechanism
5. Furrow openers
6. Covering devices.

Table 1. SPECIFICATION OF COMPONENTS

Sr. No.	Name of Component	Specification of	Quantity
1	Chain	Pitch=15 mm Width between inner plate=10mm	1
2	Sprocket	Diameter=10 inch and 3 inch	2
3	Shaft	Diameter= 20mm and 25 mm	2
4	Wheels	14-15inch dia.	2

III. III. MATERIALS USED

1) Sprocket- The material used for sprocket is mild steel due to its tensile strength and modulus of elasticity
2) Shafts- The material used for shafts are mild steel also because of high tensile strength and durability
3) Chain- The material used for chain using is mild steel.

DESIGN OF EXPERIMENTAL SETUP
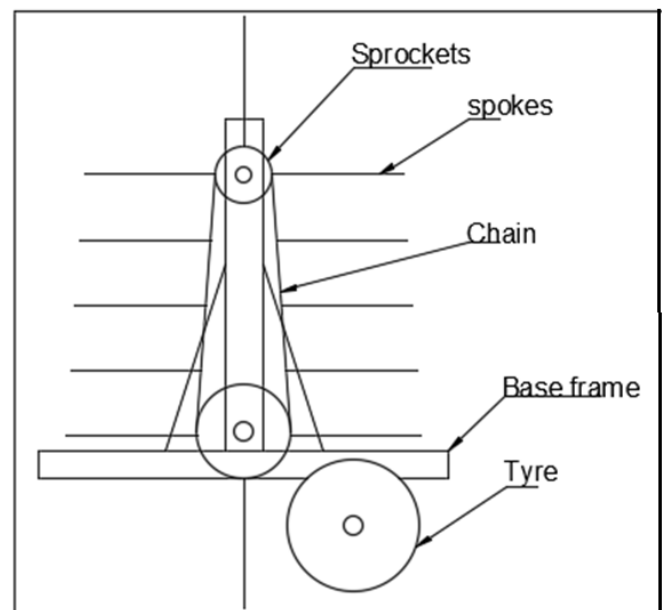
Figure 1

The purpose of the onion-set planter is to plant sets evenly in a furrow. To do this in the desired manner, the planter must perform a number of important functions. The planter must:

(1) Open the furrow to the proper depth.
(2) Meter the sets.
(3) Deposit the sets in the furrow in an acceptable pattern.
(4) Cover the sets with soil, and
(5) Compact the soil around the sets without physical damage to the sets.

IV. USEFUL FORMULAE

1) Center distance:

= /8[2 –(+)+√(2 –(+))2–8/ 2·(–)2] in inches

2) Chain length in pitches:

L= (2C/p)+((N+n)/2)+((P((N-n)/2*3.14)^2)/C)

3) Shaft diameter:

D= P/sin(tau/2) PCD

Where,

C = center to center distance

L = chain length in pitches

P = pitch of chain

N = number of teeth on large sprocket

N = number of teeth on small sprocket

IV. METHODOLOGY

1. Literature Survey & its review.
2. Study of different inversion of four bar mechanism.
3. Design of suitable mechanism for conversion of rotary motion into oscillatory motion.
4. Strength analysis of proposed planting mechanism.
5. Cost estimation of project.
6. Frame manufacturing and mechanism creating.
7. Final design and fabrication of different parts.
8. Experimental set-up design & Experimental testing.
9. Verification of results.

V. DESIGN CRITERIA

1. Use of pregraded onion-sets
2. Uniform rate of planting and uniform distribution of sets
3. Free gravity flow of onions
4. Easy adjustment of all components of the planter to control the planting rate, width, and depth
5. Opening the furrow
6. Covering the onion-sets with soil
7. Firming the soil without damaging the sets
8. Avoid injury to onion-sets throughout the planting operation
9. Design simplicity
10. standardization
11. Product safety.

ORGANIZATION OF DISSERTATION

1. To design mechanism for plantation of onion plants.
2. Analysis of the mechanism.
3. Design the parts of system including frame on the strength basis.
4. Testing the setup of actual use.
5. It should helpful in farming operations at lower cost.

TYPES OF PLANTERS

Planting and seeding equipment may be divided into four major types:

1. Row crop planters - used for planting crops such as corn or grain sorghums
2. Grain drill and air seeders - used for planting small grain
3. Broadcast seeders - used for planting grains and grass
4. Specialized planters.

VI. OBJECTIVES

1. To design mechanism for plantation of onion plants.
2. Analysis of the mechanism.
3. Design the parts of system including frame on the strength basis.
4. Testing the setup of actual use.
5. It should helpful in farming operations at lower cost.

SCOPE OF STUDY

Onion production is not always profitable for farmers owing to certain risks associated with it. National Horticulture Research and Development Foundation data shows that between 2008-13 farmers sold more than a third of their onions at a price below their cost of production, incurring losses for most of the year. On the other hand, during the same period, the

cost of input material for farming took a huge jump. While the cost of seeds shot up by around 300 percent, fertilizers, weed killers and insecticides also became expensive.

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Treadmill Bicycle

Prashant Date[1], Vivek Kumar[2], Shubham Saurabh[2], Shubham Waghmare[2], Ankit Sao[2]

[1]Assistant Professor, Mechanical Department, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India.

[2]Department of Mechanical Engineering, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India.

ABSTRACT

This paper deals with Treadmill Bicycle which is conversion of a conventional bicycle and treadmill into treadmill bicycle. This is one type of bicycle in which a man run or walks on the treadmill and the belt butts up against the rear wheel propelling the bicycle forward. This bicycle is designed for those humans who love to run outside in open environment .This Treadmill bicycles combines the best exercise running and cycling to deliver a low-impact, high-performance workout outdoors, which provides a straight forward efficient aerobic workout. In this project we design, fabricate and also study the treadmill outdoor exercise and their effect on health and enlisted the advantages, disadvantages and future scope of treadmill bicycle exercise and use.

Keywords: Treadmill , Walking Belt, Roller,Bicycle Wheel

I. INTRODUCTION

This project modifying a conventional bicycle to treadmill bicycles to better fit the needs. Treadmill bicycle is design and develop for those users who love to run or walk outside in open environment. In this project Treadmill fitted on bicycle frame and constructs a big innovation named 'TREADMILL BICYCLE'. This bicycle is basically a new concept of jogging and exercising. As we know how important exercise is in his stressful world so it helps to maintain our health as it works through human effort.

1.1 Problem Statement

People use treadmill for the purpose of jogging and running. The main drawback of treadmill is that it is stationary and do not give any natural and environmental exposure.

This project overcomes the drawback of the conventional treadmill which is stationary which in fact does not provide the jogger to get exposed to natural atmosphere. This bicycles is also for travelling short distance. So, we come up with the a concept of "Treadmill Bicycle".

1.2 Objectives

The Treadmill bicycle is totally a new concept of two commodities treadmill and bicycle. It make workout more interesting and healthier as we get fresh air from environment. This cycle turn out to be eco-friendly without emission of harmful pollution. Moreover it saves fuel thus helping in saving the natural resources. It is the best substitutes in short distance travelling. People with a busy schedule will also be able to take care of their health and physical fitness. Above all, it is not a conventional treadmill to make use of only in closed rooms, person using treadmill bicycle can roam on roads also.

II. COMPONENTS AND MATERIAL

Treadmill

It consists of a frame, set of rollers, treadmill belt etc. It is the major part of the treadmill bicycle. There is a frame on which many rollers are attached and a treadmill belt covers the entire rollers mounted on the frame. As the user walks or runs on the treadmill belt, the belt starts to rotate and due to the rotation of the belt the rollers inside the belt also get rotated.

Figure 1. Treadmill

Walking Belt

A treadmill belt is the actual surface over which the user runs or walks so as to get the forward motion. The standard size of the belt is 19" wide by 50" long. It is important that the belt should have good surface roughness in order to avoid the slipping of the user on the belt. The treadmill belts are generally made up of Polyvinyl Chloride(PVC) and Nylon.

Figure 2. Walking Belt

Bearings

A bearing is a mechanical element that constrains the relative motion to only the desired motion so as to reduce the friction between the moving components.

Thebearing used is a deep groove ball bearing and it is made up of pressed steel. In order to get proper relative motion between the contact surfaces of the member it is important to reduce the frictional resistance and wear by using effective lubricant such as mineral oils. An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

Figure 3. Bearing

Rollers

They are the cylindrical mechanical elements which are mounted on the treadmill frame. There are many rollers which are mounted on the treadmill frame. Due to the running or walking on the treadmill belt by the users, the belt rotates which in turn rotate the rollers. They are generally made up of mild steel as it has to sustain whole weight of the user.

Figure 4. Roller

Bicycle Wheels

It is a circular mechanical component which rotates on the axle bearing. It is the very important part as it gives the forward motion to the bicycle. Wheels and axles holds the complete load of the user riding the bicycle and also gives the required movement to the bicycle and makes the bicycle an efficient means of transportation.

Figure 5. Bicycle Wheel
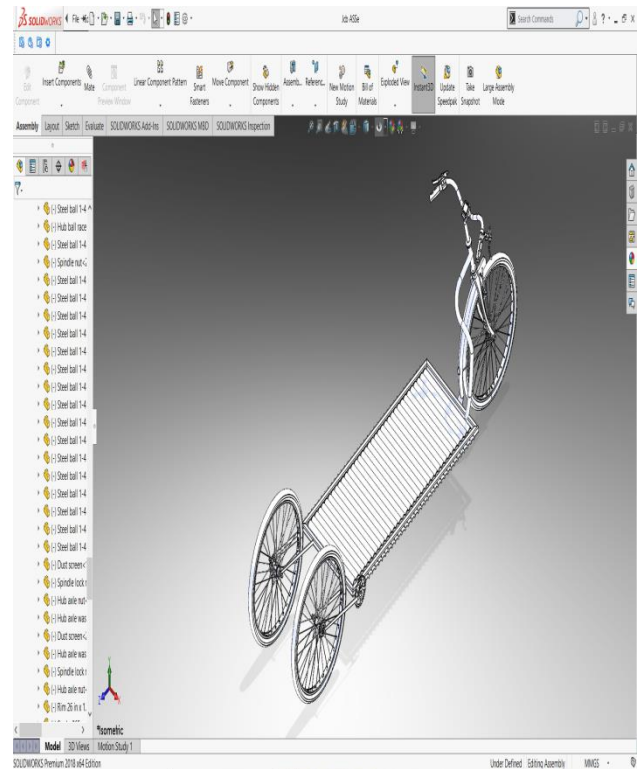
CAD Model

Figure 6. CAD model

III. WORKING

The working of the treadmill is very simple, for that the user has to run on the treadmill. As soon as the belt rotates, the belt itself rotates the rollers attached to it. This roller has a connecting shaft which rotates simultaneously with the rollers. There is a chain drive which is coupled with the connecting shaft, due to the rotation of the connecting shaft the chain drive also get rotated. This chain drive the rear wheel with the help of sprocket mounted on it and thus produce the forward motion. The treadmill driven cycle is constructed by the above mentioned components over the base frame. There are five rollers fitted next to next by certain distance and the belt is connected over the rollers which cover the rollers. The spur gear arrangement is connected to the rear roller for achieving forward motion of the vehicle.
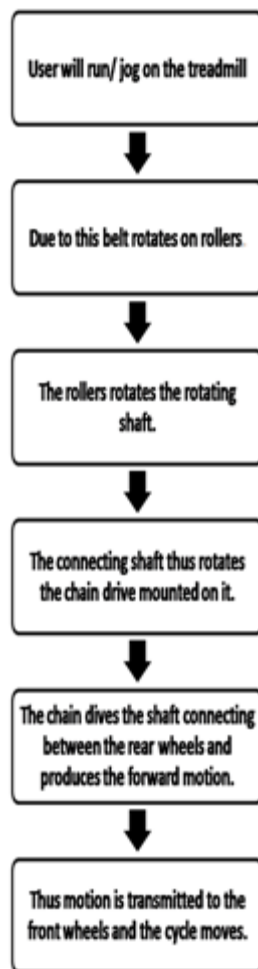
Figure 7. working flowchart

IV. ADVANTAGES

The Environment friendly and Pollution free transportation. Multiple users can use the same equipment without adjusting the structure. Running on a treadmill generally burns calories faster than most other forms of exercise.

Treadmill bicycle helps in maintaining proper physique. Physical fitness is of most importance in day to day life. People often get bored while exercising in a closed room such as gym. By using treadmill bicycle one can exercise outdoors in fresh air.

The treadmill bicycle has a predictable surface that is much easier to negotiate than sidewalks, curbs or trails and the risk of tripping is reduced.

V. DISADVANTAGES

Treadmills bicycles provide a limited kind of exercise and walking to running so some people find treadmills boring after a while. It will be difficult to drive on slope surface.

VI. RESULTS AND DISCUSSION

The treadmill driven the bicycle is designed and develop by the above mentioned components and assembly design over the base frame of conventional bicycles. There are rollers which fitted next to next by certain distance and the belt is connected over the rollers which cover the rollers. The chain and sprocket gear arrangement is connected to the rear roller for achieving forward motion of the this Treadmill Bicycles and from above discussion and various experiment after completing this project work, we came to a common results that is our treadmill bicycles is practically feasible on the ground.

VII. FUTURE SCOPE

The treadmill bike can be modify by using of electric and mechanical part assessment battery, gear and automatic sensors in future. It can be used as an indoor locomotive device infrastructure with large roof span i.e. malls, warehouse, super markets, sports academy open markets, large office spaces, etc. By using such type of Treadmill bicycles pedestrian cops can save themselves from getting exhausted in large campuses can benefits from this product the same way. we can replace cycle as an energy efficient vehicle for those who cannot drive a cycle.

VIII. CONCLUSION

Treadmill bicycles can be used efficiently anywhere either it is outdoor or indoor for different purposes. This bicycle utilizes the fuel saving technology that is a major required technology of this modern era. This

bicycle does not promote any type of pollution and provide more exercise with travelling in natural exposure. By using such type of bicycles we can travel in large campuses can take benefit from this product by the same way. We can replace cycle as an energy efficient vehicle for those who cannot able to drive a normal bicycle.

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Design and Fabrication of Engine Head Cleaning Machine

Prashant Date[1], Ashwin jose[2], Ambrish Kumar Thakur[2], Payghan Snehal Balasaheb[2], Md. Faizan Alam[2]

[1]Assistant Professor, Mechanical Engineering Department, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

[2]Mechanical Department Engineering, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

Automobile maintenance is a major area in the industry of automobile and also a major income to the business. Present, engine maintenance can be stated as a very important section in automobile maintenance and the valve lapping process that is subjected in this thesis is done during engine maintenance. Methods used in most automobile maintenance for valve lapping process are not effective and consume a lot of working hours. 'Valve lapping Machine is a machine designed to overcome these problems by minimizing the human involvement in process. It consist of the background in designing the machine, results obtained by data analysis in order to optimize the design and design of the valve lapping machine. Lapping is a machining process in which two surfaces are rubbed together, by hand movement or using a machine. This can take two forms.The first type of lapping involves rubbing a brittle material such as glass against a surface such as iron with an abrasive such as aluminum oxide, jeweller's rouge, optician's rouge, emery, etc., between them. This produces microscopic conchoidal fractures as the abrasive rolls about between the two surfaces and removes material .The other form of lapping involves a softer material such as pitch or a ceramic for the lap. The softer material, which holds it and permits it to score across and cut the material. Taken to a limit, this will produce a surface such as with a polishing cloth on an automobile, or a polishing cloth .Taken to the ultimate limit, with the aid of accurate interferometer and specialized polishing, lens makers can produce surfaces that are flat to better than 30 nanometers. Surfaces flat can be molecularly bonded by bringing them together under the conditions.

I. INTRODUCTION

Engine Head Cleaning or the process of creating a good seat between engine valves and the corresponding valve seat area in the IC engine head is a task which have to be done very accurately. The importance of obtaining a good sea is that the air/fuel mixture or airis prevented from flowing in to the combustion chamber, same as the exhaust gas is prevented from flowing to the exhaust manifold from the combustion chamber until the right time. And also a good seat prevents compression leaks. The engine will lose its efficiency by huge percentages if any of the situations explained above happens.
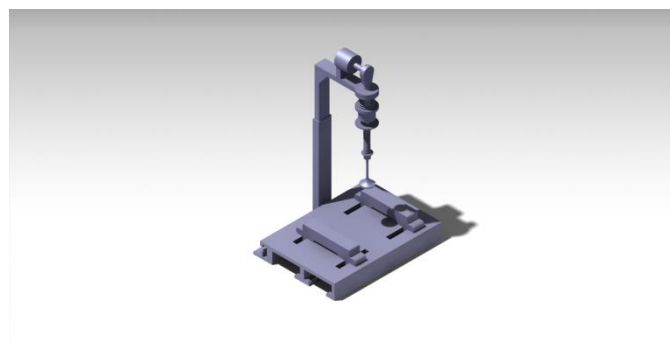
Figure 1. Engine Head Cleaning

So as this is a very important task in IC engine maintenance, extra attention is given to this particular task by technicians. This process of valve lapping is typically done using a lapping stick. these process can be replaced by the ' Valve Lapping Machine for Internal Combustion Engines', specifically designed for the process of engine valve lapping. It is fully mechanical system which performs two different motions in two directions previously performed by hand when using valve lapping stick. The valve lapping machine is very effective because the human involvement is limited in the process. A valve job is an operation which is performed on internal combustion engine, the purpose of which is to resurface the mating surfaces of the poppet valves and their respective valve seats that control the intake In the earliest automotive engines, the valves needed to be removed and the sealing surfaces sanded, ground or lapped multiple times during. As the decades passed, however, engines ran cleaner and the addition of tetraethyl lead in gasoline meant that such maintenance became more frequent. Today, valve jobs are done on passenger cars for the purpose of maintenance, although they are still quite common with high-performance cars. Some reasons that may induce the need for a valve job in a modern passenger include: excessive RPM, high mileage, overheating, material failure, and foreign object damage (FOD)

II. OBJECTIVE

The main goal of this project is to design a machine efficient and effective than previously used methods for process and to reduce the labor cost by reducing the human involvement in the work .The objectives that had to be achieved in order to achieve the main goal were designing the basic model of the machine designing the valve lapping mechanism, assembly of the machine by designing the parts needed, designing the cam, analyzing data and categorizing them in order to design holding pieces, analyzing data to obtain the specifications of the machine, obtaining

two high torque dc motors that has specific RPM values and deciding what materials must be used in order for the design to be durable and economical.

Problem Definition

The main purpose of the project is to minimize the human effort with excellent machines with precision although the time required for the process is the same for manual as well as the machine but, if we use a machine instead of the person the person can do another job by this time. Also the efforts which are given by employee will be reduced.

Scope

1.The objective of this work is to develop a New Automatic operated Machine of Engine Head Cleaning.
2.This concept allows us to achieve our goal as well as better space management.
3.The new model takes into account all the real time conveying system and provide solution over their short coming.
4.The New model will get good efficiency compare to old method

III. LITERATURE REVIEW

Effect of EGR on the exhaust gas temperature and exhaust opacity in compression ignition engines

In diesel engines, NOx formation is a highly temperature-dependent phenomenon and takes place when the temperature in the combustion chamber exceeds 2000 K. Therefore, in order to reduce NOx emissions in the exhaust, it is necessary to keep peak combustion temperatures under control. One simple way of reducing the NOx emission of a diesel engine is by late injection of fuel into the combustion chamber. This technique is effective but increases fuel consumption by 10–15%, which necessitates the use of more effective NOx reduction techniques like exhaust gas recirculation (EGR). Re-circulating part of the exhaust gas helps in reducing NOx, but appreciable particulate emissions are observed at high loads, hence there is a trade-off between NOx and smoke emission. To get maximum benefit from this trade-off, a particulate trap may be used to reduce the amount of unburnt particulates in EGR, which in turn

reduce the particulate emission also. An experimental investigation was conducted to observe the effect of exhaust gas re-circulation on the exhaust gas temperatures and exhaust opacity. The experimental setup for the proposed experiments was developed on a two-cylinder, direct injection, air-cooled, compression ignition engine. A matrix of experiments was conducted for observing the effect of different quantities of EGR on exhaust gas smoke opacity has been developed. Experiments were carried out using the setup to prove the efficacy of EGR as a technique for NOx reduction. It is seen that the exhaust gas temperatures reduce drastically by employing EGR. This indirectly shows the potential for reduction of NOx emission. This can be concluded from the fact that the most important reason for the formation of NOx in the combustion chamber is the high temperature of about 2000K at the site of combustion. Thermal efficiency and brake specific fuel consumption are not affected significantly by EGR. However particulate matter emission in the exhaust increases, as evident from smoke opacity observations. Diesel engines score higher than that of other engines in most aspects like fuel consumption and low CO emissions, but loses in NOx emissions. EGR is proved to be one of the most efficient methods of NOx reduction in diesel engines. The increase in particulate matter emissions due to EGR can be taken care by employing particulate traps and adequate regeneration techniques. Our sincere thanks to the staff of the Energy Conversion Laboratory, Department of Mechanical Engineering for their cooperation and assistance in setting up the experimental set-up and their help in performing experimental investigation.

Injector Fouling and Its Impact on Engine Emissions and Spray Characteristics in Gasoline Direct Injection Engines

In Gasoline Direct Injection engines, direct exposure of the injector to the flame can cause combustion products to accumulate on the nozzle, which can result in increased particulate emissions. This research observes the impact of injector fouling on particulate emissions and the associated injector spray pattern and shows how both can be reversed by utilising fuel detergency. For this purpose multi-hole injectors were deliberately fouled in a four-cylinder test engine with two different base fuels. During a four hour injector fouling cycle particulate numbers (PN) increased by

up to two orders of magnitude. The drift could be reversed by switching to a fuel blend that contained a detergent additive. In addition, it was possible to completely avoid any PN increase, when the detergent containing fuel was used from the beginning of the test. Microscopy showed that increased injector fouling coincided with increased particulate emissions. Based on these results a selection of the injectors was installed in a laboratory injection chamber and the spray patterns were investigated with a high speed camera. Injectors corresponding to the largest PN drift produced the thinnest spray jets with the deepest penetration. These factors amplify the risk of wall wetting and provide an explanation for the increase of PN. The positive effect of the detergent was also reflected in the spray pattern analysis, which illustrates the potential benefits of such fuel additives. Due to the fuel delivery design of direct injection gasoline engines, injectors are exposed to the harsh environment of the combustion chamber, which can lead to deposit formation on the injector tip. The resultant alteration of the fuel spray can increase engine emissions, particularly PN and PM.In order to study this effect and the potential of fuel detergency to reduce it, a set of injectors were deliberately fouled in an engine test cycle. The injectors were then cleaned with a detergent containing fuel in a similar engine cycle. During the first cycle an increase of particulate numbers of more than two orders of magnitude was observed. Fuels with detergent additives did not produce any significant increase in particulate emissions during this phase. When the engines operating with fouled injectors were run with detergent containing fuel, particulate emission reverted back to their original levels in most cases. Analysis of the injectors via microscopy confirmed that the fouling on the surface and nozzles of the injector tips correlated with an increase of PN/PM emissions during the engine test. Operating the engine with detergent containing fuel cleaned the injectors and resulted in decreased particulate emissions.Analysis of the spray patterns in a laboratory injection chamber backed-up the trends observed. Fouled injectors produced sprays with smaller cone angles and deeper penetration depths compared to clean injectors, which can promote wall wetting and lead to particulate emissions through rich fuel combustion. These results highlight a representative selection of the spray data available,

which allows comparison with the PMPN emission from the engine tests. Future work will focus on expanding the results with a systematic and numerical analysis of the spray images

PETROL ENGINE EXHAUST VALVE DESIGN,ANALYSIS AND MANUFACTURING PROCESSES

The aim of this paper is to design an exhaust valve for a four wheeler petrol engine using theoretical calculations. Manufacturing process that is 2D drawings is drafted from the calculations and 3D model and transient thermal analysis is to be done on the exhaust valve when valve is open and closed. Analysis is done in ANSYS. Analysis will be conduct when the study state condition is attained. Study state condition is attained at 5000 cycles at the time of when valve is closed is 127.651 sec valve is opened 127.659 sec.The material used for exhaust valve is EN52 steel. We are doing material optimization bydoing analysis on both materials EN52 and EN59.Static Modal analysis the exhaust valve to determine mode shapes of the valve for number In-direct benefit: This becomes a Poke- Yoke to avoid reverse material forging which is one of the critical customer complaint.

Combustion Analysis and Knock Detection in Single Cylinder DI-Diesel Engine Using Vibration Signature Analysis

The purpose of this paper is to detect the "knock" in Diesel engines which deteriorate the engine performance adversely. The methodology introduced in the present work suggests a newly developed approach towards analyzing the vibration analysis of diesel engines. The method is based on fundamental relationship between the engine vibration pattern and the relative characteristics of the combustion process in each or different cylinders. Knock in diesel engine is detected by measuring the vibration generated by the engine using The DC-11 FFT analyzer with accelerometer. Knock in diesel engine is mainly due to the engine miss .A diesel engine miss results from one or more cylinders when the fuel is not burning properly. Improper fuel burning is caused by Injection system problems which include, Faulty injectors, clogged fuel filters, incorrect Injection timing, Low engine compression, injection system leaks, Air leaks, faulty injection pump etc. Engine miss causes rapid

combustion with very high pressures generating a rumble or dull clattering sound. Abnormally loud sound with violent vibration is called "knocking or detonation". Engine cylinder vibration in FFT form is monitored at each load the cylinder excitation frequencies are compared with the base line frequencies using diesel oil. Time wave forms on the cylinder head are also recorded to analyze the combustion. Since the very combustion in the cylinder is the basic exciter, the vibration study of the engine cylinder through the measured FFT and time waveforms are the representatives of combustion propensity. Vibration accelerometer is mounted on the cylinder head, preferably on the bolt connecting the head and the cylinder to record the engine vibrations using DC-11 data logger which directly gives the spectral data in the form of FFT, the overall vibration levels. This FFT data recorded is collected by On-Time window based software designed by e-predict Inc., Argentina. The Time waveforms are obtained on the cylinder head by DC-11 in the OFF-ROUT.The vibration studies indicate that there is tradeoff between the vibrations Recorded in different directions on the cylinder head. There is also a tradeoff between the cylinder head vibration and the engine foundation vibration. Since the spectrum recorded on the cylinder head is the representative of the combustion inside the cylinder,it can be assessed that new mode of combustion has taken place with different excitation frequencies.In the crucial frequency range of 900Hz to 1300 Hz, the amplitude rise is abnormal to the tune of 0.45 g at full load run of the engine. This can be acclaimed to better torque conversion at this percentage.The time waves indicate longer time duration of combustion during firing stroke in the case of injection of water Knock is detected with water injection at 1/4 Full Load. Knock tendency decreases with increase of load with water injection.With Palm Methyl ester operation the engine has not developed any Knock tendency this may be due to thehigher Cetane number of Palm Methyl ester.At Part loads the engine may develop knock tendency but at higher

Cylinder Head Intake Port Design & In-Cylinder Air-flow Patterns,Streamlines formations,Swirl Generation Analysisto Evaluate Performance & Emissions

On the verge of rapidly increasing threat of global warming; the environmental emission norms are

becoming stringent. In-cylinder flow characteristics at the time of injection and subsequent interactions with fuel sprays and combustion are fundamental considerations for the engine performance and exhaust emissions of a diesel engine. Intake ports are designed to provide the optimum balance between air flow and desired in-cylinder air motion characteristics which is governed by the swirl and tumble motion during the intake stroke. The effect of intake port design on swirl generations, flow patterns and streamlines has been analyzed with CFD tool. The results of the CFD simulation will assist to improve understanding of the intake process of internal combustion engine and performance evaluation of intake ports and simulation resultscan be verified out by prototype testing on swirl testrig. In this paper, I have given more focus on developing intake port geometry to meet the swirl ratio required to meet emission and intake ports were simulated on CFD to know velocity vectors, different flow patterns and is used to predict/improve performance. CFD simulation of intake ports and prototype testing results compared to know the compatibility of CFD tool results. The arrangement and orientation of helical and directed port have an important effect on swirl ratio and intake flow interference and different swirl value can be optimized with different valve location andlayout on cylinder head further.

Material Removal Mechanisms in Lapping and Polishing

Polishing processes are critical to high value production processes such as IC manufacturing. The fundamental material removal mechanisms, howeve, are poorly understood. Technological outputs (e.g., surface finish, sub-surface damage, part shape) and throughput of lapping and polishing processes are affected by a large number of variables. Individual processes are well controlled within individual enterprises, yet there appears to be little ability to predict process performance a priori. As a first step toward improving process modeling, this paper reviews the fundamental mechanisms of material removal in lapping and polishing processes and identifies The physical scale of material removal processes in polishing is such that it is difficult (practically impossible) to observe them directly. Much of what we know about the fundamental mechanisms involved in the process has been derived either by correlating macroscopic measurements of process outputs with models, or by extrapolation from experiments at scales which can conveniently be observed. Process complexity and the murky nature of some of the scaling laws make such extrapolations risky. It is not surprising, therefore, that good predictive models of material removal in polishing processes are the exception rather than the rule. All, however, is not bleak. As we have shown, improvements in understanding of the basic interactions in polishing are providing models that correlate with some of the counterintuitive behaviours observed experimentally. None of the models seem to treat transitions well. The paper has also shown areas where substantial further work is required, for example in the (elasto)-hydrodynamics of CMP. Perhaps the least well understood aspect of the system is the lap, especially when that lap is faced with a pad.

Loading conditions appear to be key to understanding removal mechanisms. It is notable that the diamond Particle (granule) size Removal rate α β γ β' Particle (granule) size Removal rate α β γ β' $[A+\delta A]$ $P+\delta P$ $P+\delta P$ $[A+\delta A]$ $[A+\delta A]$ Baseline polishing results of Samuels and others, where pads are used, show a relationship between granule size and removal rate more similar to CMP than to diamond lapping processes. As noted above, frictional heating and hydrodynamic effects modulate the loading conditions. The process maps introduced in Section 8 offer a means to conceptualize transitions between mechanisms and their effect on removal rates. The idea may be extended to other important dependent variables (for example surface finish) and other process inputs (fluid viscosity etc.).This paper has attempted to characterize polishing via the fundamental interactions between four critical elements of the process. Understanding these interactions seems critical to improving our ability fto relate changes in process input variables to productivity and part quality. Currently the bulk of such predictions require that many of the less well understood process variables be "held constant". Longer term, development of new processes will be accelerated by fundamental physical understanding of the entire system. Aksu and Doyle's recent papers describing insitu electro-chemical measurements

during polishing provide insight into the formation of passivation films in copper CMP. They also provide a much needed (but perhaps unintentional) brake on our enthusiasm; as they point out, the optimum removal behavior (at pH 12) provides poor selectivity for oxide layers. The "*system examples*" presented in this paper discuss only a single material removal system. Such models must be subsumed into a system model of all the technologically important features of an economically viable production process.

Taguchi Method for Investigating the Performance Parameters and Exergy of a Diesel Engine Using Four Types of Diesel Fuels

The effectiveness of Taguchi methodology is underlined by replacing the required (44 = 256) tests, needed to decide the effect of parameters: engine speed, throttle and water temperature for four types of fuel by only 16 deciding experiments as indicated The throttle has a proportional relation to break mean effective pressure as a result of the increase in the quantity of injected fuel. The best operating point was accomplished at 75% of full throttle.Throttle position has no effect on volumetric efficiency of test engine.Water temperature is second most effective parameter on engine operation for minimum BSFC. The optimum temperature for improved brake thermal and exergic efficiencies is found to be 80oC.As the water temperature was increased the volumetric efficiency dropped. During the experiments, the maximum volumetric efficiency was recorded at a water temperature of 65oC.The optimum engine speed for the test engine, based on maximum volumetric efficiency, minimum BSFC and improved values of thermal and exergic efficiencies was 2500 rpm. Fuel specific gravity has a limited effect on BSFC. It is shown from the results that the reduction in power caused by the reduction in volumetric flow rate is compensated by increasing the fuel density

What is Engine Head Cleaning

In the process of Engine Head Cleaning in an internal combustion engine cylinder head, the goal is to achieve a good seat between valve seating area of an engine valve and the valve seat area of cylinder head in order to avoid the compression leaks through the seating from the combustion chamber and to avoid mixture leaking in to the combustion chamber through the seating. The internal combustion engine operates by achieving a certain compression ratio which is differing from engine and combusting a air-fuel mixture which is compressed to a certain volume decided by the compression ratio. And if the air-fuel leaks through the seating, the volume of the air- fuel will change and combustion process will not be accurate resulting a reduction in engine. It is vital to have a fully sealed combustion chamber and the valve seating is very important in acquiring a fully sealed chamber.

IV. CONCLUSION

The problem of holding engine valves was solved by designing valve holding pieces. Engine Head Cleaning mechanism was implemented replacing manual labor. Cylinder head supports has eased the moving of cylinder heads horizontally. Valve lapping mechanism was designed as a assembly of several parts easing any maintenance to the machine. All the designs could be completed successfully.

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Design and Fabrication of Automatic Pneumatic Double Axis Welding Machine

Gharge Akshay M., Jadhav Suyash S. , Jadhav Virendra P., Pawar Aniket P.

U.G. Student, Mechanical Engineering, SKNSITS Lonavala, India

ABSTRACT

In this project "AUTOMATIC DOUBLE AXIS WELDING MACHINE" is start with an introduction to welding the various components automatically. Two pneumatic cylinder and Solenoid valve are used. Cylinder is for the forward and backward movement, it moves in both x and y axis. So, it is called as double axis welding machine. Two pneumatic cylinders and solenoid valve are provided. One cylinder is for the vertical movement and another one for the rotary motion. The problems are with the automatic process, still in their early design stages and difficult to use and program by regular operators. In this project, these problems are discussed, and a system designed with the double objective of welding applications

I. INTRODUCTION

"Welding is the joining of two pieces of similar or dissimilar metal. So, that the bonding takes place at their surfaces". When two parts to be joined are melted together, heat or pressure or both are applied Welding is a joining process that joins metals or nonmetals, by causing mixture which is different from lower temperature metal-joining techniques such as brazing , soldering etc., which do not melt the base metal. In addition to melting the parent metal, a filler material is typically added to the joint to form a pool of molten material that cools to form a joint that is usually stronger than the parent material. Pressure may also be used in combination with heat, or by itself, to produce a weld. Welding alsoneeds a form of shield to protect the filler metals or melted metals from being contaminated or oxidized. Although less common, there are also solid state welding processes such as friction welding in which metal does not melt and to assist industrial partners working with welding setups is presented

The idea behind fabrication of low cost Automatic welding machine is to full fill the demand of automatic double axis welding machines for small scale to large scale industries with optimized low cost. In addition to that the quality of the weld is also quite paramount therefore using an optimization technique we try to optimize the different weld parameters and get a good quality of weld.

We aim to develop a prototype automatic double axis Welding machine using Arduino-based control system is desired to have following specifications:

- Low cost
- Easily operable
- Easy interface
- Flexible
- Low power consumption

Welding is the process that joins metal with help of heat, with or without pressure. Welding is a joining process that joins metals and nonmetals, by causing mixture, which is different from lower temperature metal-joining techniques such as brazing , soldering etc., which do not melt the parent metal. In addition to melting the parent metal, a filler material is often

added to the joint to form a pool of molten material that cools to form a joint that can be as strong as the parent material. Many different energy sources can be used for welding such as gas flame, an electric arc, a laser, an electron beam, friction, and ultrasound etc. While often an industrial process, welding may be performed in many different environments such as open air, under water, and in outer space. Welding is a dangerous process and there is chances of burns, electric shock, vision damage, inhalation of poisonous gases and fumes, and exposure to intense ultraviolet radiation.

II. PROBLEM IDENTIFICATION

The idea behind fabrication of low cost Automatic welding machine is to full fill the demand of automatic double axis welding machines for small scale to large scale industries with optimized low cost. In addition to that the quality of the weld is also quite paramount therefore using an optimization technique we try to optimize the different weld parameters and get a good quality of weld. We aim to develop a prototype 2-axis Welding machine.

III. WORKING PRINCIPLE

1.FLOW CONTROL VALVE
2.4-WAY JUNCTION
3.5/2 SOLENOID VALVE
4.PNEUMATIC CYLINDER
5.ELECTRONIC CONTROL UNIT
6.RACK AND PINION
7.PU TUBE
8.WELDING ROD
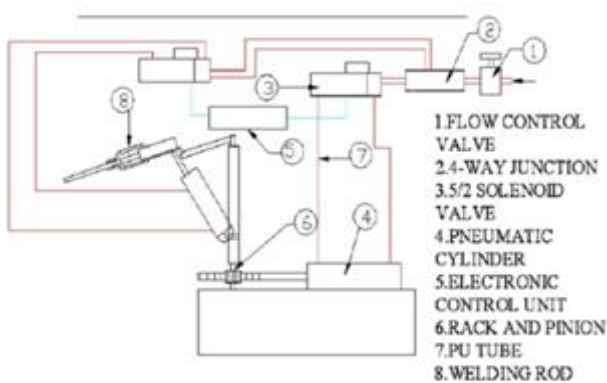
Figure 1

The trial setup comprises four chambers, all are of twofold acting compose. The cylinder1 is utilized to incite rack and pinion get together, cylinder pole of chamber 1is associated with rack, which is fitted with the opinion. By working the cylinder1, rack and

pinion turn the entire get together for 180. By changing the length of the rack the turning edge can be adjusted. Vertical chamber or cylinder2 is utilized to expand the stature of the setup. The stature is restricted to cylinder bar length.

IV. COMPONENT USED

* Double acting pneumatic cylinders
* 5/2 Solenoid valve
* Rack and Pinion
* Metal frame
* Hoses and fittings
* Welding machine
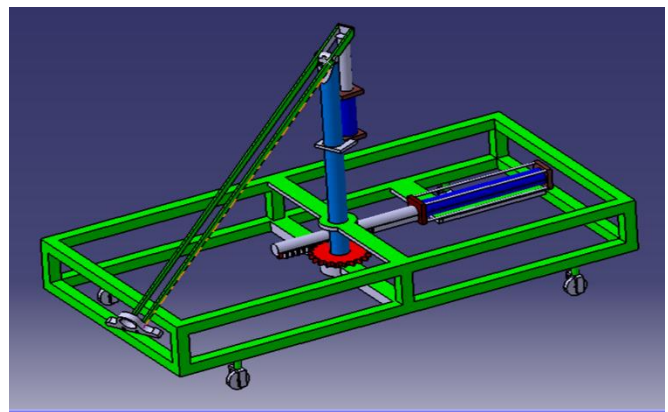
Figure 2

V. DESIGN

1.Weight calculation of Mild Steel:
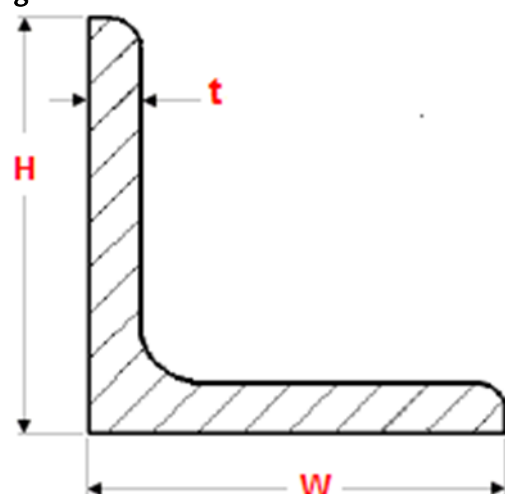
Figure 3

25x25x3 Angle

Weight calculation of mild steel angle

Weight = volume + density

We need to calculate volume

Volume = A + B

(0.025x 0.003x 1) + (0.022 x 0.003x 1)

 = 0.000066225 m³

Density of MS = 7850 kg/m³

0.000066225 x 7850

=1.12 kg

Its value for 1-meter mild steel rod

Know we need to calculate weight for

Length = 900mm

Width = 600mm

2.Frame Design:
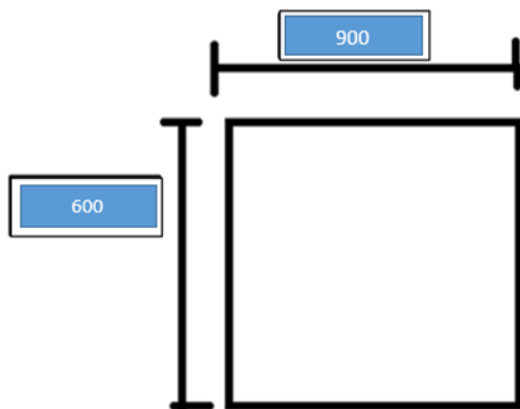
Frame design for safety FOR 25*25*3 L angle mild steel channel

B= 25 mm, D= 25 mm, t = 3 mm.

Assume the maximum load on the frame to be 50 kg.

Max. Bending moment = force*perpendicular distance

= 50*9.81*450

M = 220725 Nmm

We know,

M / I = σb / y

M = Bending moment

I = Moment of Inertia about axis of bending that is;

Ixx

y = Distance of the layer at which the bending stress is consider

(We take always the maximum value of y, that is, distance of extreme fiber from N.A.)

E = Modulus of elasticity of beam material.

I = BD3 /12

 = 25*25^3 / 12

I = 32552.08 mm4

σb = My / I

 = 220725 *12.5 / 32552.08

σb = 84.750 N /mm2

The permissible shear stress for material is σper = Syt / fos

Where Syt = yield stress = 210 MPa

And fos is factor of safety = 2

So σper= 210/2 = 105 MPa = 105 N/mm2

Comparing above we get,

σb<σperi.e 84.750

<105 N/mm 2 ………………So design is safe.

3.Design of shaft:

M/I=σb/Y   …………………….(1)

Bending moment=force*perpendicular distance

I = π/64*d4

Bending moment=5*9.81*800 = 39240 Nmm

For diameter 20mm,

I= π/64*d4

 =π/64*204

 =8525

Therefore,

(22072.5)/8525= σb/(7.5) σb=8.86*7.5 = 19.14

therefore, design is safe.

VI. CONCLUSION

Our project " Design and Fabrication of automatic pneumatic double axis welding machine" is designed with the hope that it is very much economical and help. This project helped us to know the step by step in completing a project work. Thus we have completed the project successfully.

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Anti Roll Back System

Prof. A. M Waghmare, Mahesh Nimbalkar, Prafull Patil, Sai Magar, Prasad Jadhav

BE Department of Mechanical Engineering Skn Sinhgad Campus,lonavala , Pune, India

ABSTRACT

An automobile is defined as a vehicle designed for operation on roads and usually has four wheels and a diesel or gasoline internal combustion engine. While driving on a hill road most of the drivers face the problem of rolling of a vehicle, it may be rolling backward or rolling forward which is termed as roll back system. The aim of the research is to arrest the motion of axle by using pawl and ratchet mechanism which will be operated electronically without utilizing the brakes. The objective of this is to design and fabricate a mechanism so that vehicle will not roll due to the slope of the hill and gravitational pull. The "Automobile Reverse Locking Differential Mechanism" is a preferred embodiment provides systems and methods for preventing a vehicle from reverse movement on a slope. This system consists of ratchet and pawl device connected to at least one wheel of the vehicle and actuator which will control the movement of the pawl while engaging or disengaging the mechanism where in the system may be engaged using an engaging mechanism when reverse motion is undesirable or to be restricted, and may be disengaged when the reverse motion is desirable. A push button will be provided on gear of the vehicle which will be operated by the driver on choice. In this work the mechanism will be developed to stop the vehicle from rolling backwards when the vehicle is moving on the hill roads.

Keywords: Ratchet and Pawl Mechanism, Actuator, Antiroll Back Effect, Switch.

I. INTRODUCTION

Road transport safety is an important issue in the land transport sector. Driving mistakes made by heavy goods vehicle drivers may be more serious because of the weight, size, shape, braking abilities, etc., of the vehicle. Fatal accidents occurs due to loss of control or improper handling of equipment.

An anti- roll back system, which effectively and easily supports driver while driving up on steep gradient in forward or reverse direction. The system is capable of being fitted on any vehicle having fluid (gas or liquid) operated braking system. Further, the system is capable of being retrofitted on existing vehicles with minor vehicle modifications.

Furthermore, the system operates without affecting basic braking system performance of the vehicle.

II. BACKGROUND OF THE INVENTION

The present invention in its various embodiments, aims to address the above drawbacks and requirements, and provide effective systems and methods to prevent a vehicle from reverse movement in a slope.

Figure 1. Actual diagram of traffic in Ghats

In the hill station, the most common problem to the drivers is to park their vehicle in the slope and to start up the car. While waiting in the traffic the cars have to move on step by step very slowly, this situation is a difficult one for the drivers to make their car not to roll back in the slope. So the mechanism has to be developed to stop the vehicle from rolling back and it should not stop the vehicle in accelerating forwards. This function can be achieved by using the ratchet and pawl mechanism.

III. OBJECTIVES

- The major objective of our project is to prevent of accidents with some simple and economical means.
- To overcome problem of sliding in reverse direction of a vehicle on hill or any inclined surface.
- To replace the electrical components in design of hill assist braking system by ratchet and pawl for cost optimization.

IV. LITERATURE REVIEW

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[2] Rajeshkanna - "Locking Reverse Wheel Using Anti Roll Back Mechanism" in April 2017.It has discussed, a ratchet and pawl mechanism that has advantages for mechanical safety mechanisms, particularly when the design envelop is too small to allow for traditional mechanical components.

[3] HarshalAhire-"Automobile reverse locking differential mechanism" in March 2016.It has discussed, a differential is a device which is used in vehicles over a few decades and when vehicle is negotiating a turn, the outside wheel travels a greater distance and turns faster than the inside wheel.

[4] PrateekChaturvedi-"Anti-Roll Back Mechanisms: a Review" in May 2015. It has invention relates to an automobile locking mechanism for preventing a vehicle such as an automobile, from moving backward at such times when reverse movements is not desired. It is among the objects of his invention to provide a reverse lock of the character described which permits free forward movement of the vehicle.

[5] BhavanarayanaKotteat- "Development and Fabrication of MAC Technology for a Vehicle to Control Roll Back Effect".It has discussed, Manual Actuated Control (MAC) mechanism operates by taking manual input according to the requirement.

V. COMPONENTS

Actuator

Hydraulic or pneumatic cylinders inherently produce linear motion. Many other mechanisms are used to generate linear motion from a rotating motor. It is operated by a source of energy, typically electric current, hydraulic fluid pressure, or pneumatic pressure, and converts that energy into motion.

Figure 2. Actuator

Axle

A drive shaft, driveshaft, driving shaft, propeller shaft (prop shaft), or Cardan shaft is a mechanical component for transmitting torque and rotation, usually used to connect other components of a drive train that cannot be connected directly because of distance or the need to allow for relative movement between them.

Ratchet and Pawl

A ratchet is a mechanical device that allows continuous linear or rotary motion in only one direction while preventing motion in the opposite direction. Ratchets are widely used in machinery and tools. Though something of a misnomer, "ratchet" is also often used to refer to ratcheting socket wrenches, a common tool with a ratcheting handle. The ratchet and pawl, a very simple device which allows a shaft

Figure 3. Ratchet & Pawl Mechanism.

Wheels

A wheel is a circular component that is intended to rotate on an axial bearing. The wheel is one of the main components of the wheel and axle which is one of the six simple machines. Wheels, in conjunction with axles, allow heavy objects to be moved easily facilitating movement or transportation while supporting a load, or performing in machines. Wheels are also used for other purposes, such as a ship's wheel ship's wheel, steering wheel, potter's wheel and flywheel.

Figure 4. Wheel

VI. WORKING

The working principal of the mechanism is very simple. It can be easily understood from the above Cad diagram. Mechanism consists of Ratchet and Pawl arrangement which will engage with each other as per the choice of the driver. As seen above the ratchet is simply a gear which has got one side teeth due to which is can transfer the power in unidirectional only. Just above it pawls are mounted which will engage with the ratchet to lock its rotation in any one direction. Ratchet and Pawl will be collectively mounted on the rear axle in such a way that the ratchet will have the drive along with the rear axle. Due to this the pawl will be able to engage

with the ratchet when it will be in motion along with the wheels.
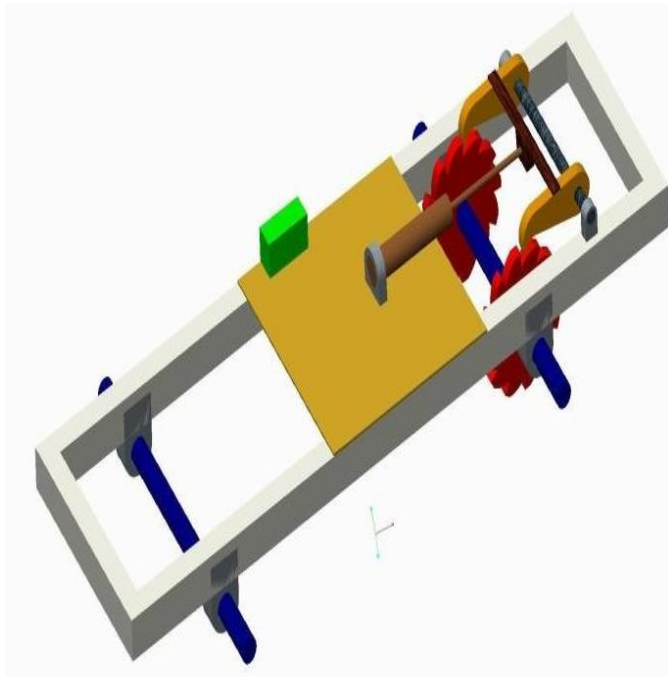
Figure 5. cad Diagram for Experimental Setup

VII. ADVANTAGES AND DISADVANTAGES

Advantages
- Less manual work.
- Fewer problems in traffic.
- Comfortable and panic free ride.
- Less risk of accidents.

Disadvantages
- Wear between Ratchet and Pawl.
- Failure of the actuator will stop the working of the mechanism.
- Complicated to implement due to space limitation.
- Needs to be operated manually.

VIII. FUTURE SCOPE

1. The engagement and disengagement of the Ratchet and Pawl can be made by using PLC control instead of using linear actuator which will result in fewer backlashes from the ratchet to the pawl.

2. Instead of using two ratchets and two pawls we can use four ratchets and four pawls which will take more heavy loads.
3. The engagement and disengagement of the Ratchet and Pawl will be done by using high grade sensors which will automatically disengaged the ratchet and pawl when driver is willing to take vehicle in reverse direction.
4. This design can be modified with axel carrying differential so that it can easily implement on actual vehicle.

IX. CONCLUSION

It will make the new driver feel comfortable during driving on gradient surfaces. Also undesirable reverse motion of the vehicle will be prevented which will result in less chances of road accidents. This will propose a perfect mechanism to Indian market at low cost. Due to this most of the manufacturers will be in a race to provide such mechanism which will be the first reference of the customer while buying a vehicle.

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Motor Operated Automatic Handbrake System for Four Wheelers

Mayur Kshirsagar, Vipul Solanke, Adesh Waghole, Akash Waghole

Department of Mechanical Engineering, SPPU/SKNSITS/, Lonavala, Maharashtra, India

ABSTRACT

In this world of Mechatronics and automation, various systems have developed just to reduce the time and human error. The automated braking system is a part of mechatronics. Presently the vehicle has alarm system for maintaining the safe distance between moving vehicle. When the vehicle gets too close to the object, the alarm is triggered this warns the driver about an object. Nevertheless, this feature has many problems and is prone to human error. Therefore, we developed a system, which can avoid the accident in reversing the vehicles. For this purpose, we have developed a model, which automatically brakes four-wheeler when locked the ignition switch and releases when the ignition switch is ON.

Keywords: Automated Handbrake, Automation, Mechatronics

I. INTRODUCTION

to The present invention relates to a parking brake system for motor vehicles having a control element and at least two electromechanical actuators for generating a parking brake force at in each case one wheel of the motor vehicle. An electric parking brake control unit of an electric parking brake apparatus has an input section for receiving signals for performing automatic activation and deactivation, but does not have a determination function and a circuit for inputting signals from various sensors, which are necessary to determine whether to start the automatic activation/deactivation control.

Therefore, when used in a vehicle that does not require an automatic control function and requires only a manual control function, the electric parking brake control unit can solely be used, with no signal line connected to the input section. When used in a vehicle that requires both the automatic control function and the manual control function, the input section is connected to a second control unit that can

be output signal for performing automatic activation and deactivation whereby the electric parking brake control unit operates in cooperation with the second control unit.

The present invention relates to an electric parking brake apparatus capable of activating and deactivating a parking brake of a vehicle by use of electric drive means such as an electric motor. A parking brake system for a motor vehicle comprising a control element and an electromechanical actuator.

Now the project mainly concentrates on designing a suitable operating system. To maintain simplicity and economy in the design the locally fabricated unit has been used. Our project achieves higher safety, reduces human effort, increases the efficiency, reduces the workload, reduces the fatigue of workers and reduces maintenance cost.

1.1. Problem statement

The automated braking system is a part of mechatronics. Presently the vehicle has alarm system

for maintaining the safe distance between moving vehicle. When the vehicle gets too close to the object, the alarm is triggered this warns the driver about an object. However, this feature has many problems and is prone to human error. We have brought the facility by using the same sensor system but with the automated breaking system, that restricts the backward motion of the vehicle. We developed a system, which can avoid the accident in reversing the vehicles. For this purpose, we have developed a model which automatic braking for four wheelers when lock the ignition switch and releasing when on the ignition switch.

1.2. Objectives

1. To understand the basic principal of our project
2. Describe the construction and working of various parts of our project
3. Development of working model of our project

II. COMPONENTS AND MATERIAL

2.1. Hand brake lever

Hand Brake is used to keep the vehicle stationary and in many cases perform an emergency stop. Hand brake on older vehicles often consist of a cable connected to two-wheel brakes at one end and the other end to a pulling mechanism which is operated with the driver's hand or foot. The mechanism may be a hand-operated lever, at floor level beside the driver or straight pull handle located near the steering column, or a (foot-operated) pedal located beside the drivers' leg. In most automobiles, the hand brake operates only on the rear wheels, which have reduced traction while braking. Some automobiles have the hand brake operate on the front wheels.
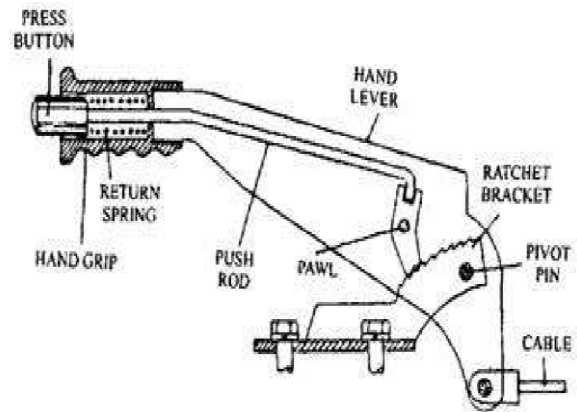
Fgiure 3

2.2. Motor

A DC relies on the fact that like magnet poles attract each other. A coil of wire with a current running through it generates an electromagnetic field aligned with the centre of the coil. The motor is used to drive the pinion that drives the rack so that circular motion is converted into linear motion. The source of current is obtained from the 12V DC battery from the car.
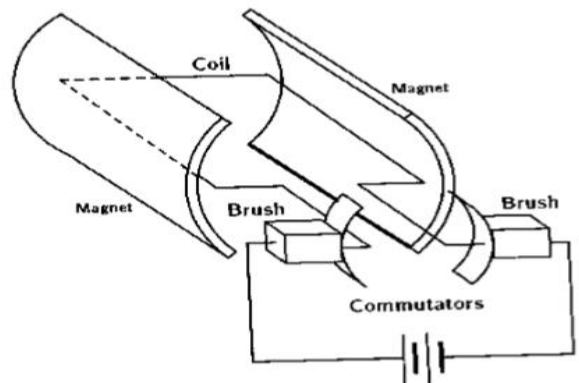
Figure 2

2.3. Battery

A battery is used to provide energy for ignition. It works as storage of energy and charged by dynamo, which is driven by engine. It converts chemical energy to electric energy. Two types of battery used in spark ignition system, lead acid battery and alkaline battery. The first one is used in light duty commercial vehicle and the other one is used in heavy-duty commercial vehicle. It is housed in primary side of ignition coil.

Figure 3

2.1. Micro switch

The defining feature of micro switches is that a relatively small movement at the actuator button produces a relatively large movement at the electrical contacts, which occurs at high speed (regardless of the speed of actuation). Most successful designs also exhibit hysteresis, meaning that a small reversal of the actuator is insufficient to reverse the contacts; there must be a significant movement in the opposite direction. Both characteristics help to achieve a clean and reliable interruption to the switched circuit.
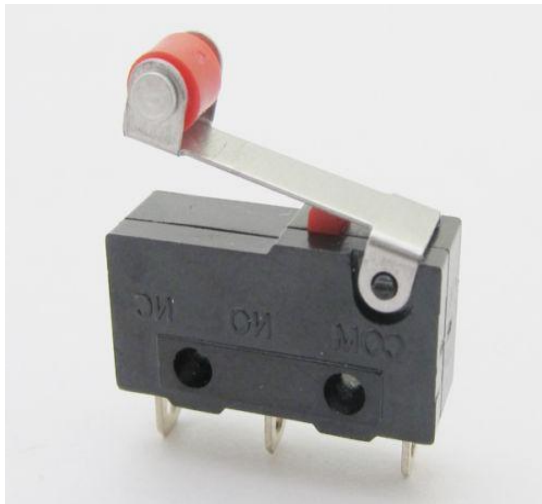
Figure 4

2.1. Ignition switch

An ignition switch, starter switch or start switch is the switch in the control system of a motor vehicle that activates the main electrical systems for the vehicle, including "accessories" (radio, power windows, etc.), the switch provides power to the start solenoid and the ignition system components (including the engine control unit and ignition coil), and is frequently combined with the starter switch which activates the starter motor.

Figure 5

III. WORKING

Working of developed a model, which is an automatic braking for four wheelers, when locked the ignition switch then automatically hand brake lever, is in braking condition and released when ON the ignition switch. Generally speaking, it is an object of the present invention to provide for simple and intuitive control of a vehicle brake system. This is achievable by means of an actuating device of the general type under consideration, which can be switched into a further switching state, and by means of an actuation method, wherein in response to an actuation. The actuating device can be switched into the first switching state, the second switching state and the further switching state by the same control element. By the further switching state, it is possible, for example, for a trailer testing function and/or a trailer braking function and/or an anti-jacking braking function to be selected by one and the same control element, or a function that prevents an automatic engagement of the parking brake upon the deactivation of an ignition can be selected by means of the actuating device, in particular

by one and the same control element. The actuating device has, aside from the control element, at least one electronic system for providing switching states. The actuating device may however also have further components of the brake system, in particular control electronics, power electronics and brake actuators.

The control element of the actuating device according to embodiments of the invention can be controlled intuitively and more easily than the control element of the known actuating device, by means of which a trailer testing function can be selected, or by means of which, in combination with a separately arranged further control element, a trailer braking function and/or an anti-jacking braking function or a deactivation of an automatic engagement of the parking brake upon the deactivation of the ignition can be selected. Simple and intuitive control is also possible in the case of a further control element, which is actuated separately, for deactivating the automatic engagement of the parking brake upon the deactivation of the ignition.

IV. ADVANTAGES

1. No conventional grid electricity required.
2. Long operating life
3. Highly reliable and durable
4. Easy to operate and maintain
5. Eco-friendly

V. FUTURE SCOPE

In view of the foregoing, an object of the present invention is to provide an electric hand brake apparatus including an electric hand brake control unit, which can be applied to both a vehicle requiring an automatic control function and a vehicle not requiring an automatic control function and which is compact and of simple configuration. In order to achieve the above object, the present invention provides an electric hand brake apparatus which

comprises: a hand brake of a vehicle, electric drive means for activating and deactivating the hand brake, a manually operated member for generating signals which instructs activation and deactivation of the hand brake and an electric hand brake control unit for controlling the electric drive means on the basis of the signal. The electric hand brake control unit includes an input section for receiving signals output from a second control unit mounted on the vehicle and instructing automatic activation and automatic deactivation of the hand brake

VI. CONCLUSION

The present invention therefore provides a system, which compared to the known concepts, permits considerably greater availability with an extremely simple and favourable structural concept. "Greater availability" is understood to mean that the parking brake is to be as far as possible always capable of operating. In one advantageous development, a fourth signal line is provided which connects the two wheel electronic systems of the electromechanical actuators directly to one another and in one preferred embodiment of the invention, the control element is equipped with at least three channels, and it outputs the driver's request in the form of at least three switching information items. The control element is supplied and/or evaluated from the brake controller or from the further controller. The control element has preferably electronic semi conductor components. In a further advantageous development of the subject matter of the invention, a redundant power supply of the parking brake system is provided. Here, the redundant power supply is formed by two batteries together with a charging circuit. Alternatively, the redundant power supply is formed by a management system for a vehicle on-board voltage supply.

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Review on Drowsiness Alert System by Using Vibrator and Braking System

Pradeep Gawali, Aniket Thombare, Akash Tikhe, Yogesh Rathod

Mechanical Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

Nowadays, most of the accidents are happened because of driver's careless mistakes for example, fast driving, not follow the rules of driving, drowsiness (sleepiness) of driver while driving, etc. this reasons makes risk of life of driver, passengers in vehicles and other persons near vehicle. So from above conditions mostly the drowsiness related no of accidents was happened particularly during the night are more than other conditions. So the main aim or objective is design some system to reduce the accidents related to this. We design a braking system, which gives vibration to seat of vehicle at back or downward side and then apply brake of the vehicle. It will only be happened after some counts. The drowsiness is identified using IRs (infrared sensor) by means of spectacles frame, When the eyes are open the rays emitted from sensor are reflected from eyes and receive by receiver of sensor, but eyes are frequently blinking so in blinking eyes are closed for some counts. If the driver is drowsy the eyes of driver are closed in that condition rays emitted from sensor are not reflected from eyes and output is increases then it passes the input signal to microcontroller in (Arduino board) system to start the vibrator after some counts, then the system apply for brake. The benefit of this project is to decreases the number of accidents.

Keywords: Drowsiness, IR Sensor, Vibrator Motor, Microcontroller, Arduino Board

I. INTRODUCTION

The drowsiness (filling tiredness) is one of the causes responsible for accidents of vehicles. According to NHTSA (National Highway Traffic safety Administration) 37 percent accidents are happened because of drowsiness of driver. The driver drowsiness can be observed by examine driver response. To detect the eye blinking of driver there are lots of methods but we are used IR sensor. The IR sensor is used to see the behaviour of the eyes of driver. If for certain time period eyes are closed it can be sense by sensor. The IR sensor gives this information to Arduino Board to do above operations. Therefore tiredness of a driver is intercepted and it cause result in decreases the numbers of accidents. If the driving is insufficient so accident of vehicle is most common. These occur mostly if the driver is drunk.

This project consists of continuous observation of IR sensor to control eye blinking.

The IR sensor consists of transmitter and receiver, when transmitter emitted or transmitted the rays in the direction of eyes and the rays can be reflected from the eyes and is received by receiver. If the eyes are closed then the output of IR transmitter is high but in other side IR receiver input is low. From this condition we know the eyes are closed or opened. So when the eyes are closed output is high, this information of eye blink is transfer to microcontroller of Aduino board. Then the system is counts up to 15, after 10 counts it transmits the signal to the DC motor with offset (dead weight) for vibration provide to the driver seat. Then after 15 counts the system transfer the signal to the braking system to apply the brake and vehicle will be stopped. In between 10 to 15

counts because of vibration the driver woke up in that condition the eyes of driver was open then the IR sensor receiver receives the rays so system do not transfer the signal to brakes for apply. This project includes controlling accidents due to insensible conditions of eye blink.

II. COMPONENTS USED

A) Eye blink Sensor (Infrared Radiation Sensor)

The eye blink sensor includes an infrared transmitter and receiver. This sensor emits the electromagnetic radiations that can be transfer from the transmitter to eyes then it reflects from eyes and receiver receives the rays. This sensor is continuous senses the moments of eyes (opened or closed position) then after some counts it gives information to the timer circuit in system to proceeds for next operation using arduino board.

Specifications:-

Detection range: 2cm to 30 cm
Operating voltage range:

Figuer 1

B) Vibrator (DC Motor with Offset)

A vibrator is a mechanical device used to generate vibrations. The vibration is often generated by an electric motor (DC motor) with an unbalanced mass (offset) on its driveshaft. There are many different types of vibrator. A DC motor is a rotary electrical machine that converts direct current electrical energy into mechanical energy.

VIBRATING MOTORS

COUNTERWEIGHT IS FIXED AT THE END OF THE ROTOR, WHEN THE ROTOR SPINS, IT THROWS THE MOTOR OUT OF BALANCE CAUSING IT TO SHAKE.
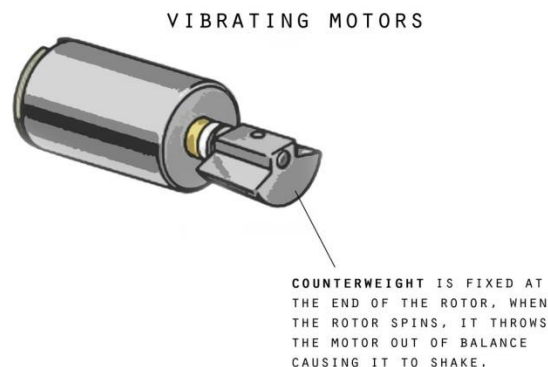
Figue 2

C) Gear Motor

The DC gear motor used to transmit the power to the wheels to drive the vehicle. It is mostly used in the conditions where the low rotational speed is required to create certain amount of torque.

Figuer 3

D) Arduino Board

Arduino is an open source electronic device based on easily used hardware and software. The input signal required for arduino board is in the form of light on sensor, finger on button, etc and gives output in the form of turning on the vibrator, start the motor, turning on an LED. We can do any operations or tell anything to our board to do by using the set of instructions to the microcontroller present on the board. We can provide these instructions to the microcontroller by using arduino language and

arduino software IDE (Integrated Development Environment).
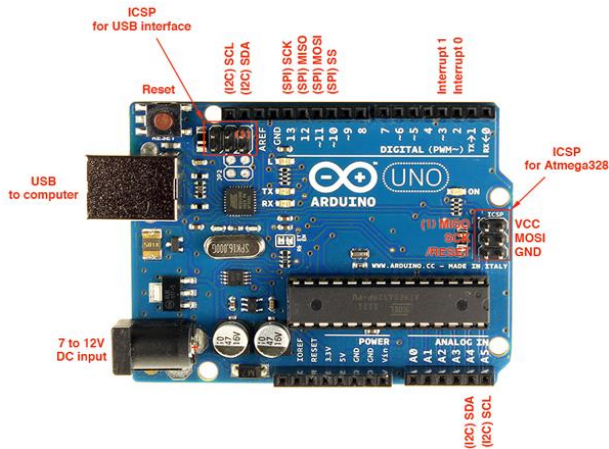
Fgure 4

E) Electro-magnetic Braking System

Electromagnetic braking means applying brakes using electronic and magnetic power. Here we use the principle of electromagnetism to reach friction less braking. This helps to increase the life span and reliability of brakes as long as no friction leads to less wearing out of brakes. Also it consists less maintenance and oiling. This is an upcoming technological replacement for traditional braking systems. The main objective behind the use of these brakes in vehicles is that it is frictionless. The electromagnetic brakes works on a magnetic flux when passed in a direction perpendicular to the rotating direction of the wheel, we see eddy current flowing in a direction opposite to the rotation of the wheel. This creates an opposing force to the wheel rotation and in turn slows down the wheel.

III. WORKING

The Drowsiness alert system consists of IR sensor, DC gear motor, vibrator, Arduino board and electromagnetic brake. All these components working together to overcome the chances of accidents occurs because of drowsiness.

The driver drowsiness can be observed by examine driver response. To detect the eye blinking of driver there are lots of methods but we are used IR sensor. The IR sensor is used to see the behaviour of the eyes of driver. The IR sensor is fitted in the spectacles. If for certain time period eyes are closed it can be sense by sensor. The IR sensor gives this information to Arduino Board to do next operations.
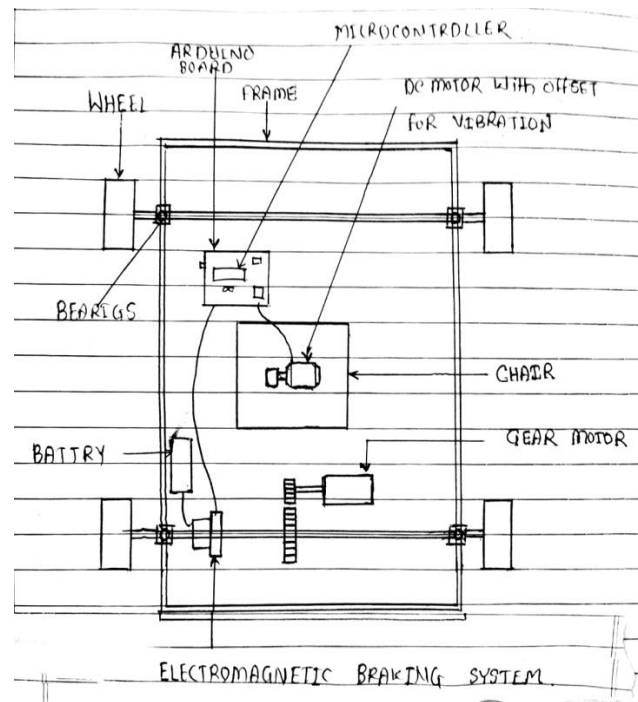
Figure 5. Working setup of Project

The IR sensor consists of transmitter and receiver, when transmitter emitted or transmitted the rays in the direction of eyes and the rays can be reflected from the eyes and is received by receiver. If the eyes are closed then the output of IR transmitter is high but in other side IR receiver input is low. From this condition we know the eyes are closed or opened. This sensor is continuous senses the moments of eyes (opened or closed position) then after some counts it gives information to the timer circuit in system to proceeds for next operation using arduino board.

So when the eyes are closed output is high, this information of eye blink is transfer to microcontroller of Arduino board. Arduino is an open source electronic device based on easily used hardware and

software. Then the time circuit in the system is counts up to 15, after 10 counts it transmits the signal to the DC motor with offset (dead weight) for vibration provide to the driver seat. Then after 15 counts the system transfer the signal to the electromagnetic braking system to apply the brake and vehicle will be stopped. In between 10 to 15 counts because of vibration the driver woke up in that condition the eyes of driver was open then the IR sensor receiver receives the rays so system do not transfer the signal to brakes for apply. The electromagnetic brakes are applied by using the source of DC battery.

Tables
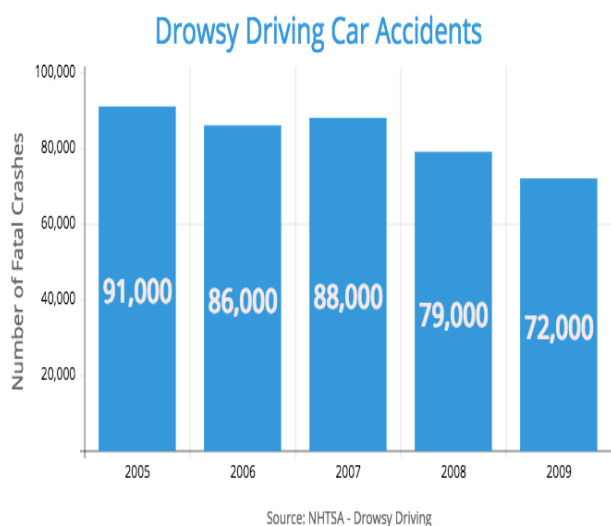
Table1. According to NHTSA (National Highway Traffic safety Administration) number of Accidents occurs because of drowsiness

IV. CONCLUSION

Actually the purpose of making such a system to minimize the chances of accidents but it is only possible when the driver of a vehicle should follow the rules and regulations of driving skills. When the car is at very high speed it is difficult to control the vehicle by driver and this is very risky conditions for driver and other passengers in the vehicle. But during drowsiness the speed of the car is low then it can be easily controllable. The aim of such system is to continuous observe the behaviour of driver and control the speed of vehicle to reduce chances of accident and prevention of valuable life of humans.

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Design and Simulation of Combination Die for Fuel Tank

Rahul Borate[1], Sumit Jadhav[2], Suraj Guldagad[2], Rahul Takle[2], Chetan Patil[2]

[1]Assistant Professor, Mechanical Department, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

[2]U.G. Student, Mechanical Department, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

This project is mainly focusing on designing a combination die which will reduces the individual operations and then a single combination die will perform specially the blanking, piercing and cam-piercing operations simultaneously. The Combination die is reliable method over other cutting processes, which is highly affect to cost and time of further operations. Furthermore by using simulating software Autofarm, we can predict whether the given sheet metal material will form according to given operations or not.

I. INTRODUCTION

Combination dies are used for production of sheet metal parts having two or more operations in a single station. The terms compound and combination dies have frequently been interchangeably used to define one-station die Compound dies are used for production of sheet metal parts having combined cutting operations like blanking and piercing, while combination dies are used where two or more sheet metal operations such as forming, drawing, extruding, embossing etc. are combined with each other or with the various cutting operations such as blanking, piercing, trimming, broaching, and parting off. Design of combination dies is tedious, time consuming and skilled based activity. It requires highly experienced die designers and process planners. Many CAD softwares are available in market to aid die designers for design of dies. But these softwares does not have special die-design functions and capabilities .Further, because of high cost of these software packages, very few small scale industries can afford these. Also to operate these softwares and interpret the results generated by softwares well trained competent and experienced designers are required.A number of computer aided systems have been developed for punching, blanking, progressive, and deep drawing dies. Very few researchers tried to develop computer aided die design system for compound dies, and fewer research cover the combination die type. Therefore, there is a need to develop an automated system for quick design of combination die. Several researchers applied their efforts in developing computer aided design systems (CADD) for piercing and blanking die .

II. LITERATURE SURVEY

SR. NO.	Title	Author name	Methodology
1	Computer aided system for parametric design of combination die	Vishal G Naranje, H M A Hussein2 and S Kumar	The proposed system is capable to reduce design time and efforts of die designers for design of combination dies.
2	Design and Analysis of Progressive Die for an Industrial Part	Vivek D. Barhate1, Dr. Sachin G. Mahakalkar, Dr. A. V. Kale	This research deals with designing a progressive die, simulating the blanking and piercing process.
3	Design and Analysis of combination Tool .	Ch.Mastanamma 1, K.Prasada Rao 2,Dr. M.Venkateswara Rao3	Avoids premature die failure, final part geometric distortion and production risk.
4	Design, Analysis and Manufacturing of a Set of Stage Tools for sheet metal component for a Panel Back Outer Rear Back Floor	Sridhar H S1, Harendra kumar H V2, A R Mohan kumar3, Dinesh P4, Satish.P.C5, Umashankr.	The experimental result are this dissertation work covers the Design, Analysis and Manufacturing of a Set of Two Stage Tools

III. PARTS AND MATERIALS

Table 1. Parts and Materials

Sr. No.	Parts	Material
1	Lower Shoe	D2 type of steel
2	Upper Shoe	OHNS
3	Punch	EN8
4	Piercing Punches	EN12
5	Punch Retainer	D2 type of steel
6	Cam unit	FC250
7	Guide pillar	St42
8	Shoulder bolt	SCM435
9	Gas Spring	Powder

IV. OBJECTIVES

i. To calculate different parameters of combination die and forces for operation and verify them with Finite element analysis results and experimental setup.

ii. To determine forming & cutting force to avoid crack on component.

iii. To design a combination die for the given engineering process data.

iv. To carry out Finite element analysis of combination die.

V. WORKING

- First we get the Catia model of fuel tank from company, then we take sheet metal of proper thickness,and then do the required operations using upper and lower shoe,punch.
- Next step is to trim it from outer side of sheet metal and then vertical piercing.The punch for vertical piercing is attached to die of trimming and both operations will performed simultaneously.
- Then perform cam piercing operation at proper inclination angle.
- For that we use misumi catalogue , and select proper die of standard inclination angle in multiple of 5 degree.
- At last, taking the results of simulation by using Autofarm Software and deliver it to the company.
- As per company requirement, we change either radius of cam or material if there is any thickening or thinning.
- Due to simulating software Autofarm,we can predict whether the given sheet metal of particular thickness can work under the given operations or not and we get the actual profile of product. And as per our requirement we can make changes in it.

VI. DESIGN

Force Calculations:

1. **Shearing Force** = (L x S x T max)

   L=length of the periphery to be cut in mm

   S=Stock thickness in mm

   T max= Maximum Shear strength in N/mm

2. **Piercing Operation :**

   Shear Force = L x S x τ max

   = 2x3.142x3x2x110

   = 4147.44 N

3. **Plunging operation :**

Shear Force = [(2x π x r) + 30] x 110

= [(2xπx 5) + 30] x 110

= 6756.2 N

4. **Cutting Clearance** = C x S x$\sqrt{\tau}$ max

= 0.005 x 2 x $\sqrt{110}$

= 0.105mm/side

Calculations of Die:

The die clearance for mild steel is 2.5% or 5% of thickness per side.

C = 2.5 % of thickness

= (2.5/100) x 6 = 0.15 mm

Or

C = 5% of thickness

= (5/100) x 6 = 0.3 mm

Large clearance increases the tool life. So here take 5% of thickness per side.

Calculations of Punch:

Travel = Entry in Stripper + Entry in die + Part, Plate Thickness.= 5 + 3 + 6 = 14 mm

Calculations of Guide pillar:

There guide pillar diameter is given by;

D = 0.6 x Td

= 0.6 x 100

= 60mm.

For the guide pillar there is its length is larger than its diameter. So the effect of length occurs on the performance on overall performance. For Guide pillar manufacturing St-42 material is used.

E – Modulus of Elasticity (For St-42 material 2.1 x 105)

I – Moment of inertia for pillar.

I =π D4/64

= $\pi \times$ 384/64   = 102353.87 mm4

Here take the length of pillar as l = 160 mm.

Area of punch is;

A = (π x D2/4) = 1134.11mm2

rg = (I/A)0.5 = 9.5 mm.

Slenderness ratio (SA) = (Le/rg) = 33.68

Transition slenderness ratio (TSR) =

$$\sqrt{\frac{2\pi^2 E}{Syc}}$$

Syc = 860 N/mm2
TSR = 112.08
There is buckling force is calculated by Johnson's formula. Because T.S.R. is greater than S.R.. Applying load is less than critical load; so design is safe here.
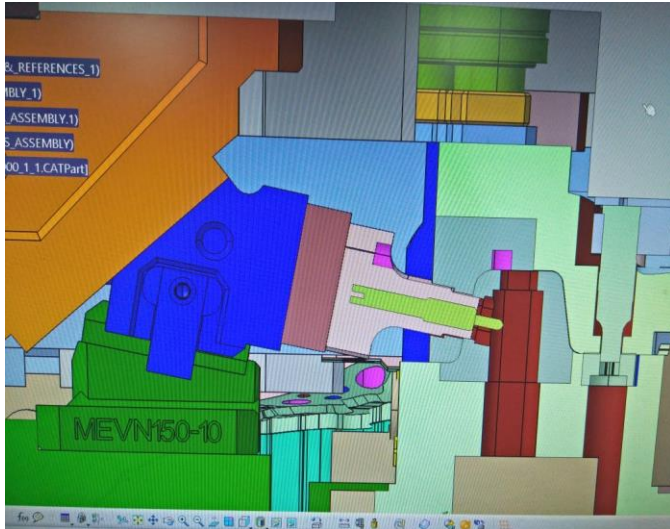
Figure 1. Combination Die Diagram

VII. RESULTS AND DISCUSSION

1. Less Failure:
Simulation gives result of shape formation so chances of failure are negligible.

2. Full proof Design:
CAD software gives full proof design and part list of Combination Die.

3. High Accuracy:
Result are accurate in general compare to analytical model.

4.Reduces time of operation:
Reduce time cycle and handling time

5. Lowers cost:
This method is cost effective as compared to laser cutting process which is very expensive

VIII. CONCLUSION

The project is used for continuous production activities as well as by using CAD software helps to Full Proof Design and cost cutting for material

wastage will result CAD software also supports to the CAM software for machining 3D programmes. So machining process can easily decide and helps to accuracy level increase.so machining sequence can be determined. CAD software also helps to Assembly team for planning. In the combination die there should be some error of cam retract position problems, So there may be some problem in wrong cam selection or local made. So it should be selected by proper travel and use standard catalogue. Also there may be problem in spring back of component more but it can removed in last restrike operation.

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Variable Displacement Pump Using Constant Speed Motor

Kiran Awchar, Prasad Garud, Hanuman Ghadge, Rushabh Panchwatkar

Mechanical Engineering, SPPU, Pune, Maharashtra, India

ABSTRACT

This paper present variable displacement linkage which use for desired position displacement. Using this particular displacement run a radial piston pump for variable discharge. In hydraulic power systems, variable displacement pumps save power, increase the productivity or control the motion of a load precisely, safely and in an economical manner .The displacement varying mechanism and power to weight ratio of variable displacement piston pump makes them most suitable for control of high power levels. Positive Displacement Pumps are "constant flow machines" Thus objective of research is defined to develop a variable displacement linkage that will enable to vary the stroke of an two cylinder radial piston pump, thereby offering to vary the discharge of the pump using manual control.

Keyword: Piston Pump, Positive Displacement Pump

I. INTRODUCTION

A pump is a device that moves fluids (liquids or gases), or sometimes slurries, by mechanical action. Pumps can be classified into three major groups according to the method they use to move the fluid: direct lift, displacement, and gravity pumps. A Positive Displacement Pump must not be operated against a closed valve on the discharge side of the pump because it has no shut-off head like Centrifugal Pumps .A Positive Displacement Pump operating against a closed discharge valve, will continue to produce flow until the pressure in the discharge line are increased until the line bursts or the pump is severely damaged – or both. Axial piston pumps with constant pressure and variable flow have extraordinary possibilities for controlling the flow by change of pressure. Owing to pressure feedback, volumetric control of the pump provides a wide application of these pumps in complex hydraulic systems, particularly in aeronautics and space engineering.

The major obstacle in application of the bent axis piston pump is extremely high cost over that of the radial piston pump , it ranges in the range of 5 to 6 times the cost of radial piston pump. Hence there is a need to develop a modification in the radial piston pump design that will offer a variable discharge configuration in addition to the advantages of high efficiency and maximum pressure. Thus objective of project is defined to develop a variable displacement linkage that will enable to vary the stroke of an two cylinder radial piston pump , thereby offering to vary the discharge of the pump using manual control.

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efficiency and maximum pressure. Thus objective of project is defined to develop a variable displacement linkage that will enable to vary the stroke of a two cylinder radial piston pump, thereby offering to vary the discharge of the pump using manual control

II. METHODS AND MATERIAL

1) 1) System design as to kinematic design of one linkage set to 30 degree output
2) System Design and geometrical derivations of the linkage to integrate individual linkage output to get the desired 1:4 ratio
3) System Design and geometrical derivations of the control linkage to achieve single lever control and derive the desired output in step-less manner
4) Selection and geometrical profile of shifter mechanism.
5) Selection and design of cam profile , linkage geometry for minimum space occupation and minimum inertia to make drive compact, light weight and precise.
6) Selection of motor drive transmission.
7) Mechanical design : This part includes the design and development of linkages , section dimensions for strength criterion. The linkage section dimension will be calculated using theoretical derivation using appropriate theories of failure and the dimensions.

- The following components of the drive will be designed.
- Input eccentric
- Connecting link
- Output link
- Control link

1. Problem Statement:

The system design consists of development of the mechanism so that the our concept can perform the required operation. The mechanism is basically an inversion of four bar kinematic linkage, hence the mechanism is suitably designed using Grashoff's law and the final outcome is shown in Auto cad software below fig. Here four links with one control link arranged for variable output without changing input. The speed changing mechanism is simple in construction. It consists of a control shaft that is mounted on two cranks that are hinged to the frame. The control shaft carries a handle. Turning the handle changes the position of the connecting link connecting rod joint which will lead to change in the degree of oscillation of the output yoke thereby speed change of the output shaft.

2. Experimental setup
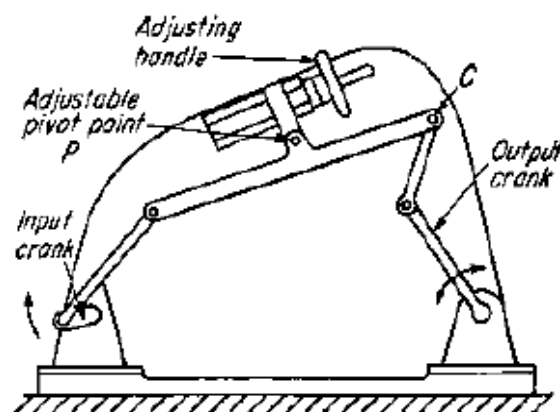
Figuer 1

The designed linkages converted into experimental set up . Input shaft coupled to the motor by coupling at one end. Connecting rod is an element which is imparted oscillating motion by the input shaft. Connecting link is the member that connects the connecting rod to the output yoke. The control link is the speed governing member, it changes the position of the joint of the connecting link with connecting rod. Output yoke is connected to the connecting link which oscillates it about the output shaft as shown in Figs.

3. Working
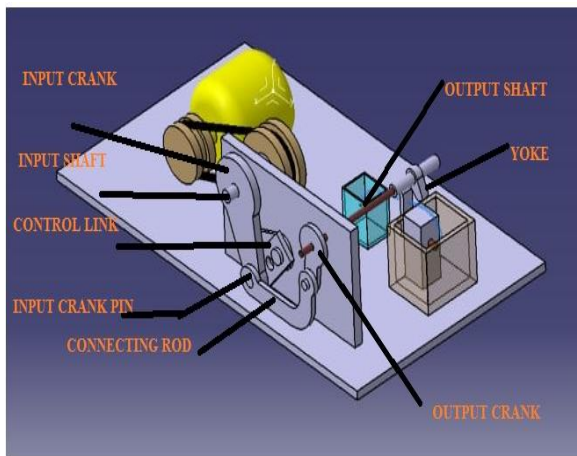
Figure 2

Working:

When motor start rotating it is pulley rotate and transfer the rotational motion to the input of linking mechanism via belt drive. There is eccentricity between input shaft and input crank there for it oscillate instead of rotation.

The moment or angle or intensity of oscillation is controlled by the control link which further decide the flow rate and it our main aim through this project. The connecting rod is connected with control link which transfer motion from input crank to output crank .output crank is oscillating because of motion transform into and from motion; this motion is transfer to yoke via output shaft.

The yoke movement is power source to the pump, so when yoke oscillate pump operate and flow start.

Our aim is to get variable flow so by adjusting control link we can increase or decrees the yoke speed and flow get varied.

III. SCOPE OF THE PROJECT

As the world progressing at faster rate we meet mover and The following features of the drive will lead to application of drive in variety of field applications:

Step-less variation of speed : Any speed between Nmax to N min can be obtained . The conventional

gives fixed speed ratios, that too in steps. This will help replace the costly electrical variable speed drives conventionally used for spindle and slide drives in machine tool applications, packaging machinery etc.

Specific applications:
The device can be applied to automatic transfer lines where in the speed of conveyor varies as per the job sequence and operations to be performed, so every time it is necessary to change the gear box to vary the rotational speed of conveyor hence the developed device will serve the purpose and eliminate need of separate gear box for each setting of conveyor speed.

Wide range of speeds Ratio: The speed ratio can be varied one a wide range which is not possible in conventional gear box. This will be especially useful in spring making machinery, textile machinery, printing machinery and automatic transfer lines.

Specific applications
The device developed offers close to 200 speed ratios, hence this device can be easily used in spring making machine where in it will be possible to vary the pitch of the springs thus produced with precision and a range of close to 200 different pitches will be offered by application of the device.

Compact size: The size of the gear less variable speed reducer is very compact; which makes it low weight and occupies less space in any drive.
Used.

IV. CONCLUSION

The development of our project can be used to the various applications in effective manner .The developed prototype exhibits the expected results. Further modifications and working limitations will put this work in the main league of use. From this concept it is possible to vary discharge of reciprocating pump by using linkage arrangement instead of other expensive arrangement .By development of this model there is no need of

replacing fixed displacement reciprocating pump for sake discharge variation . As this concept is the extension of step less drive so that this concept posses advantage of step less drive.

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A Review on Development of Three Axis Hydraulic Dumping Trailer

Omkar Mule, Omkar Dumbre, Rushikesh Dhavale, Dipak Aware

Mechanical Engineering, SPPU, Pune, Maharashtra, India

ABSTRACT

There are many applications of trailer through the globe. In general as well as applications whosoever are used in industries, tippers have tendency to take a variety of elements which are gravel, grain, sand, fertilizer, heavy rocks, etc. just taking into consideration big scope of the title, it is essential to do analyse and research on the topic of tipper mechanism.so as to make it profitable and efficient. In today's scenario, tipper can unload only by single way i.e. by using pneumatic jack or conveyor mechanism. By this study it is easiest for the driver to unload the trailer and also it decrease time and fuel consumption. For constructing tipper mechanism hydraulic jack mechanism are used. Our project is mainly concentrated on above problem. The body can be unloaded from the trailer in three axes without applying of sudden force. The Direction control valves which energies the ram of the cylinder which lift the trailer cabin in determined side. By this study it is convenient for the driver to unload the trailer and it decrease the time.

I. INTRODUCTION

A dumper is a vehicle used for carrying bulk material, often on building sites. Dumpers are different from dump trucks by design & structure a dumper is usually an open 4-wheeled vehicle with the load skip in front of the driver, while a dump truck has its cab in front of the load. The skip can tip to the dump the load; this is where the name "dumper" comes from. They are normally diesel powered .A towing eye is fitted for secondary use as site tractor. Dumpers with rubber tracks are used in special circumstances & are popular in some countries 3-Axis dumper can be helpful for farmers, site construction, garbage collector as well for dumping gravel, sand etc. It also can reduce the work while it can be dump in 3 axial directions. It also takes less time than traditional dumpers which can reduces the work & time.

Truck, tipper, dump truck are used to transport various types of material from one place to another place at construction site in mines or in dump yards to accomplish the actual site requirement. If we can understand the working condition and availability of space in mines and at construction site, it is very tough task to unload loose material at appropriate place, adjustment of truck is needed which take vey long time and effort to unload loose material. As ewe all knows that tipper is mostly used for unloading loose material at various fields i.e construction site, mines and dump yards.

The current system available is to unload material on back side. As considering the mines space available is very less due to which unloading material on left or right side is not possible to take this as a problem Multisided tipper tilting is the need of time. To overcome one side tilting of trolley, multisided tilting mechanismis come into focus. This will help to reduce

the efforts to unload loose material one side of tipper. Now days dropping dumper has been conceived by observing the difficulty in unloading the materials. Just by making this project we performed to minimize this kind of a difficulties. Hence by this it will be easy for driver to perform an activity of unloading with minimum time with reduction in the fuel consumption.

II. METHODS AND MATERIAL

Problem statement
↓
Literature review
↓
Identifying and selecting feasible solution
↓
Design and calculation
↓
Development of CAD models of system
↓
Purchasing of component
↓
Analysis in ANSYS
↓
Fabrication of model
↓
Assembly and Testing
↓
Report Writing
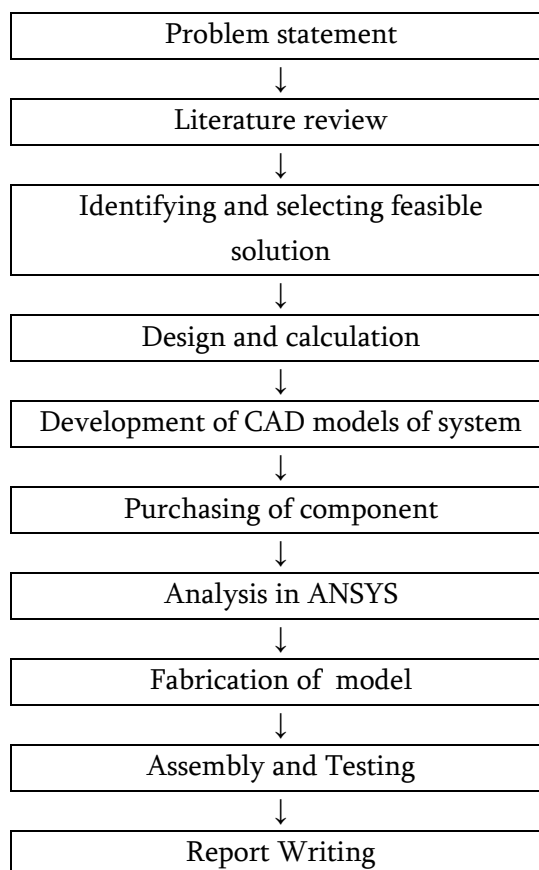
Figure 2.1 method

III. PROBLEM STATEMENT

Design and development of three axis rotational Trailer by using Hydraulic System compared with conventional trailer system.
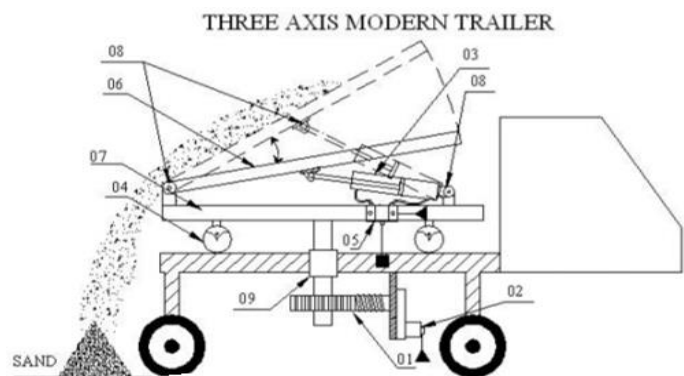
Figure 3.1. Schematic diagram of Modern Three Axis

Hydraulic Trailer
1. Worm gear arrangement
2. Motor
3. Cylinder
4. Reservoir
5. Control valve
6. Lifting body
7. Rotating body
8. Hinged support
9. Bearing

Objective
- Study and analyse the axial movement of trailer.
- Design and calculation of system Development of the prototype having 3-axis movement.
- Compare actual project model to the conventional trailer system.

IV. SCOPE OF THE PROJECT

As the entire world is developing in a at faster rate we have to meet the demand of the entire world and the standardized equipment must be found which will serve as an alternative for the existence system hence Hydraulic trailer may be used more. Effectively than the two way or one way. India is growing at huge rate and hence infrastructural development is on its high. Hence the future of this project work seems promising. The project work can be modified further more by the following way:
- Dual stage cylinders can be used.

V. LITERATURE REVIEW

S. N. Waghmare et al stated that during the study of the conventional system the dumpers that are used are not that much active and there lacking of the new inventions and the technology. The study in taken into consideration of several automobile workshops, it shows the fact that most of the difficult method was been adopted in the areas of the unloading of the material. This paper has mainly concentrated on above difficulty. Hence a prototype of such suitable arrangement has designed. The vehicle can be unloaded from the entire three direction of the mechanism can be control with the help of providing sideways to the mechanism.. This mechanism will prevent road blocking.

Prof. R.S. Ambade et al stated that This project work titled "UNIVERSAL MODERN TRAILER" has been found again difficulties in unloading of the material. Revealed the facts so mostly some difficult types of methods were adopted in unloading the materials from the trailer. The trailer will unload the material in only one single way axes. It is difficult to unload the materials in small compact area or site and small roads. In our project these are overcome to unload the trailer in all of the sides very easily. Conventional dumper vehicle unload materials only in single direction that to only at the rear side of the tipper by using various powerful pneumatically cylinders, which may cause the problems of blockage when the work area is limited.

The Multidirectional dumper is the solution of this problem. Unloading the material by using mechanical arrangement one side. By using gear and linkage attachment material can be unloaded in 180degree requirement. The all directional dumper is developed and tested for its movement in all 180 possible angles to unload the materials in the tipper trolley and monitor the inclinations for its gradualism (linearity).Now a day's hydraulic and pneumatic system is generally use in trolley for unloading purpose but our aim is to check performance of mechanical system.

Mr. Abhimanyu D. Deshmukh et al stated that The earlier techniques followed the difficulties in removing sand and assets. there are many survey in the regards in automobile garages, revealed the facts wich are mostly difficult methods were adopted in unloading the materials from the trailer or dumper . This paper has mainly focused on above problem. So as to find the solution the protypewas designed.Vehicles can be unloaded from the trailer in three axes without applying any kind of foreign force. There are way of the mechanism are be control with the help of ball and socket joint which connected to ram of the hydraulic cylinder which lifting the dumper cabin in require side. Further modifications and working limitations which will put this work in the main league of use. This research paper is help to saves time & energy which helpful and efficient .

VI. ACTUAL CONCEPT OF PROJECT

The dumper which has been using in our country has big problem to drive it in reverse direction and well skill operator required for it. So to overcome this problem we design a dumping trailer in such a manner that instead of driving it in reverse direction for unloading material we made system in the trailer which rotate the only the trailer. In this way there is no need to drive the trailer in reverse, we have to just rotate the trailer and unload the material.

Figure 6.1. Before modification
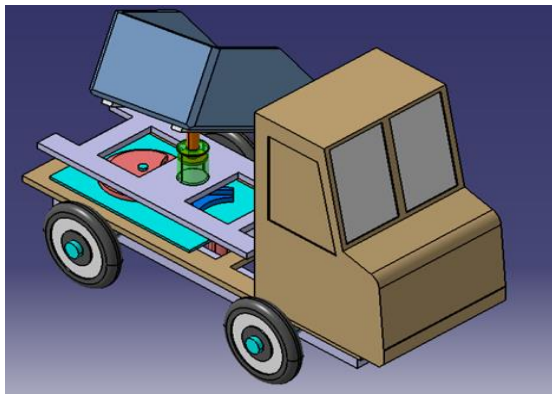
Figure 6.2. After modification

VII. CONCLUSION

The development of our project can be used to the various applications in effective manner. The developed Prototype exhibits the expected results. Further modifications and working limitations wich will put this work in the main league use. This concept saves time, cost and energy which leads to efficient working. This further line should be modelled using equations and an experimental agreement. The constructional sites or the infrastructural work demands efficient and user friendly machinery which will lead to more and more use of three way dropping dumper.

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A Review on Working of Four Stroke Engine Using Biogas

Vivek Kale, Akshay Lagde, Nitin Patil, Aniket Kulkarni

Mechanical Engineering, SPPU, Pune, Maharashtra, India

ABSTRACT

One of the major problem for the successful application of biogas as a major fuel for SI (Spark Ignition) engines is the modifications that are required into the engine as well as intake system overcome this problem a new intake device was designed. With the use of this new intake device, engine will be effectively run on biogas. A new intake device could be serviceable by making simple modifications on the carburettor venture and this modification would not cause complications in the carburetor system. The paper includes design and working of an intake device for biogas operated single cylinder 4^{-S} spark ignition engine.

I. INTRODUCTION

As the population and economic growth increase, most of developing countries facing the increasing demand of energy. Energy saving and emission reduction are two worldwide problems. In order to meet the increasing demand on the performance of internal combustion engine and satisfy more and more restricted emission regulations, the power, reliability, life cycle, emissions and mileage of IC engine need to be further improved. In order to meet theincreasing energy requirements, there has been growing interest in alternative fuels like biodiesels, methyl alcohol, ethyl alcohol, biogas, hydrogen and producer gas to provide a suitable fuel substitute for internal combustion engines. Biogas has been a major source of energy and it is also a renewable source of energy. The biogas is easily developed under specific climatic and socio-economic conditions and cost of production of biogas is very low. Also 60-80% methane gas present in biogas hence, we can use the biogas a fuel in the SI engine.

II. NEED OF INTAKE SYSTEM DESIGN

In SI engine the air and fuel is mixed in carburettor and the homogeneous mixture of air and fuel is then admitted into the combustion chamber. The fuel used for this engine is petrol which is in the form of liquid. Air comes through the air filter and fuel comes from fuel tank into the float chamber of carburettor and gets mixed with each other into throat of carburettor. This carburettor is specially designed for stable liquid phase fuels. If it is need for fuels like biogas, it cannot be effectively used for the biogas. The major problem with biogas as a fuel for SI engine is phase difference, the biogas exists in the form of gaseous phase. Besides, biogas is required to be stored at high pressure in the tank and when high pressure biogas comes to the intake manifold large amount of fuel is entered into the cylinder due to the high pressure. So overcome these problems, the intake system needed to be designed for biogas fuel. In general, to design intake system using biogas as a fuel in petrol engine we need to make modifications in the engine. Major modifications required are as follows,

- **Modification in Intake System**
  A. Carburettor Design
  B. Intake manifold design
- **Modification in Engine**
  A. Valve timing
  B. Compression ratio
  C. Spark timing
  D. Turbulence in combustion chamber
  E. Flame propagation

Before directly going to design an engine, it is logical to design intake system. In this paper the focus is limited to the intake system design.

III. METHOD AND MATERIAL

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┌─────────────────────────┐
│   Problem Statement      │
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┌─────────────────────────┐
│   Literature Review      │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Identifying and selecting│
│ feasible Solution        │
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│ Design and Calculation   │
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│ Development of CAD       │
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│ Analysis in ANSYS        │
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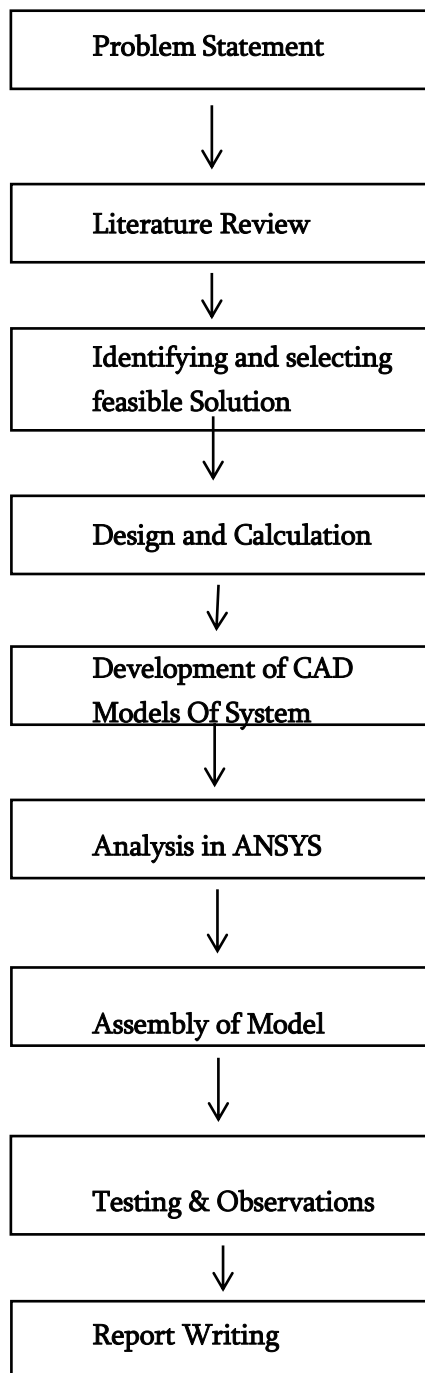
Figure 1

IV. PROBLEM STATEMENT

There are so many fuels used in IC Engine, but they have certain physical and chemical properties. Other words, fuels used in IC engine redesigned to satisfy performance requirements of engine system. Gasoline contains many impurities. It has low octane number. All fuels oxidize slowly in presence of air. In alcohol, higher latent heat of vaporization reduced charge temperature before combustion. Alcohol suffers disadvantages of water absorption, corrosive and lubricant incompatibility. In LPG, it decreases volumetric efficiency due to its high heat of vaporization. The road sensitivity is very high. It is very corrosive. Response to blending is very poor. In electricity, they use starting generated power stations that use fossil fuel of nuclear power. There are other problems too. To overcome these problems researchers found some other solutions. They used biogas as a fuel in engines to overcome pollution and other problems facing by peoples.
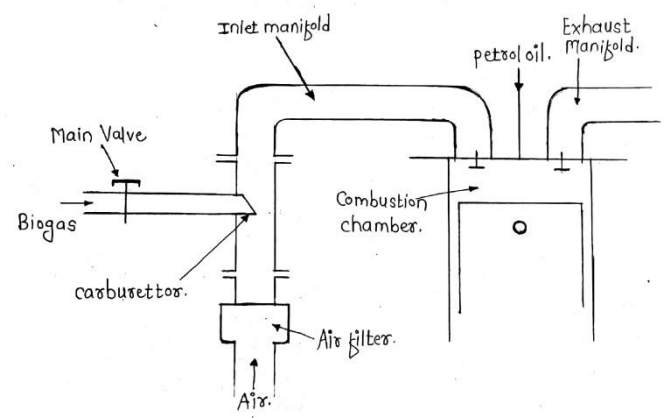
Figure 2

Objective
- Study and analyse the four stroke SI engine using biogas.
- Modification of the prototype of existing four stroke SI engine.
- Compare the experimental results with the other existing engines.
- Reduction of fuel consumption an increase in reliability.

Proposed Work

- The study of the research work will be carried out on a four stroke petrol engine.
- Present layout of a Biogas operated engine.
- We have to run Two wheeler on Biogas.
- Also we are going to run the motor for watering the farm.
- Also for Stationary applications like generators in colleges.

V. LITERATURE REVIEW

N. S Hanamapure carried out Biogas Otto engines when modified from Otto engines using petrol fuel are found to produce less power than in petrol version. The reason is reduction in volumetric efficiency as a gaseous fuel occupies a larger portion of the mixture's volume sucked into the engine than liquid fuel and displaces air accordingly. The liquid fuel has a high volumetric energy content than biogas and also cools the air/fuel mixture when evaporating in intake manifold. The cooling effect an expand in density, and hence the amount of air/fuel mixture actually sucked into the engine on a mass basis is higher. A gas engine, basically when operating on biogas with a large amount of unnecessary carbon dioxide, can suck a reduced amount of air only to allow room for the necessary amount of fuel gas. Otto engines has an excess air ratio of $\lambda = 1 \pm 0.1$ has to be maintained and the inlet ducts and manifolds are dimensioned for operation with petrol, the overall fuel energy in a mixture of biogas and air is less than in petrol operation. With the decrease in the maximum possible supply of fuel energy for the energy density of the mixture (mixture heating value) the maximum power output consequently decreases in the same proportion. The rate of reduce in power is largely dependent on the volumetric heating value of the gas, e.g. biogas with 70% CH4 has a high volumetric calorific value than biogas with 50% CH4 only. The power output of an engine is higher in operation on gases with high calorific value than in operation on "weak" gases.

Shardul S Mane stated that The utilization of biogas in vehicles requires a method of compact storage to facilitate the independent movement of the vehicle for a reasonable time. Higher quantities of biogas can only be stored at small volumes under high pressure, e.g. 200 bar, or purified as methane in a liquid form at cryogenic conditions, i.e. -161 °C and ambient pressure. The process, storage and handling of compressed or liquefied biogas demand special and costly efforts. Compression is completed in reciprocating gas compressors after filtering of H2S. At a moderate pressure of about l5 bar the CO2 content can be "washed out" with water to reduce the final storage volume. Intermediate cooling and elimination of the humidity in molecular sieve filters are essential as the storage containers should not be subjected to corrosion from inside. The storage equipment, similar to oxygen cylinders known from gas welding units, can be used on the vehicle as "energy tank" and in larger numbers as refilling store.The volume thus required on the vehicle is still five times more than is required for diesel fuel.

Poonam Mahadev Salgar stated that Purification of biogas to CH4 increases the storage efficiency by 25 to 30% but involves an extra gas washing column in the process. Purified biogas, i.e. methane, has various combustion features than biogas because of the lack of the CO2 content. It burns faster and at higher temperatures; this requires different adjustments of ignition timing. Dual fuel methane engines are suitable to increased problems with injector nozzle overheating and have to operate on higher portions of diesel fuel (about 40%) to effect sufficient cooling of the jets. Liquidification of biogas requires drying and purification to almost 100% CH4 in one process and an additional cryogenic process to cool the CH4 down to -161 °C where it condenses into its liquid form. Storage is optimal at these conditions as the volume reduction is remarkable, i.e. 0.6 m³n with an energy

content of 6 kWh condense to one lifer of liquid with an energy equivalent of 0.61 diesel fuel. The required tank capacity is only 1.7 times the volume needed for diesel fuel. This advantage is restricted by a more easy multistage process, the handling of the liquid in specially designed cryo-tanks with vacuum insulation and the fact that for longer storage it has to be keep at its required low temperature in order to prevent evaporation.

VI. CONCLUSION

It is concluded that The study concludes the biogas production from organic wastes, its composition and properties for use in I.C.Engines. Different techniques for CO_2, H_2S elimination are discussed, among which water scrubbing is a simple continuous and cost effective method for purification. Attention is also focused for making biogas as alternate fuel in Diesel Engines and dual fueling is recommended to be the best one for biogas CI operation. Drop of CO_2 in biogas for dual fuel increases the thermal efficiency. In biogas HCCI mode, the presence ofCO_2 controls the high heat release rate; hence the durability of engine components will not be affected. Therefore it is suggest to use biogas as alternate fuel in diesel engines.

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Electricity Generation using Propeller Shaft of Vehicle

Rahul Borate[1], Sandesh Bichitkar[2], Hanumant Pawar[2], Ashutosh Kunkekar[2], Aditya Lote[2]

[1]Assistant Professor, Mechanical Department, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

[2]U.G. Student, Mechanical Department, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

A vehicle such as a large truck can generate electricity for operating a hybrid engine or recharging batteries by use of an electricity generating driveshaft. The electricity generating driveshaft is comprised of a magnetized driveshaft which acts as a rotor, and a series of copper wire coils surrounding the magnetized driveshaft which acts as a stator in an electrical generator. As the magnetized driveshaft spins as a result of power from the hybrid engine, an electrical field is created which is captured by the copper wire coils and used to power the hybrid engine or recharge a super capacitor or batteries of vehicle.

I. INTRODUCTION

The field of the invention disclosed here in is an article of manufacture and method for generating electricity from the rotating driveshaft of a motor vehicle and using the driveshaft to slow the vehicle to a stop. Vehicles have been powered by a variety of sources over the years. Before the invention of the internal combustion engine, vehicles were powered by animals, wind, and manpower. Since the abuse of the internal combustion engine, vehicles have been fuelled by gasoline, diesel oil, natural gas, ethanol and combinations of ethanol and gasoline. These fuels are expensive to use, difficult to obtain and transport and are becoming increasingly scarce. In response to these problems with the so called 'fossil fuels', vehicles are being powered by all electric motors or hybrid combinations of electric/gasoline or electric/diesel fuel engines. The use of electric motors or electric/fossil fuel hybrid engines is hindered by the difficulty of providing electricity to power the electric motor or the electric portion of the hybrid engine. Electric engines receive energy from batteries. However, the batteries are heavy decreasing the efficiency of the electric motor. The batteries also have limited storage capacity thereby decreasing the range of the vehicle driven by an electric motor. Moreover, stations to recharge the batteries are few limiting the usefulness of electric vehicles. Electrical generators have been in use for many years in different applications. This is possible due to the principle of electromagnetism. As this electrical energy is produced, the generator will cause electric current to flow through an external circuit. Typically, generators are made up of an arrangement of magnets, copper winding and a rotor, which ultimately produce electricity from mechanical power. This concept of electromagnetism can be applied to vehicles, or virtually anything that utilizes a drive axle or drive shaft.

II. PARTS AND MATERIALS

Table 1. Parts and Materials

Sr. No.	Parts	Material
1	Frame	Mild Steel
2	Wooden Sheet	Wood
3	Shaft	Steel

4	Coil	Copper Coils
5	Battery	STD
6	Bearings P204	STD
7	Motor	STD
8	Disc Magnets	Neodymium
9	Screw Nut Bolt M6	STD
10	Pulley	Mild Steel
11	Belt	STD

III. WORKING

- When the propeller shaft is rotating at high speeds, the disc magnets also rotates with its axis.
- When the magnet spins, the magnetic field around the top and bottom of the coil constantly changes between a north and a south pole.
- This rotational movement of the magnetic field results in an alternating emf being induced into the coil as defined by Faraday's law of electromagnetic inductions
- Copper coils generates 10 to 30 AC volt, by using AC to DC Converter circuit, we can convert it to DC and charge the batteries.
- Further by using this power we run the hybrid vehicles or electric vehicles.

IV. DESIGN

1.Shaft:

Figure 4.1. Shaft

Material-Mild Steel (M.S.)

S_{yt}=Yield Strength=170MPa

S_{ut}=Ultimate tensile strength=290MPa

...… (Ref. Table 2.5 in Machine Design by R.S. Khurmi & J.K. Gupta)

Torque=20Kg.cm=20*9.81*10=1962N.mm

Speed=100rpm

Weight of 8 magnets=1kg

(maximum weight value, weight considered as per available magnets with supplier of magnets. i.e. 18mm dia. and thickness 3mm)

Consider Self-Weight of Shaft=5kg

Total weight=W=6kg=6*9.81=58.86N

K_b=combined shock & fatigue factor for bending=1.5

K_t=combined shock & fatigue factor for torsion=1.25

………….. (Ref. Table 4.2 in Machine Design by V.B. Bhandari)

Applying A.S.M.E. Code,

$\mathcal{T}_{per}$=Permissible stress

$\mathcal{T}_{per}$=0.3*S_{yt}=0.3*170=51MPa

$\mathcal{T}_{per}$=0.18*S_{ut}=0.18*290=52.2MPa

Selecting $\mathcal{T}_{per}$ whichever is minimum

……… (Ref. Page no.226 from Machine Design by V.B. Bhandari)

$\mathcal{T}_{per}$=51MPa (selected)

Considering effect of key-way reduces this value by 25%,

$\mathcal{T}_{per}$=0.75*51=38.25MPa

Maximum bending moment of simply supported shaft carrying central load,
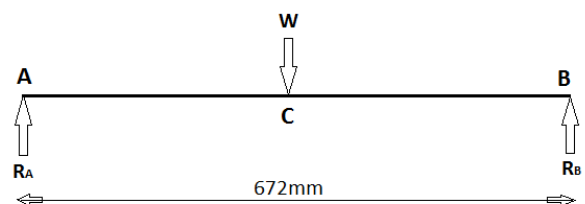
Figure 4.2. Vertical loading diagram of shaft

$$Mc = \frac{WL}{4}$$

Mc = (58.86*672)/4=26369. 28N.mm =9888

We know that, the equivalent twisting moment,

$$Te = \sqrt{(Kb * Mc)^{\wedge}2 + (Kt * T)^{\wedge}2}$$

$$Te = \sqrt{(1.5 * 26369.28)^{\wedge}2 + (1.25 * 1962)^{\wedge}2}$$

Te= Under root of ((1.5*9888)^2+(1.25*1962)^2)

Te=15034.105 Nmm

Therefore,

We also know that, equivalent twisting moment,

$$Te = \frac{\pi}{16} * \text{Tper} * d^{\wedge}3$$

Putting values,

15034.105= (3.14/16) *38.25*d^3

d=12.60 mm

factor of safety is selected=1.5

d=1.5*12.60 = 18.9mm =19 mm,

The standard size of shaft available nearby to 19 is 20mm

Therefore, shaft diameter(d) we considered as 20mm.

2.Motor:

Figure 4.3. Motor

Speed=N= 1440 rpm

Torque = 20 Kg-cm =20*9.81*10^-2

=1.962 N-m

Angular Velocity =ω= (2*π*N)/ (60) = (2*π*1440)/ (60)

=150.796 rad/sec

Power =P = T*ω =1.962*150.796

=295.862 watt
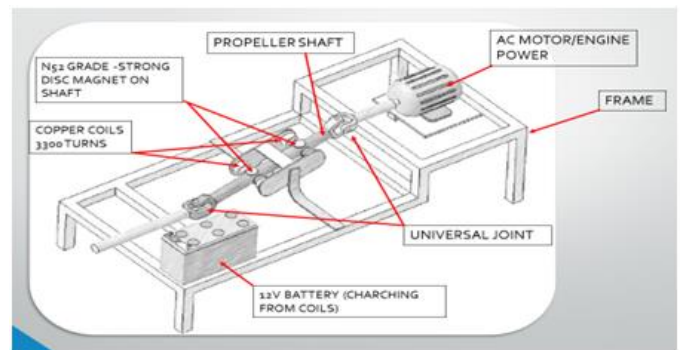
Figure 4.4. Proposed Working Setup

V. RESULTS AND DISCUSSION

1. Save energy:

Propeller shaft is used as energy source in this project due to rotary energy is directly converted to electrical energy & store in battery.

2. Reduce friction:

Dynamo mechanism or regenerative braking system not used in this project coils & magnet concept to generate electricity frictionless.

3. No air & environment pollution:

No fuel is required to run this project due to which no exhaust of pollutants take place.

4. Easy power generation:

As the vehicle is running the power generation takes place by itself and no need of extra efforts to generate power.

5. Low cost:

Main constrain a low-cost device middle class or small-scale industries or society can use it with the vehicles.

VI. CONCLUSION

Electrical generators have been in use for many years in different applications. The general definition of generator is a device that converts mechanical energy into electrical energy. This is possible due to the principle of electromagnetism. In generator powered by a diesel engine, the mechanical energy is provided

from the chemical energy that stems from the combustion of diesel fuel by the engine. This mechanical energy provided to the generator is eventually converted into electrical power based on the principle of electromagnetic induction. As the magnetic field is changed, a current is produced through the conductor within the generator.

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Characterization of Properties of Natural Fiber Composites

Prof. Ganesh A. Kadam, Kishor R. Desai, Darshan P. Darane, Prasad K. Shinde, Suryakant V. Kasurde

Department of Mechanical Engineering, UG Student, SKN Sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India.

ABSTRACT

The recent interest in new light weight natural fibers can be used due to their low density, low cost and bio-degradability. During the motion of aircraft, wing and control surfaces undergo through severe vibration. This vibration can be controlled by selecting proper material, thickness, fiber orientation etc. This work focuses on vibration characteristics & sound absorption characteristics of Jute, Flax & Basalt Fiber Reinforced Hybrid Composites for Free vibration composites at various fiber orientations and end conditions. A variety of parametric studies were carried out to see the effects of various changes in the laminate parameters like orientation of fiber, stacking sequence and number of layers of fiber on the natural frequencies. The specimens of jute Flax & Basalt fiber and epoxy matrix composites are fabricated by the hand-lay-up technique with different composition and orientation. An experimental investigation is carried out using modal analysis technique with Fast Fourier Transform Analyzer (FFT), impact hammer and contact accelerometer to obtain the Frequency Response Functions. Vibration tests of simply supported beam for different composites are performed. Depending on the obtained results, best suited composite was chosen by comparing all the combinations.

Keywords: Natural fiber, FFT, Sound absorption, Stacking sequence, Orientation angle, Number of layers, Natural frequency

I. INTRODUCTION

In many applications Natural fibers are a possible replacement for synthetic fibers in automotive and aerospace engineering applications due to less weight, high strength, low density, eco-friendly and easily available, high specific strength, low cost, biodegradability, good thermal and acoustic insulating properties. The most commonly used plant fibers for polymer reinforcement are jute, flax, sisal, banana, basalt, coir, kenaf, hemp, palmyra etc. [1,3]

The properties that can be enhanced by forming a composite material consist of strength, stiffness, corrosion resistance; wear resistance, natural frequency, damping factor, weight, fatigue life, temperature-reliant behaviour, thermal insulation, thermal conductivity, acoustical isolating and electrical isolating. Naturally, neither all of the properties are improved at the same time nor is there usually any necessity to do so.[2] In recent years, because of their improved and better characteristics, the use of the fibre reinforced composite laminated materials have extensively increased in structural applications. The properties of fibre-reinforced composite materials depend on several parameters such as material of fibre and matrix, curing process, fibre orientation, stacking sequence, inherent lamina

and laminate level flaws introduced during the manufacturing process. Nevertheless, fibres are the primary factors controlling the properties of fibre-reinforced composite materials.[5]

In recent years, with rapid development of modern industry and transportation, noise pollution has become increasingly prominent, and has become a major cause of environmental pollution and personal unhealthiness. There are two main methods to control the noise pollution. One is the control of the noise sources, that is, to make the big vocal sound inaudible through a small device or equipment; the other one is to use a variety of noise reduction materials with special structures, in terms of transmission route. materials science experts have introduced new noise reduction materials and there are more and more applications of fibers in the control of noise pollution.[4]

The goal of this study is to explore the sound absorbing and damping properties of composites composed with natural materials. By utilizing such materials in the fabrication of structures along with the ability to have materials which are renewable, recyclable and biodegradable. Natural material-based composites with improved acoustic performance and damping properties will be an environmentally friendly solution. In this present study three different types of composite materials (Jute, flax, & Basalt) are fabricated using hand lay-up technique and sound, and vibration test has been carried out in order to investigate the sound absorption and vibration damping properties.[4]

II. METHODS AND MATERIAL

A. Materials
1. Jute
Jute is a lignin-cellulose fibre which is composed primarily of the plant materials. cellulose (major component of plant fibre) and lignin (major components wood fibre). Dubbed the "golden fibre", jute is long, soft and shiny, with a length of 1 to 4 m and a diameter of from 17 to 20 microns. It is one of nature's strongest vegetable fibres and ranks second only to cotton in terms of production quantity. Jute has high insulating and anti-static properties; moderate moisture regains and low thermal conductivity. The strong threads made from jute fibre are used worldwide in sackcloth - and help sustain the livelihoods of millions of small farmers.

2.Flax
Flax fiber is having good mechanical properties other than the natural fiber materials. Flax fiber is the light-weight material for light-weight construction. These materials are strong, stiff and light-weight. Sound absorbing and damping properties of flax fiber is good. Flax fiber has an inelastic nature

3.Basalt
Basalt fiber is a relative newcomer to fiber reinforced polymers (FRPs) and structural composites. It has a similar chemical composition as glass fiber but has better strength characteristics, and unlike most glass fibers is highly resistant to alkaline, acidic and salt attack making it a good candidate for concrete, bridge and shoreline structures.[5]

B. Methodology
The following materials such as Jute, Flax, Basalt, and epoxy resin are used. Fibers which are used in the present work are purchased from Vruksha Composites and Services, Chennai and GY 257 epoxy resin and Hardner 140 used as matrix material. The composite laminates for different volume fractions are prepared using hand lay-up method in a glass setup. Many laminates having different fiber length, fiber orientation with stacking sequence were prepared.

1.Sound absorption test:
Sound absorption is a process of converting sound energy, partly into heat (i.e. either by friction or by viscous resistance of the pores and fibers of acoustic materials) and partly into mechanical vibration of the

materials. The sound absorption coefficients of natural composites are measured using two-microphone transfer function impedance tube test rig according to the American Society of Testing and Materials, ASTM E1050-12.19 The large impedance tube test rig is 80mm in diameter the small impedance tube test rig is 25mm in diameter. The large tube can operate within frequency of 500Hz to 2000Hz, while the small tube can operate within 500Hz to 6000Hz. Later, the large and small tube results were combined to obtain the sound absorption coefficient for frequency range of 500Hz to 6000Hz.

2. Vibration Tests:

Frequency Analysis Based on the Fast-Former Transform (FFT) Algorithm is the tool of choice for measurement and diagnostic of vibration. The FFT Analyzer is recently developed pc based virtual instrument. It uses impulse execution and either frequency domain analysis or time - domain Analysis to entrant the model Parameter from the response measurement in real time. Following impulse are executions of the specimen the measured analog response signal may be digitalized and analysed using the domain techniques or transformed for analysis in the frequency domain using FFT Analyzer. The peaks in the frequency response spectrum are the location of natural frequency.

III. LITERATURE REVIEW

The purpose of the literature review is to understand the work done and understand composite material layers effect on the vibration frequencies of plate & Sound Absorption.

Ashwini P., SureshBabu S. U. and Manjunath G. B. presented their study on "Experimental Investigation of Jute & E-Glass Fiber Reinforced Hybrid Composites for Free vibration." The specimens of Jute fiber and epoxy matrix composite plates were manufactured by the hand-layup techniques. An experimental investigation is carried out using modal analysis

technique to obtain the natural frequencies by using FFT analyzer. Also another analysis runs on ANSYS to validate the results. The aim of current study is to determine the vibration characteristics of the Jute/ E-glass epoxy composite laminates, and the evaluation of the effect of fiber orientations on the vibration characteristics.

The experimental setup for of simply supported beam conducting modal analysis is shown in Fig 1. The beam is supported by hinges at both ends. Middle of the beam mounting accelerometers to measure acceleration of vibration for the free vibration. Beam can be excited for free vibration at point and response is observed using OROS software for coherence. Once coherence is observed, the results are stored and the point of excitation is charged.[3]

Figure 1. Experimental setup of simply supported beam using FFT Analyzer

S. Prabhakaran, V. Krishnaraj, M. Senthil kumar, R. Zitoune presented their study on "Sound and Vibration Damping Properties of Flax Fiber Reinforced Composites."

The sound absorption coefficient can be measured with the help of an impedance tube tester as per the ASTM standard E 1050. The impedance tube testing method is implemented by the generation of plane wave in a tube by a sound source and then the sound pressures are measured in a microphone position in close proximity of the sample. Figure 2 shows the schematic diagram of impedance tube tester.
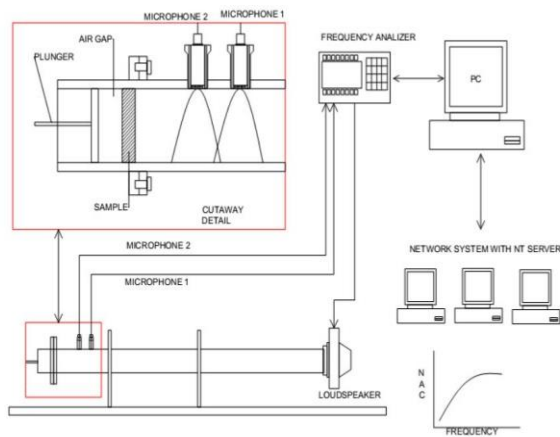
Figure 2. Impedance tube tester
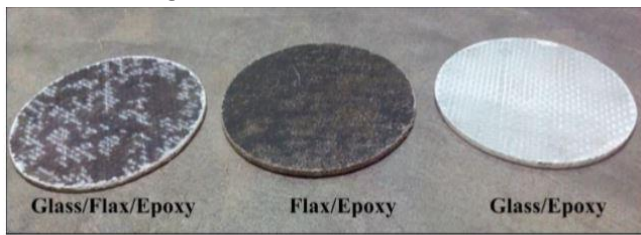
Figure 3. Sound test specimens

An impedance tube was used with a sound source (loudspeaker) connected to one end, and the test sample shown in Figure 3 was mounted to another end. The loudspeaker generates the broadband random sound waves and the sound waves propagating as plane waves in the tube hit the sample, get partially absorbed, and subsequently reflected. The acoustical properties of the test sample were tested in the frequency range of 100–2000 Hz. This system tests a sound absorptive material, processes the results, and reports the results in a graph of the absorption coefficient in various frequencies. Thus, the absorption coefficient of each sample was obtained.[4]
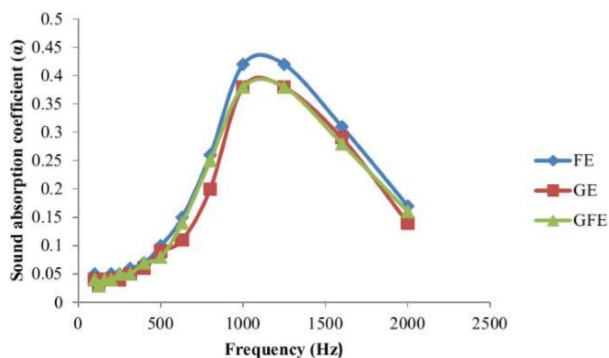
Figure 4. Sound absorption coefficient vs. frequency for FE, GE, and GFE specimens.

From Figure 4, it is evident that, the sound absorption coefficient of FE is greater than that of GE and GFE in all frequency levels. The maximum sound absorption is observed at 1000 Hz for all the reinforcements. The sound absorption of FE has 21.42% and GFE has 14.28% higher than that of GE at higher frequency of 2000 Hz. At lower frequency level (100 Hz), the FE has 25% of higher in sound absorption over GE. The GFE has a similar sound absorption over GE. Out of the three developed fiber reinforced composites, FE with higher sound absorption coefficient can be suitably used in the applications were sound absorption is considered as important design criteria.[4]

IV. CONCLUSION

By using natural fiber based composite materials, it is possible to create a composite laminate with superior acoustic and vibration damping performance without sacrifices in stiffness-to-weight ratios.

The investigation of damping characteristics of jute and E-glass epoxy hybrid composites was studied. The specimens are obtained for 0^0, 30^0, 45^0 (JG0, JG1, JG2) angle orientation with a different composition. Vibration tests were conducted by using an FFT analyzer for simply supported beam.

- The damping factor decreases from 0.35 to 0.146 when increasing the percentage of in JG0 composite material.
- The damping factor decreases from 0.512 to 0.268 when increasing the percentage of in JG1 composite material.
- The damping factor decreases from 0.387 to 0.269 when increasing the percentage of epoxy JG2 composite material.
- Finally, JG1 shows higher the damping factor value about 0.369 and JG0 shows lower the damping factor value about 0.236.
- It can be concluded that the damping factor is decreases with increasing epoxy percentage for

all different fiber orientation of the composite material.[3]

The sound absorption coefficient of flax fiber reinforced composites has 21.42% higher than that of glass fiber reinforced composites at higher frequency level (2000 Hz). At lower frequency level (100 Hz), the flax fiber reinforced composites has 25% higher in sound absorption over glass fiber reinforced composites. These results suggest that the flax fiber reinforced composites could be viable candidate for applications which need of good sound absorption properties.

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Frictionless Power Generation by Flywheel

Saurabh Wagh, Atish Pawar, Prithul Mishra, Abhmanyu Domb

U.G. Student, Information Technology, SKN Sinhgad Institute of Technology and Science, Lonavala,
Maharashtra, India

ABSTRACT

In all countries production and use of energy is needed for the many activities such as phone charging, lighting, driving bike and other stuff. Energy is produced by Non-renewable sources such as Petrol, Kerosene and nuclear Which creates pollution, this is main idea to produce the energy using cycle tyre. Since cycling competition that are conducted throughout year, we could generate sufficient energy to charge small and large devices. The problem with other energy generation mechanism is loss taking place because of physical contact with tyre but we developing new idea that could generates electricity without any friction with flywheel.

I. INTRODUCTION

This is a mechanical device which uses the flywheel to store energy in the form of inertia. In this system electrical energy is used to drive the main motor. Main motor is used to drives a series of pulley and belt arrangement which forms a gear train arrangement which produce a twice/ thrice speed at the shaft of generator. The inertia of flywheel can be increased by increasing weight of flywheel. It also increases if the flywheel weight is concentrated as far out toward the rim of the flywheel as is possible. Firstly, the requirement for an effective system needs to be a suitable flywheel with a large diameter and vast majority of the weight needs to be close to rim. The construction needs to be robust and secure as ideally. The weight on the flywheel is concentrated outward of the rim which needs to be exactly at right angles to the axle on which it rotates and exactly centred on the axle. The main motor is low speed, low voltage input motor, the generator is high speed, and high voltage output generator. When we apply energy to the main motor it starts running, which causes to rotate the flywheel. When the motor is reaches the highest speed (constant speed) we switch the power by applying the electrical energy

generated by the generator. We add the extra thing in the system like transformers, rectifier, inverter etc. for further conditioning of the output as per requirement.

Electric vehicles are powered by electric motors connected to batteries. When we are driving along, energy flows from the batteries to the motors, turning the wheels and providing us with the kinetic energy we need to move. When we stop and hit the brakes, the whole process goes into reverse. The kinetic energy stored in flywheel is consumed to generate electricity. Power flows back to the batteries, charging them up. So, a good proportion of the energy we lose by braking is returned to the batteries and can be reused when we start off again. In practice, regenerative brakes take time to slow things down, so here our system zero friction no physical contact of vehicle connected, the flywheel plate just connected parallel with the type shaft to get the good output continuously even when there is braking.

II. METHODOLGY & MATERIAL

We are using the wheel of cycle which is connected to the pulley which is mounted on the

same shaft and its diameter is less than the wheel diameter due to which the speed of rotation can be increased.

On another shaft which is connected to the pulley is having the assembly of flywheel and neodymium magnet-coil arrangement.

Flywheel will store the kinetic energy while wheel is in running condition and will release the K.E when the brake is applied on the wheel.
So, use of flywheel it provides such kind of energy which is help run the cycle by less efficient power.

Neodymium magnet will start rotating shaft and coil is steady. So here E.M.F is produced from magnet and coil arrangement. By this way power will generate and store it into battery.

Table 1. Parts and Materials

Sr. No.	Parts	Material
1	Frame	Mild Steel
2	Wooden disk	Wood
3	Shaft	Steel
4	Coil	Copper Coils
5	Battery	STD
6	Bearings P204	STD
7	Motor	STD
8	Disc Magnets	Neodymium
9	Screw Nut Bolt M6	STD
10	Pulley	Mild Steel
11	Sprocket	Mild Steel
12	Belt	STD
13	Flywheel	Cast Iron

III. WORKING

Electricity is used to drive main motor. The spindle of motor drives the primary shaft through belt and pulley drive.

Chain and sprocket mounted on primary shaft is used to drive secondary shaft which rotates flywheel mounted on secondary shaft.

Kinetic energy is stored in flywheel when break is applied. Flywheel is continues to rotate even if cycle wheel stop.

The neodymium magnet mounted on flywheel generates electricity through copper coil. Its generated electricity is used to charge batteries.

IV. DESIGN AND CALCULATIONS

Shaft 1

Power transmitted by shaft,

$$P = \frac{2 \pi N T}{60}$$

Where,

$N \rightarrow$ Rpm of shaft 1 = 1270

$T \rightarrow$ Torque transmitted

$P \rightarrow$ Power Available = 0.5 kw = 0.5×10^3 w

T = 3.76 NM
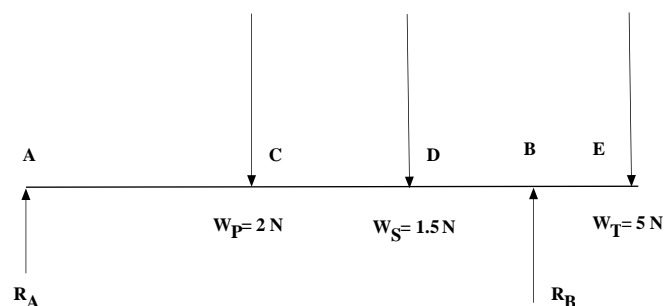
Taking moment about point A,

R_B x 400 + ($R_A \times 0$) = (150 × 2) + (1.5 × 250) +(5 × 450)

400 R_B = 2925 N

RB= 7.31 N

$R_A + R_B$ = Total load

R_A = Total load - R_B

R_A = (2 +1.5 +5) − 7.31

R_A = 1.19N

Now SF at A,

R_A = 1.19N SF

Between A & C is 1.19N

SF at C = 1.19 − 2 = -0.81 N

SF between C & D is -0.81N

SF at D = - 0.81 -1.5 = -2.31N

SF at B = -2.31N + 7.31 N = 5N

SF between B & E is 5 N

SF at E = 5 -5 = 0 N

W_S=1.5N W_F=1 N

Taking Moment at point A

R_B x 400 + (R_A × 0) = (1.5 × 250) + (1 ×300)

Bending Moment:

MA= 0Nmm

MC = R_A X 150 = 1.19X150

MC =178.5 Nmm

MD =1.19X250 – 2 X 100

MD = 97.5Nmm

MB= 1.19 X400- 2 X 150 -15 X 50

MB= 101 Nmm

ME = 0

·: Maximum bending moment at point C= 178.5Nmm = 0.178 Nm

Combine Twisting and Bending

$$Teq = \sqrt{[T^2 + M^2]}$$
$$= \sqrt{[(3.76^2) + (0.178^2)]}$$
$$= \sqrt{14.14+0.031}$$
$$= \sqrt{14.161} \ Nm$$

Teq = 3.76 Nm

Teq = (∏ × D³×Ʈ) / 16

Where,

Ʈ = Shear Stress

D =Diameter of shaft = 20 mm=0.02m

Ʈ = 2.3949 N/mm2

Allowable shear stress 60 N/mm2 ≥ Ʈ.

Hence our Design is safe.

Shaft 2 :

The power available for shaft 2 is same.

Power transmitted by shaft,

$$0.5 = \frac{2\pi \ x \ 808 \ x \ T}{60 \times 1000}$$

T = 5.912 Nm

400 R_B = 675 N

RB= 1.68 N

R_A + R_B = Total load

R_A = Total load - R_B

R_A =(1.5+1) – 1.68

R_A = 0.81 N

Now SF at A,

R_A = 0.81N

SF between A & S is 1.5N

SF at C = 1.19 – 2 = -0.69 N

SF between S & F is -1 N

SF at F = -0.69 - 1 = -1.69N

SF at B = -1.69+1.69 = 0 N

Calculation of maximum B.M:-

MA= 0Nmm

MS = R_A X 250 = 0.81 X 150

MS =200.5 Nmm

MF =0.81 X 300 – 1.5 X 50

MD = 168 Nmm

MB= 0 Nmm

·: Maximum bending moment at point S= 200.5 Nmm = 0.2005 Nm

Combine Twisting and Bending

$$Teq = \sqrt{[T^2 + M^2]}$$
$$= \sqrt{[(5.912^2) + (0.2005^2)]}$$

Teq = 5.915 Nm

Ʈ = 3.76 N/mm2

For steel,

Allowable shear stress 60 N/mm2 ≥

<u>Hence our Design is safe.</u>
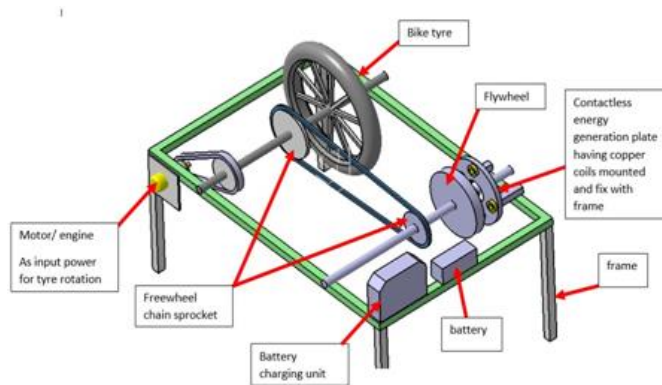
Figure 1. Working Setup

V. RESULT AND DISCUSSION

- Save energy
- Flywheel is used in this project due to which kinetic energy is saved while breaking the cycle.
- Reduce friction
- Gear mechanism is not used in this project due to which friction is reduced.
- No air & environment pollution
- No fuel is required to run this project due to which no exhaust of pollutants take place.
- low maintenance cost
- Easy power generation

As the cycle is running the power generation takes place by itself and no need of extra efforts to generate power.

VI. CONCLUSION

We can conclude that, the system arrangement generates electricity without any friction with flywheel and it can be utilized in the maximum amount.

We have successfully designed the project and implemented on frame, the generated power is utilized to charge the mobile phones and mobile devices; we also understand the concept of electromagnetism and how to generate power by just placing the magnet and coil of equal quantity on different disks without making any contact. The voltage output taken from the assembly is totally dependent on the rpm of the wheels so voltage is fluctuating so a battery is used to provide a constant power supply to charging vehicle or appliance. A battery connected to the generator assembly is continuously charged when shaft moves at 80- 90 rpm which is normal speed of bike. By this assembly battery is continuously charging.

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Pyrolysis of Biomass using Solar Energy

Yeole Shubham E , Gadkari Pranil S , Patil Akshaykumar S , Wakade Rohan K

Department of Mechanical Engineering, Smt. Kashibai Navale Sinhgad Institute of Technology and Science,
Kusgaon (BK), Pune, Maharashtra, India

ABSTRACT

The study is to develop a method for production of energy from biomass other than direct burning of the biomass. There are many thermochemical processes through which biomass can be synthesized , the popular among these is Pyrolysis. Many of the projects are being carried out with various setups for the same across the globe. Most often for the regular pyrolysis process non-conventional methods like biomass heater and is used to heat the biomass and to carry out the gasification. The products obtained from the pyrolysis are- bio-char, bio-oil, syngas. These products can be used for various application. The substitute for these nonconventional techniques is pyrolysis of biomass using solar energy.

Keywords: Solar Energy, Parabolic Concentrator, Pyrolysis, Biomass.

I. INTRODUCTION

In the 21st century, where the world facing energy crises has made many renewable energy alternatives to contribute in total energy consumption per capita. All renewable sources possess energy which is available in decentralized form. The need of the century is to develop combined and concentrated form of renewable energy which can be utilized as direct substitute for conventional fuels. The current topic comprises of the concentration of energy possessed by biomass and the solar radiations to generate the bio-fuel which is direct substitute for fossil fuel and natural gases.

One of the most important never ending and cheap alternative of energy is solar. It is estimated that the amount of solar irradiation received by the earth is approximately about 1000 W/m² per day. Abbot [3] shows that the amount of irradiations generated is around 85,000 TW worldwide [3]. India is ranked 5th in global energy consumption list and consumes about 3.9% of the total commercial energy of the world. In

2007 the amount of solar energy utilized was less than 1% of the total energy need in India. In of sulphur in less amount and some biomass carry significant amount of inorganic material species.2010 the grid interactive solar power was 10MW and it was raised to a level of 3.062GW on December 2014 and 9.2GW on march 2017 [9].

Biomass is a reliable alternative ecofriendly source of non-conventional energy in the current world energy scenario. In order to minimize green-house gases the Union ratified the Kyoto protocol and emphasized the potential for scientific innovative study in 2002. Unfortunately they failed to achieve the agreed targets. As a result, global-warming is increasing each day [6]. Of the world primary energy supply approximately 13% is provided by biomass. It is estimated that by end of 2050 the global energy supply contributed by bio-energy will be around 25-33% [10].

Pyrolysis is a thermo-chemical process which takes place in the inert atmosphere (in the absence of oxygen).

Thermal degradation of bio-mass is done to obtain the products – charcoal, oil, gas[10].

II. METHODS AND MATERIAL

(A) Pyrolysis classification

Depending on operating conditions pyrolysis can be classified into three categories[6,11]:

(a) Slow (Conventional) pyrolysis
(b) Fast pyrolysis
(c) Flash pyrolysis

a. Slow pyrolysis

Slow pyrolysis has been used for many years to enhance the production of char at low temperature and low heating rate. In this process the time for vapour residence is too high i.e. (5 to 30 min)[6]. It has some technological limitations which makes it unlikely to be used for production of good quality bio-oil.

b. Fast pyrolysis

In this process bio-mass is rapidly heated at high temperature in the absence of oxygen. It produces 60-75% of oily products(oil and other liquids). 15-25% of solid matter (bio-char) and 10-20% of gas depending on the feed . The production of liquid is yielded at low temperature, high heating rate and short resident time. This liquid product can be easily and economically transported and stored [6].

c. Flash pyrolysis

It is a promising process for producing solid, liquid and gaseous fuel from bio-mass and which can yield up to 75% of bio-oil. This reaction takes place at high temperature ranging between 450 – 1000°C. with short residence time less than 1 sec [6].
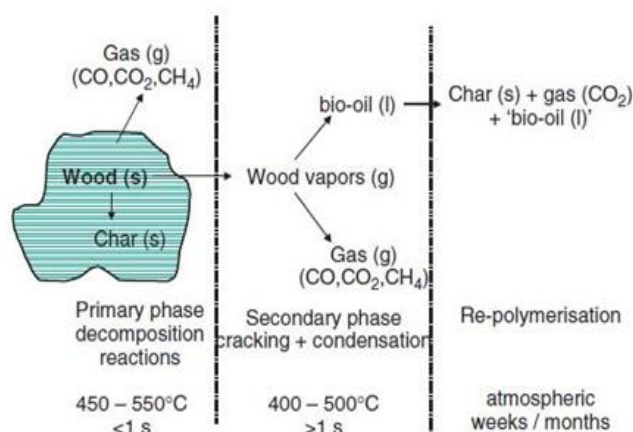
Figure 1. Representation of biomass pyrolysis process [6]

(B) Biomass

Biomass is any hydro-carbon material which mainly consists of carbon, hydrogen and nitrogen. It also consists of sulphur in less amount. Some biomass types carry significant amount of inorganic species. Biomass resources include various natural material, such as wood wastes, agricultural and industrial waste, waste paper, municipal solid waste and so on [11].

Biomass selection

Properties to be considered for biomass selection:-

- Density
- Moisture content
- Ash content
- Volatile matter
- Fixed carbon

Feedstock	Density (Kg/m³)	Moisture Content (%)	Ash Content (%)	Volatile Matter (%)	Fixed Carbon (%)
Wood	1186	20	0.4–1	82	17
Bituminous coal		11	8–11	35	45
Hybrid polar	150	45	0.5–2	-	-
Switchgrass	108	13–15	4.5–5.8	-	-
Miscanthus	70–100	11.5	1.5–4.5	66.8	15.9
Sugarcane baggage	1198		3.2–5.5	-	-
Barley strew	210	30	6	46	18
Wheat straw	1233	16	4	59	21
Danish pine		8	1.6	71.6	19
Rice straw	200	6	4.3	79	10.7
Fire wood	-	7.74	1.98	80.86	17.16
Grateloupia filicina	-	4.93	22.37	55.93	17.01
Birch	125	18.9	0.004	-	20
Pine	124	17	0.03	-	16
Polar	120	16.8	0.007	-	-

Figure 2. Physical properties of selection of biomass [6]

(C) Solar concentrator

For the past four decades, there have been a lot of development in design of solar concentrator. Many papers present some distinguish design which have shown significant contribution to solar technology, they are:

- Parabolic dish concentrator
- Hyperboloid concentrator
- Fresnel concentrator
- Compound Parabolic concentrator

Parabolic dish concentrator

It serves the best option to concentrate solar radiations. The efficiency of parabolic dish concentrator is comparatively high than that of other concentrators viz. parabolic trough, linear Fresnel reflector other power tower systems [1]. The property of this concentrator is that it focuses all parallel rays from the sun at specific single point [8].
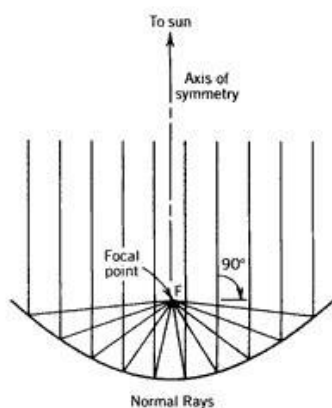
Figure 3. Ray diagram of parabolic concentrator[8]

Hyperboloid concentrator

The general design of hyperboloid concentrator consist of two hyperbolic section which is produce by rotating two dimensional design along its symmetrical axis. The advantage of this particular concentrator is that it is compact and only truncated version needs to be used. And hence it is mainly used as secondary concentrator. It requires usage of lenses at the entrance in order to work efficiently[8].
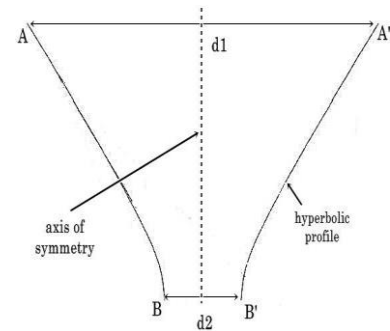
Figure 4. Hyperboloid concentrator[8]

Fresnel concentrator

Fresnel Lens has function quiet similar to the conventional lens i.e. the rays are refracted and focused at a single focal point. It has two section viz. flat upper surface and back surface that employs canted facets. It has disadvantage due to its sharpness of facet. Due to which manufacturing error may occur creating rounder shapes at the edges, this causes improper focusing of rays at the receiver[8].
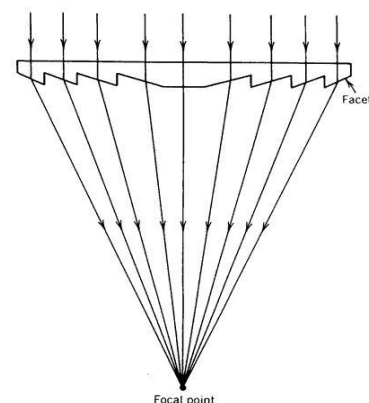
Figure 5. Fresnel concentrator[8]

Compound parabolic concentrator (CPC)

The CPC can be used as three dimensional rotational symmetric concentrator or as CPC trough concentrator. The CPC trough is the main commercial product in harnessing the solar energy. It has a disadvantage that it requires a good tracking system to maximise sun radiation collection[8].

(a)   (b)
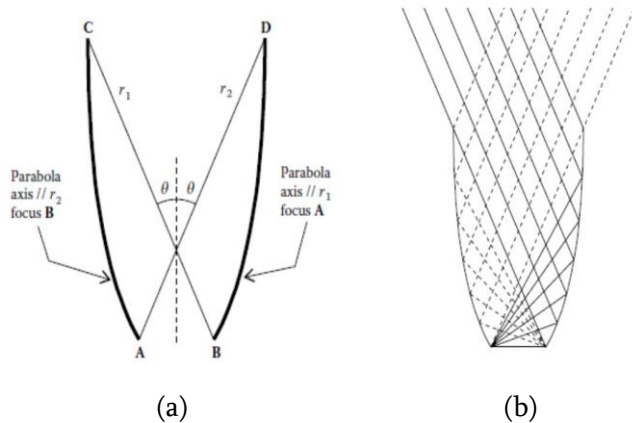
Figure 6. CPC (a)Geometry of CPC, and (b)Ray diagram of CPC[8]

Material selection aspects

The crucial aspect for proper functioning of the concentrator is the reflective surface used. When analysed the global reflectivity of some materials it was found out that AISI 430 can be used for the reflective surface of the dish. It can withstand the sunrays and high temperatures up to 816°C [5]. To improve the thermal efficiency of the concentrator system the materials which can be widely used depending on the availability and cost considerations are –

- Glass mirrors.
- Anodized and Highly polished aluminium sheets.
- Stainless steel.
- Stretched coated.
- Stretched membrane.[3,4]

Of which glass comes out to have reflectivity of about 92% [4].

(D) Evacuated tube

In high temperature, it is always preferred to use evacuated solar tube collectors than the flat plate collectors and it is considered to be the most important component in thermal applications. It works satisfactorily when the temperature of the working fluid is highly in the excess of the boiling point of the temperature [7].

Evacuated tube is made from two extremely strong borosilicate glass tube. The outer tube is the transparent tube which allows light rays to pass through it with minimum reflection and the inner tube is coated with Al-nickel/Al which gives excellent solar radiation absorptivity and minimum reflectivity.[12]

Properties of borosilicate glass tube[12]

- thermal conductivity K : 1.125 W/mk
- solar transmittance : 0.9
- solar absorptance : 0.05
- solar reflectance : 0.05
- thermal emittance : 0.85

III. CONCLUSION

Pyrolysis is a thermo-chemical process in which direct thermal decomposition takes place in the absence of oxygen and yields char, bio-oil and gas. The quantity of this products depends on the composition of the feedstock, the pyrolysis temperature and further more[12]. The amount of efficiency received from the pyrolysis of biomass using solar energy is much better than pyrolysis[10].

After studying the research papers based on the current scenario we can conclude that in future the pyrolysis of biomass using solar energy can find its best place in generation of energy. Further study in this field can optimize the cost and increase the efficiency of the system.

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Onion Separation Machine by Grading

Vishal Krishna Behere , Sameer Javed Maniyar, Shailesh Ganesh Mohale, Prabuddha Balkrishna Kamble

Department of Mechanical Engineering, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

The project presents the recent development and application of mechanical quality evaluation of products in the field of agricultural and food. It is very much essential to through light on basic concepts and technologies associated with mechanical linkages vision system, a tool used in image analysis and automated sorting and grading is highlighted.In India the ever-increasing local population, losses in handling and processing and the increased expectation of food products of high quality and safety standards, there is a need for the growth of accurate, operation fast and objective quality determination of food and agricultural products.Quality vision is a rapid, economic, consistent and objective inspection technique, which has expanded into many diverse industries. Its speed and accuracy is good and satisfy ever-increasing production and quality requirements, hence aiding in the development of totally automated processes. This non-destructive method of operation process inspection has found applications in the agricultural and food industry, including the inspection of quality and grading of fruit an vegetable. It has also been used successfully in the analysis all the of grain product characteristics and in the evaluation of foods such as potato chips, meats, cheese and pizza. This paper reviews all the progress of computer vision in the agricultural system and food field then explores different possible areas of research having a wider scope to enhance the existing algorithms to meet the today's challenges

I.   INTRODUCTION

Onion is one of the important crops cultivated in India. India is the second largest producer of onion in the world.Improvement of quality and value addition of agricultural produceshas gained higher concern in recent times in India. Until now almost everywhere in India, the onion grading is done manually. This manual grading is increase the cost of onion tremendously to customers and to producers. The manual grading also need more labour. There is also lot of human errors will be in the grading so we cannot clearly guarantee the highest fool proof grading with the present way of grading. Now the

need of automation arrives in the agricultural sector also due to the higher competition from across the globe. So we have to increase the quality and efficiency of the grading process. This type of new ideas will surely help a lot of people, to focus back to agriculture and this will lead to new innovations in the agriculture sector.

In order to achieve uniform size of onion the proper grading is required, with the aid of automation that goal can be achieved. This type of grading machines allows the farmers to be more productive by reducing the cost as well as the need of labour. The research on this field is also very much necessary in the future to

develop new mechanism that will aid the farmers to be capable to manage their crops themselves. The other area is the creation of awareness among farmers about this type of innovation to proper implementation of advanced technology in the farmland to increase the productivity of farms.

The other purpose of grading is the aesthetics effect of the onion that will attract the customer to buy the onion by giving higher amount of money. It will increase the value of the crop and it can survive higher amount of testing, when it is comes to export to advanced nations where they are able to pay very high amount of money for the value added products. On the other side, there is higher chance of banning less quality products which is not meeting the standards given by their respective government. The main gap between the value-added product and the cheap quality product is there post harvest processing capability. This gap can be mended by the newer innovations like onion grading machine.

Objective

To reduce human effort.To increase the capacity of Onion grading.To increase the efficiency of Onion grading.To reduce the cost and time of Onion grading.To design a machine for grading onion.To fabricate the onion grading machine based on the design

Problem Definition

As India is a country where agriculture based economy is there but due to environmental uncertainties the quality of food produced is lowered and hence farmer gets the lowered cost of the product. So the aim is to fulfil the market demand and also improve the quality of onions. Problems facing by the onion growers while marketing the onion they does not get proper remuneration for the product. In order to get proper post-harvest processing the farmers are not capable to do it.

Scope

➢ Onion grading machine consist of belt conveyor system in which eight buckets are attached to carry onion.

➢ These buckets are attached equidistant in the conveyor belt.

➢ At a time, four buckets are loaded and four will be in unloaded position.

➢ The loading of one bucket is happening at the same instant where the other bucket is unloading the onion into the grading tray.

➢ This conveyor system is powered by the motor.

➢ The conveyor system consist of roller and conveyor belt.

➢ The conveyor belt sliding over the roller.

➢ The roller is giving support to the conveyor belt.

➢ This onion in the conveyor system is falling to the grading tray.

➢ The grading tray is oscillating in the horizontal direction.

➢ The motor is connected to the grading tray through the chain drive which is connected to the crank plate,

➢ where the rotary motion of the crank plate is converted to the oscillatory motion of the grading tray.

II. LITERATUREREVIEW

[1] Smitha and Phatale (2013) depicts about the automatic grading machine based on the machine vision.

Smitha and Phatale (2013) The viewer is introduced to light as an electromagnetic quantity, and to the mechanisms by which light interacts with objects. The processes of producing colours by addition and subtraction of light are introduced. Then the concept of human colour perception and colour description is discussed. The basis of this identification onion will be selected by the machine.

[2] El-Rahman and Magda (2011) presents the onion grading machine which was developed from a small cylinder type grading machine to suit grading of onion sets crop.

The project also considered two parameters for optimum performance. Those parameters are revolving speed and feeding rate. On these parameters four levels of increase in revolving speed and feeding rates The studied parameters included, revolving speed 35, 45, 55 and 65 rpm (0.366, 0.471, 0.576, and 0.680 m/s), and feeding rates (75, 100, 125 and 150 kg/h). The grading efficiency (%), grading productivity (kg/h) and the mechanical damage percentage, were also considered on the effect of machine parameters. This project was successful based on the obtained results in which the maximum grading efficiency was higher on the third set of parameters (55 rpm and 125kg/h).

[3] Wang and Li (2014) presents the grading concept of onion based on the RGB-Depth sensor.

The post-harvest handling of the onion has a great role in the profit of onion. This paper clearly mention the onion grading using advanced technology such as measuring of the RGB- depth sensor. The authors used the RGB- depth sensor to measure the volume and diameter of the onion based on the colour of the onion and the density of the onion in regard with the measured parameters. Images were acquired when onions were placed at six different orientations. The colour and depth images helps to get the maximum diameter of the onion. The volume of the onion was estimated using the depth images. The onion diameter estimated by depth images achieved a higher average accuracy and robustness (RMSE = 2 mm) than those calculated by colour images (RMSE = 3.4 mm). Two types of onion varieties were measured in this project are Mexican sweet onion and Vidalia sweet onion. The results obtained from this project was shown the effectiveness of this model where the depth is finding non-destructively. The proposed methods can be applied to improve the efficacy and efficiency of size estimation in onion phenotyping and postharvest sorting/grading.

[4] Tripathi (2006) presents about the need of the onion grading.

The demand of graded onion and how much is the need of onion. In this paper, the classification of onion based on size was described. The size of the onion were classified to three that are A, B and C. The global production rate of onion was also described. The onion grading prototypes which were used around the country also included in this presentation.

[5]Gunathilake et al (2016) introduces a new prototype for onion grading machine.

In this new prototype, the inclined angle against the horizontal axis were within a range of $2°-4°$. The revolving speed of the grader was from 10rpm to 20 rpm. The optimum result was obtained at the revolving speed 15rpm and at an inclined angle of $3°$.The capacity of the grader under optimum operation conditions was 630 Kg/hr. The grading efficiency/qualities of small, medium and large grades were 84.47%, 93.46% and 90.14 respectively.

Advantages:-

The system is automatic. Speed of the separation process is very high. Accuracy of the process is very high.

1. High Reliability.
2. High-Quality Ejector.
4. High rejection rate.
5. Ease of use.
6. System is cost effective.
7. High Flexibility.

Applications

1. This system can be used in food industry, rice mills.
2. It can also used at farms.
3. In the pharmaceutical industry to separate tablets of medicines.

4. 4.In agricultural field for sorting of chilly, roses, food grains
5. 5.Other uses are for separation of chalk ,soap ,textile, paper, toy.

III. FUTURE SCOPE

The prototype of the system is designed. The system can be further implemented on large scale. Further we can design same sorting machine for cleaning of rice, brown rice, sticky rice, Small yellow rice, sorghum, black rice. Further wheat, cereals, tea, beans, nuts, crops, seed, vegetable colour sorter can be implemented.

IV. RESULTS & CONCLUSION

A faster, automatic, precise system for the GRADING different types of onions

The system can replace the conventional methods with better efficiency.

V. CONCLUSION

We have successfully develop the model of onion grading with better efficiency, from the existing prototype we have studied the all mechanical process which comes under the project

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Utilisation of Exhaust Heat from Kitchen to Create Air Conditioning System

Rahul Borate[1] , Anchit Gharat[2], Sumedh Gulig[2], Aditya Anarase[2], Shubham Ganvir[2]

[1]Assistant Professor, Mechanical Department, SKNSITS, Lonavala, Kusgaon (Bk), India

[2]Student, Mechanical Engineering, SKNSITS, Lonavala, Kusgaon (Bk), India

ABSTRACT

Chlorofluorocarbon and hydrochloro-fluorocarbon refrigerants have been widely used in conventional cooling systems and in household air conditioning systems. Major commercial refrigerant, chlorofluoro carbons (CFCs), are going to be phase out shortly as part of Montreal Protocol since they caused the phenomenon called greenhouse effect and depletion of ozone layer. In the case of house/hotel kitchens, enormous amount of hot gases are released to the nature. This is a harming effect on human health & environment. The bottom line is that a great amount of harsh chemicals is consumed for air conditioning. In addition to this is the refrigerant usually R12 or R22 leaks easily. Being a secondary refrigerant, it is also harmful to the surrounding. Therefore, vapour absorption air-conditioning technology attracted much attention recently as an alternative solution due to its advantage of environmental compatibility & human friendliness. This system as it powered by waste heat from the kitchens of houses/hotels can help to reduce required electrical energy and thermal pollution. In this paper, an exploration has been done to research the possibility of waste heat recovery and its efficient usage in air conditioning effect of an average regular home. This will ultimately help us to save energy, reduce noise occurring due to vapour compression ACs. Here, the heated exhaust air from kitchen chimneys is instead of giving out to nature is re-used as input for AC system.

Keywords: Kitchen Exhaust Air, VARS, Absorption System, Eco Friendly Refrigerants.

I. INTRODUCTION

Energy is an important entity for economic development of any country. Most of this energy consumed in power conservation devises and electricity usage. There is a significant increase in this energy consumption in Heating Ventilation & Air Conditioning (HVAC). Due to serious problems of energy shortage and global environment issues, utilizations of waste heat and renewable energy become one of the most interesting research fields. HVAC refrigerants in traditional cooling systems contain Chlorofluorocarbon (CFC) and hydrochloro fluorocarbon (HCFC). Such components with high ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) accelerate the depletion of the Earth's ozone layer. Therefore, alternative solutions to current cooling systems are required. A cooling technology known absorption cooling system powered by waste and/or renewable energy sources is an attractive solution. Absorption cooling systems powered by solar energy have attracted much attention in recent decades due to its matching between sun-shine and the required cooling effect. Absorption cooling system has numerous advantages, such as using low heat source temperature, employing of natural refrigerants such as water, less moving mechanical parts (absence of compressor), noiseless, low maintenance and environment-friendly. Available energy in exit stream of many energy

conversion devices goes as waste, if not recovered or utilized properly. Thus, usage of this waste hot air can be utilized as input for AC system, giving us efficiency of about 30%.

II. PRINCIPLE

The vapor absorption refrigeration system comprises of all the processes in the vapor compression refrigeration system like compression, condensation, expansion and evaporation. In the vapor absorption system the refrigerant used is ammonia, water or lithium bromide. The refrigerant gets condensed in the condenser and it gets evaporated in the evaporator. The refrigerant produces cooling effect in the evaporator and releases the heat to the atmosphere via the condenser. The major difference between the two systems is the method of the suction and compression of the refrigerant in the refrigeration cycle. In the vapor compression system, the compressor sucks the refrigerant from evaporator and compresses it to the high pressure. The compressor also enables the flow of the refrigerant through the whole refrigeration cycle. In the vapor absorption cycle, the process of suction and compression are carried out by two different devices called as the absorber and the generator. Thus the absorber and the generator replace the compressor in the vapor absorption cycle. The absorbent enables the flow of the refrigerant from the absorber to the generator by absorbing it. Another major difference between the Vapor Compression & Vapor Absorption Cycle is the method in which the energy input is given to the system. In the vapor compression system the energy input is given in the form of the mechanical work from the electric motor run by the electricity. In the vapor absorption system the energy input is given in the form of the heat. This heat can be from the excess steam from the process or the hot water. The heat can also be created by other sources like natural gas, kerosene, heater etc. though these sources are used only in the small systems.

COMPONENTS USED:-

1) Condenser
2) Expansion valve
3) Evaporator
4) Absorber
5) Pump
6) Generator

III. WORKING

1) Condenser: Just like in the traditional condenser of the vapor compression cycle, the refrigerant enters the condenser at high pressure and temperature and gets condensed. The condenser is of water cooled type.

2) Expansion valve: When the refrigerant passes through the expansion valve, its pressure and temperature reduces suddenly. This refrigerant (ammonia in this case) then enters the evaporator.

3) Evaporator: The refrigerant at very low pressure and temperature enters the evaporator and produces the cooling effect. In the vapor compression cycle this refrigerant is sucked by the compressor, but in the vapor absorption cycle, this refrigerant flows to the absorber that acts as the suction part of the refrigeration cycle.
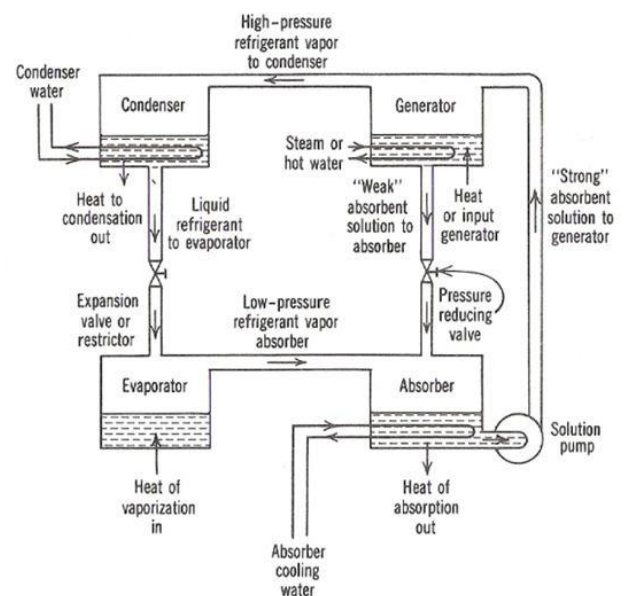
Figure 1

4) Absorber: The absorber is a sort of vessel consisting of water that acts as the absorbent, and the previous absorbed refrigerant. Thus the absorber consists of the weak solution of the refrigerant (ammonia in this case) and absorbent (water in this case). When ammonia from the evaporator enters the absorber, it is absorbed by the absorbent due to which the pressure inside the absorber reduces further leading to more flow of the refrigerant from the evaporator to the absorber. At high temperature water absorbs lesser ammonia, hence it is cooled by the external coolant to increase it ammonia absorption capacity.

How Absoption Refrigeration System Works (Continued) The initial flow of the refrigerant from the evaporator to the absorber occurs because the vapor pressure of the refrigerant-absorbent in the absorber is lower than the vapor pressure of the refrigerant in the evaporator. The vapor pressure of the refrigerant-absorbent inside the absorbent determines the pressure on low-pressure side of the system and also the vaporizing temperature of the refrigerant inside the evaporator. The vapor pressure of the refrigerant-absorbent solution depends on the nature of the absorbent, its temperature and concentration.

When the refrigerant entering in the absorber is absorbed by the absorbent its volume decreases, thus the compression of the refrigerant occurs. Thus absorber acts as the suction part of the compressor. The heat of absorption is also released in the absorber, which is removed by the external coolant.

5) Pump: When the absorbent absorbs the refrigerant strong solution of refrigerant-absorbent (ammonia-water) is formed. This solution is pumped by the pump at high pressure to the generator. Thus pump increases the pressure of the solution to about 10bar.

6) Generator: The refrigerant-ammonia solution in the generator is heated by the external source of heat. This is can be steam, hot water or any other suitable source. Due to heating the temperature of the solution increases. The refrigerant in the solution gets vaporized and it leaves the solution at high pressure. The high pressure and the high temperature refrigerant then enters the condenser, where it is cooled by the coolant, and it then enters the expansion valve and then finally into the evaporator where it produces the cooling effect. This refrigerant is then again absorbed by the weak solution in the absorber.

When the vaporized refrigerant leaves the generator weak solution is left in it. This solution enters the pressure reducing valve and then back to the absorber, where it is ready to absorb fresh refrigerant. In this way, the refrigerant keeps on repeating the cycle.

IV. SPECIFICATION TABLES

Some of the important tables stating the specifications of some components are given below.

Condenser -

Item	Detail	Unit
Number of coil turns	16	–
Coil outer diameter	9.5	mm.
Shell outer diameter	103.6	mm.
Shell height	252	mm.
Shell material	Stainless	–
Coil material	Copper	–

Evaporator -

Item	Detail	Unit
Number of tubes	1	–
Number of coil turns	17	–
Tube outer diameter	19.1	mm.
Tube inner diameter	16.1	mm.
Fin height	9.975	mm.
Fin thickness	0.45	mm.
Tube material	Stainless	–
Fin material	Aluminium	–
External unfinned area	0.6875	m2
Finned area	7.8975	m2

V. EXPERIMENTAL RESULTS

The experiments have been carried out on a working prototype using kitchen environment as input (heat) source. The temperatures are note down at 30 minutes interval of time. The results are tabulated as in table below:-

Table 1

Time in (min)	Exhaust Temp. (K)	Condenser Temp. (K)	Evaporator Temp. (K)
30 min	433	308	299
60 min	563	311	294
90 min	629	313	289

GRAPHS :-

Important graphs showing relations between Exhaust & Evaporator Temperature are shown below :-
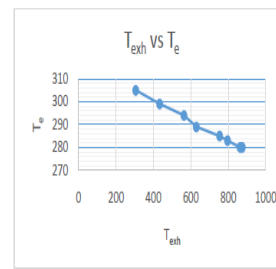
Fig 4. Exhaust temperature vs Evapourator temperature
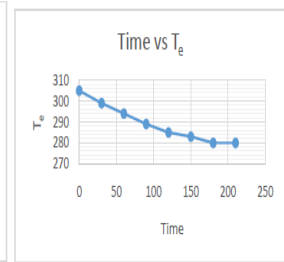
Fig 5.Time vs Evapourator temperature
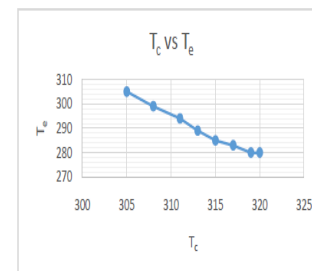
Fig 6. Condenser temperature vs Evapourator temperature

Figure 2

VI. CONCLUSION

It has been identified that there are large potentials of energy savings through the use of waste heat recovery technologies. Waste heat recovery defines capturing and reusing the waste heat from exhaust hot-air for heating, generating mechanical or electrical work & refrigeration system. If these technologies were adopted by the exhaust manufacturing companies, then it will be result in efficient use of exhaust and low emission of waste gases. It can be concluded that the vapour absorption refrigeration system powered by exhaust heat of hotel/home kitchen can be suitable to produce cooling effect. COP of the such system is less as compare to the traditional VCRS system but COP can be increase by doing some improvements further in the cycle and increasing the source temperature of desorption process in thermodynamic cycle. Absorbent material and refrigerant pairs are also deciding factor for the design of the AC system as depending upon the absorption and desorption process temperature. After literature review in the

field of alternative cooling systems powered by heat, adsorption air cooling systems with activated carbon and NH3 as absorbent refrigerant pair is selected & used in the present system. In the present system solid material is used as absorber which makes the system suitable for household applications.

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Automatic Jack System Using an Android App

Prashant Date[1], Prashant Kshirsagar[2], Shubham Bhawar[2], Sooraj Sable[2], Vinod Pathare[2]

[1]Assistant Professor, Mechanical Department, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

[2]Mechanical Department, SKN sinhgad Institute of Technology and Science, Lonavala, Maharashtra, India

ABSTRACT

This paper is modification of arduino based electric motor Lead screw jack, the concept of this work is to design and develop the automatic jack system using an android app. An automotive jack is a device used to raise the vehicle into the air in order to facilitate repairs and replace of the part of vehicle without using any manually operation. Operating the manual jack is quite difficult job. This purpose is to mainly encounter this problem. This paper presents the development of the car jack which is controlled by android app. The weight lifting is quick and effective manner in order to make Operation easy we need battery, gear pair, ardunio, android app and design of lead screw which is a fundamental part in process. Some improvement in the present technology has to be made as well as weight lifting load criteria. The purpose of working is to modify lifting the car in easily way.

Keywords: Lead Screw Jack, Electric Motor, Gear Pair, Arduino And Android App.

I. INTRODUCTION

The paper is on working of android based lead screw jack which is modified present technology and currently at working condition and main purpose of the project Helps in reducing the effort as well as time taken to lift the load in comparison to the ordinary screw jack. In that jack is to be stated as heavy object lifting device. This device is the automatic electro-motorised jack for has been developed to later the needs of small and medium automobile garages in most of the garages the vehicles are lifted by using screw jack. This needs high man power and skilled labours .in order to avoid all such disadvantages we design automatic electro-motorised jack has been designed in such a way that it can be used to lift the vehicle very smoothly without any impact force. The operation is made be simple that even any person can handled, by just pressing the button it is a wireless jack which can be simply turn on and off by any

mobile phones in that special type of android app so this system saves the human efforts and can take power to the batteries. The operator only needs to press the button from the mobile phone. In order to fulfil the needs some improvement must be made base on the problem statement. Now the project has mainly concentrated on this difficulty and by pressing the button in mobile, the electronic control unit activates the jack automatically. The fabrication part of it has been considered as simplicity.

II. METHODS AND MATERIAL

1. Design of Frame:
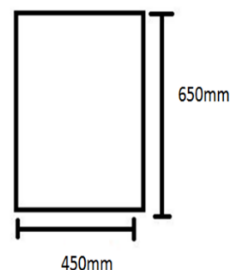
Frame design for safety FOR 25*25*3 L angle mild steel channel

b = 25 mm, d= 25 mm, t = 3 mm.

Consider the maximum load on the frame to be 20 kg.

Max. Bending moment = force*perpendicular distance

$$= 50*9.81*325$$

$$M = 159412.5 \text{ N/mm}$$

We know,

M / I = σb / y

M = Bending moment

I = Moment of Inertia about axis of bending that is; Ixx

y = Distance of the layer at which the bending stress is consider

(We take always the maximum value of y, that is, distance of extreme fiber from N.A.)

E = Modulus of elasticity of beam material.

I = bd3 /12

  = 25*25^3 / 12

I = 32552.08 mm4

σb = My / I

 = 159412.5 *12.5 / 32552.08

σb = 61.214 N /mm2

The allowable shear stress for material is σallow = Syt / FOS

Where

 Syt = yield stress = 210 MPa = 210 N/mm2

And fos is factor of safety = 2

So σallow= 210/2 = 105 MPa = 105 N/mm2

Comparing above we get,

σb<σallow

i.e.

61.214< 105 N/mm 2

So design is safe.

2.Design calculations to check the safety of Lead screw

Maximum Load to be lifted   = 60 KILO

$$=60*9.81\text{N}$$

$$=588.5 \text{ N}$$

For a 60 KILO capacity screw jack, the suitable screw is the one whose nominal (major) diameter is 16 mm. Corresponding to the nominal diameter 16mm, the pitch (p) selected is 5 mm.

The core diameter (d_c)= 14 mm

The mean diameter (d_m)= 15 mm

ALLOY STEEL material is used for lead screw.

The ultimate and yield stresses are 450N/mm² and 230N/mm² respectively.

The compressive stresses induced in lead screw due to load of 60KN is given by

F_c = (580x 4)/ (π x 16²)

     =2.92 N/mm²

Safety factor = 230/2.92= 78.76

Hence lead screw will bear 60KILO easily

The helix angle of screw = tanα=6/ (πx16)

                          =0.12

Therefore   α=7.6

Assuming coefficient of friction between screw and nut,

μ = tanθ = 0.14

θ = tan⁻¹(0.14) = 7.96°

α < θ, hence it is a self-locking screw.

The turning moment required to rotate screw under design load is given by T = W (d_m/2) tan (α+θ)

T=974.72N/mm

Torque, F_t= (16x947.72)/π(30)³

Torque, F_t=5.36 N/mm²

The lead screw material has 115N/mm² shear strength.

Safety factor = 115/5.36

              = 21.45522

Hence design is safe

MATERIAL

Lead screw =alloy steel

Motor = DC Motor

Gear = Gear drive

Arduino=arduino uno R3

Android app

OBJECTIVES

 The main objectives of this project are

 To Increase in weight load

To minimize human effort

To reduce time

To simplify the work

To reduce fatigue

III. COMPONENTS AND WORKING

1. LEAD SCREW JACK [MOTORISED JACK]

The lead screw jack has been developed to cater to the needs of small and medium automobile garages, which are normally man powered with minimum skilled labour. In most of the garages the vehicles are lifted by using screw jack. This needs high man power and skilled labour. In order to avoid all such disadvantages, the motorized jack has been designed in such a way that it can be used to lift the vehicle very smoothly without any impact force. The operation is made simple so that even unskilled labour can use it with ease.

A lead screw, also known as a power screw or translational screw, is a screw used as a linkage in a machine, to translate turning motion into linear motion. Lead screws are an excellent economical solution for your linear motion requirement.

Figure 1. Lead Screw

2. 12 VOLT GENERATING DC MOTOR

A DC motor is any of a class of electrical machines that converts direct current electrical power into mechanical power. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. Most types produce rotary motion; a linear motor directly produces force and motion in a straight line.

Specifications:

- Standard nominal voltage = 12 V
- No load speed = 100 rpm
- No load current = 2A
- Nominal speed = 100 rpm
- Nominal torque = 70 Nm.
- Nominal power = 8 watt
- Max power = 60 watt
- Max. efficiency = 80 %

Figure 2

3. CIRCUIT DESIGN

The simple block diagram of the system. A hand held mobile phone is used as the transmitter. The receiver is the Microcontroller that includes a mobile phone on the auto answer mode, DTMF decoder, microcontroller and motor drivers. The blocks of the receiver model are explained in detail in this section.
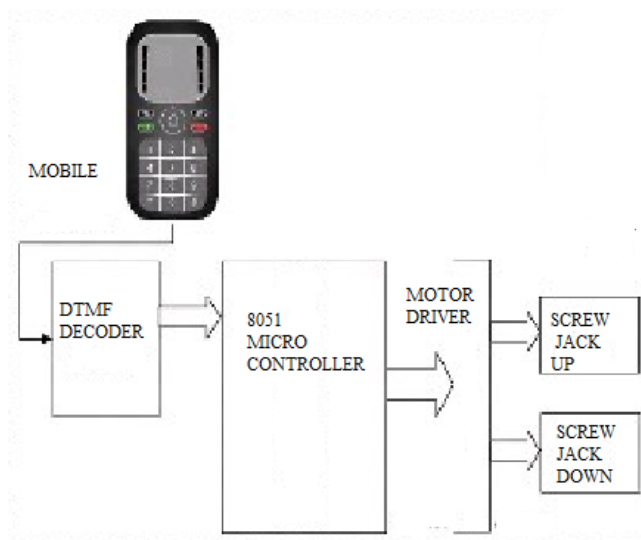
Figure 3. block diagram of DTMF working

4 DESIGN FEA ANALYSIS

Modal analysis is the study of the dynamic properties of structures under vibrational excitation.
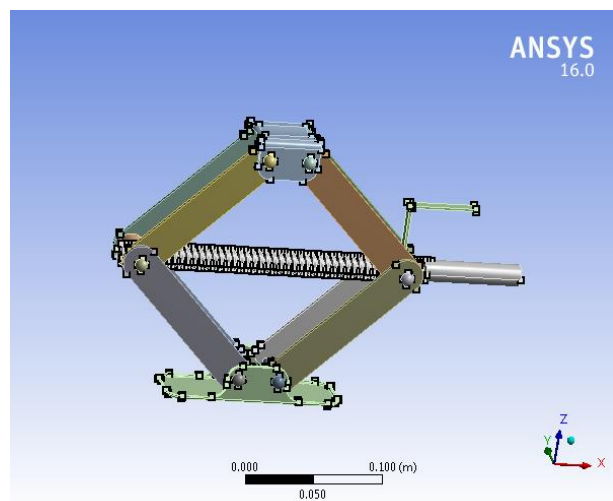
Figure 4. Catia model imported into Ansys workbench

5 STRUCTURAL ASALYSIS

The finite element method (FEM) is a powerful technique originally developed for numerical solution of complex problems in structural mechanics, and it remains the method of choice for complex systems. In the FEM, the structural system is modelled by a set of appropriate finite elements interconnected at points called nodes. Elements may have physical properties such as thickness, coefficient of thermal expansion, density, Young's modulus, shear modulus and Poisson's ratio.
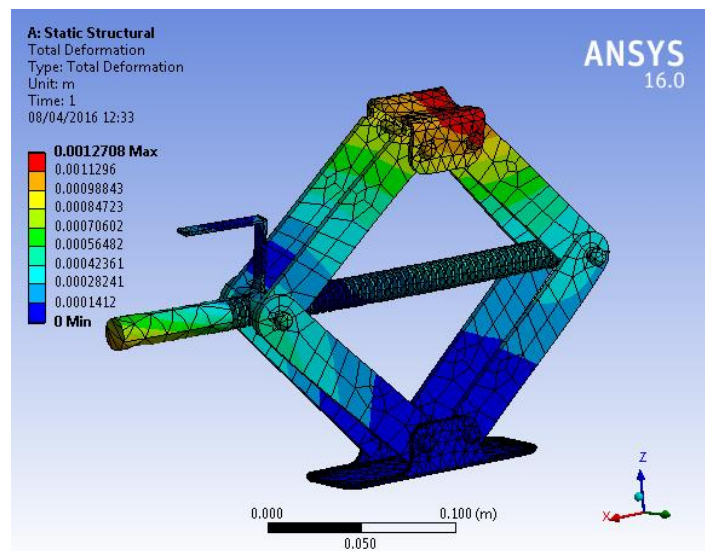
Figure 5. Total Deformation
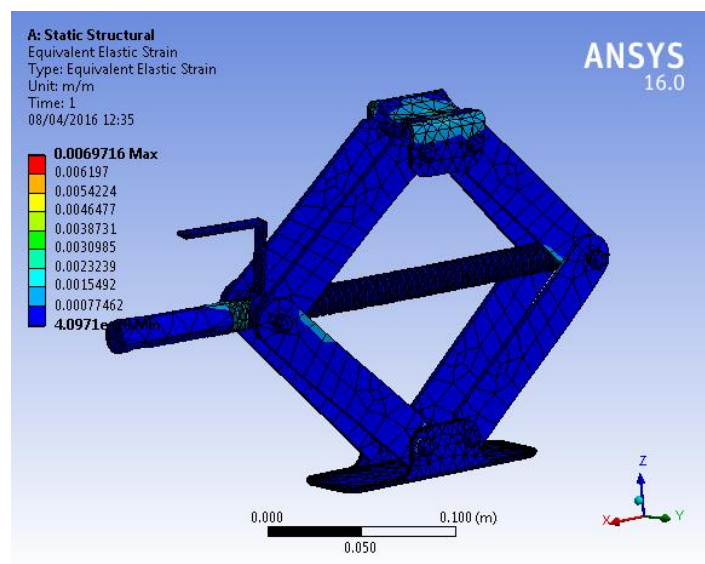
Figure 6. Equivalent Elastic Strain
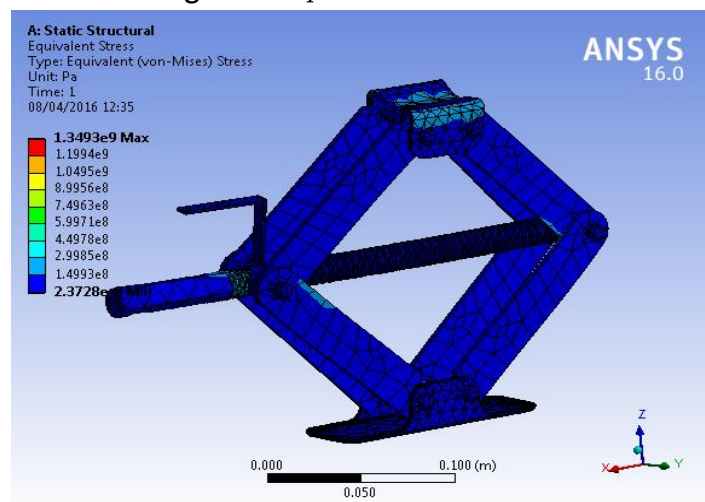
Figure 7. Equivalent Stress
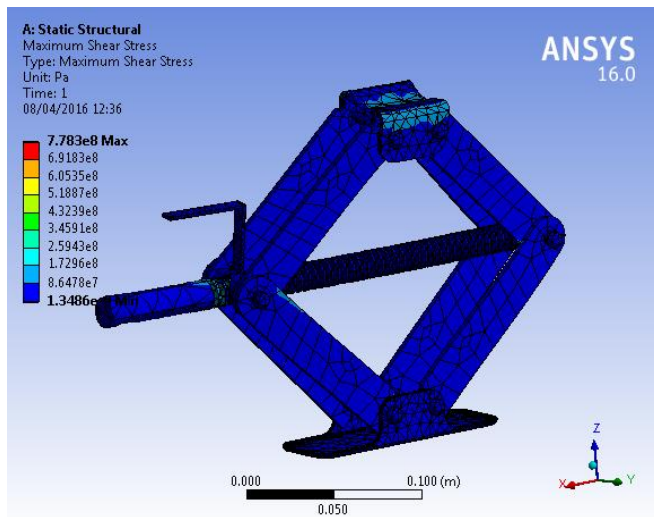
Figure 8. Maximum Shear Stress
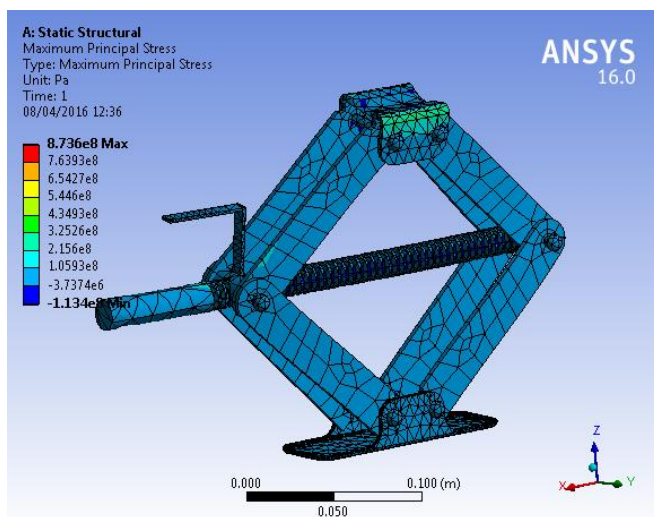
Figure 9. Maximum Principal Stress

6 ACTUALLY MODEL
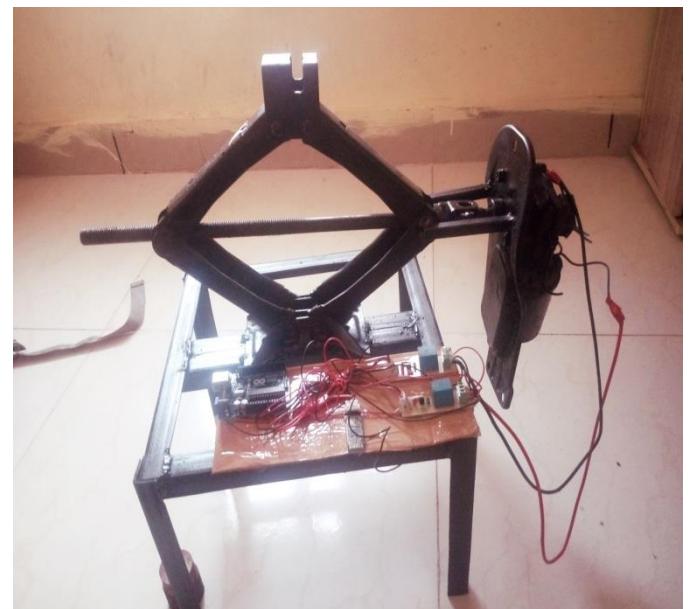
Figue 10
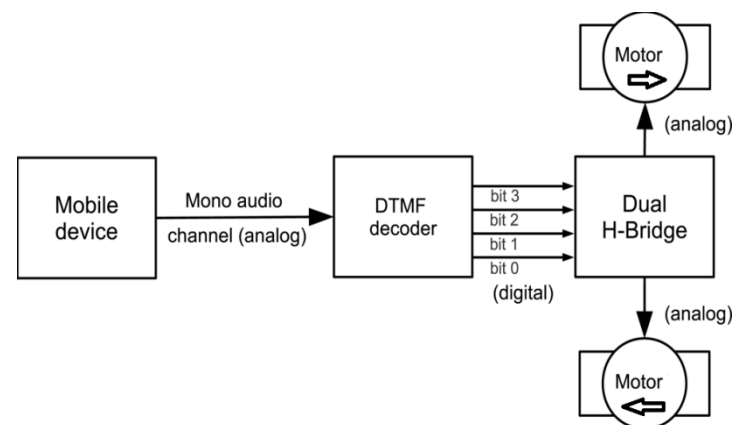
BLOCK DIAGRAM

Figure 11. block diagram

Advantages:

1. The loaded light vehicles can be easily lifted.

2. Checking and cleaning are easy, because the main parts are screwed.

3. Handling is easy

4. No Manual power required.

5. Easy to Repair.

6. Replacement of parts is easy

7. Maximum height up to 1.5 feet can be reached.

Disadvantages:

1) Cost of the equipment is high when compared to ordinary hand jack.

2) Care must be taken for the handling the equipment such as proper wiring connection, battery charging check up etc.

APPLICATIONS:

1. It is useful in auto-garages.

2. This motorized lead screw jack is used for lifting the vehicles. Thus it can be useful for the following types of vehicles in future;

Maruti, Ambassador, Fiat, Mahindra. It is very much useful for Car Owners & Auto-garages. This automatic electro-hydraulic jack is used for lifting the vehicles.

FINAL RESULT:

Table 1

TEST - 100 RPM, 12 VOLT, DC MOTOR			
SR. NO.	MOTOR SPEED	WEIGHT	LIFTED HEIGHT IN MM
1.	100	30	150
2.	100	40	100
3.	100	50	80
4.	100	60	20

IV. CONCLUSION

Motorised lead screw Jacks are the ideal product to push, pull, lift, lower and position loads of anything from a couple of kilograms to hundreds of tones. The need has long existed for an improved portable jack for automotive vehicles. It is highly desirable that a jack become available that can be operated alternatively from inside the vehicle or from a location of safety off the road on which the vehicle is located. Such a jack should desirably be light enough and be compact enough so that it can be stored in an automobile trunk, can be lifted up and carried by most adults to its position of use, and yet be capable of lifting a wheel of a 4000 pound vehicle off the ground.

Further, it should be stable and easily controllable by a switch so that jacking can be done from a position of safety. It should be easily movable either to a position underneath the axle of the vehicle or some other reinforced support surface designed to be engaged by a jack. Thus, the product has been developed considering all the above requirements. This particular design of the motorized lead screw jack will prove to be beneficial in lifting and lowering of loads.

V. FUTURE SCOPE

Our project is beneficial for several automobile garages, revealed the facts that mostly some difficult methods were adopted in lifting the vehicles for reconditioning. Now the project has mainly concentrated on this difficulty, and hence a suitable device has been designed, such that the vehicle can be lifted from the floor land without application of any impact force. The fabrication part of it has been considered with almost case for its simplicity and economy, such that this can be accommodated as one of the essential tools on automobile garages. Automation can be achieved through computers, hydraulics, pneumatics, robotics, etc. Automation plays an important role in mass production. For mass production of the product, the machining operations decide the sequence of machining. The machines designed for producing a particular product are called transfer machines. The components must be moved automatically from the bins to various machines sequentially and the final component can be placed separately for packaging. Materials can also be repeatedly transferred from the moving conveyors to the work place and vice versa. Nowadays, almost all the manufacturing processes are being atomized in order to deliver the products at a faster rate

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Railway Axle Power Generation by Magnetic Coupling

Ajit Bade , Tushar Golhar , Haridas Patil

U.G. Student, Mechanical Engineering, SKNSITS Lonavala, India

ABSTRACT

This project aims at production of electricity by using the concept of the rotation of secondary shaft due to the primary railway axle caused by the moving train by using an electrical power generation system. This device could be placed along railway bogies or locomotive axles. An electrical power generation system comprises a variable capacitor and a power source. The magnetic coupling here by used will transfer power from locomotive axle to the generator shaft without contact that will implies no contact / friction load on railway locomotive shaft. That will beneficial for power generation without altering or damaging ongoing system

I. INTRODUCTION

Now days, electricity has become a need of every single human, demand of electricity increasing day by day. This new generation needs lots of electrical power for their different operations. Due to this many sources are wasted and exhausted in a large amount. There are various ways to generate electricity. The human bio-energy being wasted if it can be made possible for utilization it will be very useful energy sources. The human waste foot energy is being used to produce electricity this would be a great evolution in electricity generation. The average human can take 3,000 -5,000 steps a day.

The main objective is to build a power generation system such that it can contribute to the present power generation system as the need of energy is growing day by day. The generated power is eco-friendly as well as inexhaustible means the power can be generated as long as the railways are in function. This can be achieved by utilizing the energy resources along the railway tracks i.e., by utilizing the mechanical energy supplied by both wind gusts from train as well as mechanical energy supplied by the train when it is in motion. The proposed technique

relates generally to generating electricity and, more particularly, to a method and a system for generating electricity along a railroad track. Many known railroad systems employ a variety of wayside equipment alongside the railroad tracks.

Within a network, railroad tracks often span rural and unpopulated areas, and as such, providing power to wayside equipment in remote locations may be a challenging and costly task. At least some known railroad systems run power lines into remote areas to power wayside equipment. However, depending on the location, such power systems may be expensive to install and to maintain. Unfortunately, traditional automated devices generally obtain operating power from an external power source, which is not generally available in remote areas. That is, the automated device receives operating power that is generated at a remote location and that is delivered over a power grid, and coupling the grid to the device can be a costly proposition, especially in remote areas. In certain instance, local power sources, such as batteries, have been employed. In any event, even if a local or external power source is provided, these power sources may not provide a cost effective mechanism for producing sufficient levels of power for operation

of the automated testing devices. Therefore, there is need for a system and method for improving electric power generation with respect to rail systems.

A magnetic coupling uses permanent magnets to transmit torque between an input and output shaft without mechanical contact. Torque densities comparable with mechanical gears can be achieved with an efficiency >95% at full load and with much higher part load efficiencies than a mechanical gear. For higher power ratings a magnetic gear will be smaller, lighter and lower cost than a mechanical gear. Since there is no mechanical contact between the moving parts there is no wear and lubrication is not required. Magnetic gears inherently protect against overloads by harmlessly slipping if an overload torque is applied, and automatically and safely re-engaging when the fault torque is removed.provides a unique ability to convert an applied mechanical train into an electrical potential or vice versa. Our project includes how to utilize the energy which is wasted, creates pollution to the environment. The sound energy of the moving train wheels which is nothing but pollution can be converted into electrical energy with the help of train axle power generation.

II. PROBLEM IDENTIFICATION

Design and develop a prototype model of showing the concept of railway electricity power generation through magnetic coupling which will show the working of application of electricity production by motor generator on secondary shaft coupled using non-contact magnetic coupling with prime mover axle shaft of railway locomotive or bogie.

Also fabricate the model of the same which will show the working desired by it using a 12 volt motor generator by using its driving energy from main axle of railway bogie through a magnetic coupling designed using permanent magnets.

III. WORKING PRINCIPLE
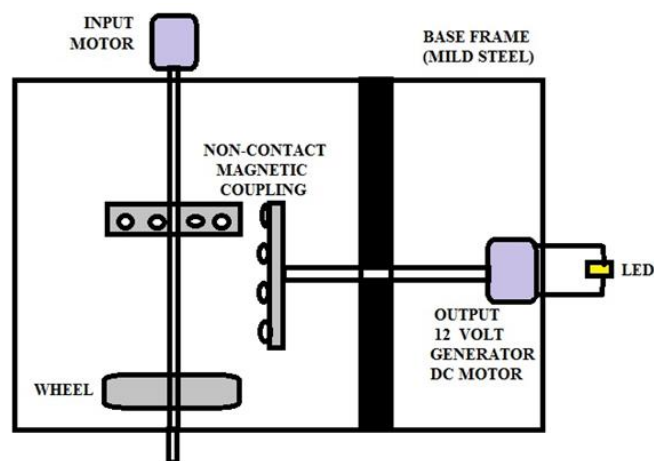
Figure 1. Block Diagram

The system used its driving energy through an input electric motor which drives a shaft to show the rotational motion of the railway axle. The wheel is provided to show the working of railway wheel which also stores the inertia energy of shaft which drives the system. In between the shaft a permanent magnetic coupling is provided which will transfer through rotational energy from driving shaft to the DC motor generator shaft.

This coupling uses the disc coupling formed by two discs on whos circumfrrence of it the permannet magnets are placed. The magnets emplies the toeque force onto eact other by magnetic force of attraction and by thus when driving shaft is rotated by motor simultaneously the generator shaft also starts moving due to magnetic coupling.

By thus we provide rotational motion to the DC motor generator which will convert the rotational mechanical energy into electrical energy. Which is indiacted by a LED which glows when elecrticty is produced by generator motor.

The whole construction is done on a base frame fabricated using L angle mild steel channel. The magnetic disc coupling are also formed using mild

steel circular plates and permanent magnets are placed on periphery of it. The motors are placed at ends of shaft and fitted to base frame.

IV. COMPONENT USED

- Magnets
- Input motor
- Wheel
- LED

V. DESIGN

SIZES WITH SECTION WEIGHT OF EQUAL ANGLES

Size	Weight in Kgs.	Gauge	Thickness
in mm	Per Feet	Per Mtr.	
20x20x3	0.274	0.899	3mm
25x25x3	0.335	1.099	3mm
25x25x5	0.548	1.798	3mm
31x31x3	0.390	1.280	3mm

By standard available sizes we select the 25 mm so because that will be easily available and have appropriate size for frame.
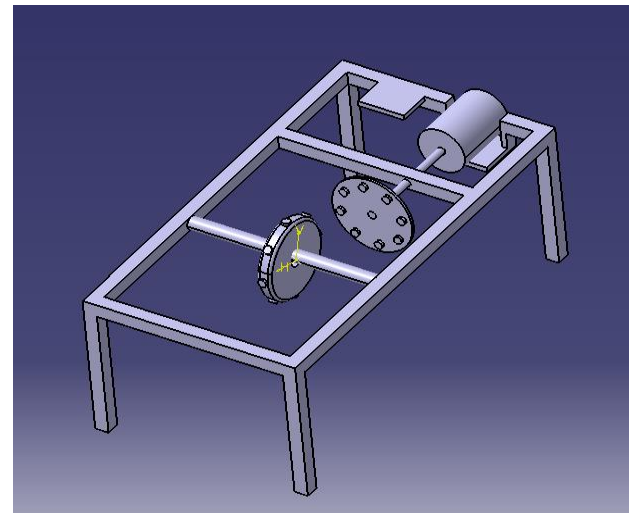
Figue 2. Cad design of train axle power generation on Catia

The magnetic coupling works by using the power generated by permanent magnets. No external power supply is needed. These are permanent magnets not electro magnets.

The magnets are installed alternating between poles in a side by side and opposing position as seen in the diagram. The main body of each coupling half is of ferromagnetic material to aid the channeling of the magnetic field correctly and therefore maximizing transmittable torque.

2.Frame Design:
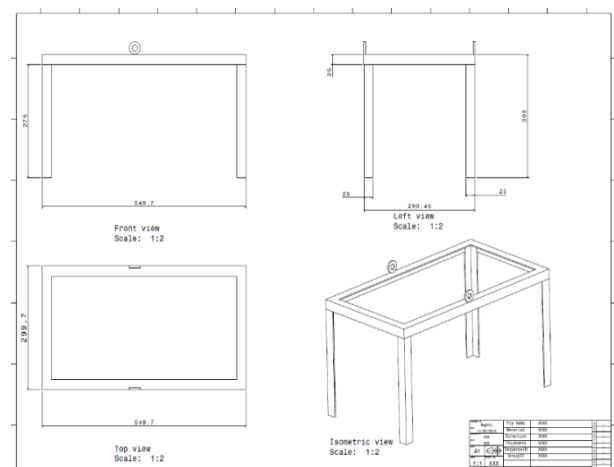
Figure 3

VI. CONCLUSION

There are many places which use electricity and thus those places are responsible for not proper usage of electricity. The ability to transmit power without contact whilst continuing to transmit mechanical power from one to the other makes these couplings ideal for applications where prevention of cross contamination is essential. A lot of energy is being used for various purposes and no one actually has a count of how it is wasted. One such huge form of energy is Electricity. Electricity is generated from various sources and is been used for various activities. There is no regulatory body which is concerned about the wastage of Electricity.

We are using the principle of magnetism which transmits the rotational mechanical energy of first shaft in equivalent rotational energy of second shaft. Which can be converted into electrical by generator and can be stored in batteries and used whenever and wherever required. We can use this electrical power as a free service in railways like water service, lighting, HVAC (heating ventilation and air conditioning).

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Automated Braking System for Hilly Region

Girish Gakhreja, Aman Imam, Waikar Ajinkya Hemant, Dawkhar Ashwin Vinayak

Mechanical Engineering, SKNSITS, Lonavala, Maharastra, India

ABSTRACT

Accident prevention has been one of the leading areas of research today. Our paper is designed to prevent accidents due to loss of control, drunken driving, and rash driving, using circuitry aided by a microcontroller kit. In our work, braking distance and the distance of the obstacle are taken into consideration along with the speed of the vehicle. The sensor helps in finding the speed of movement of the vehicle and the ultrasonic sensor senses the distance of the object in front. These sensors provide real- time inputs to the microcontroller program. Using sensor the system will sense the speed of the vehicle and with the microcontroller, it will calculate the distance required to bring the vehicle to a complete stop for that speed. Breaking motors is incorporated to activate the brakes thereby achieving automatic breaking procedures. The system helps in conjunction with the driver judgment if the driver doesn't sense the obstacle and applies the brake at the right time then the microcontroller initiates braking motor to apply the brakes automatically. Our future work deals with incorporating real time brake shoe wear system to provide enhanced feature for the intelligent braking system.

- By looking at safety in terms of avoiding accidents in the first place.
- And then protecting occupants when a crash is unavoidable.
- We can prevent more accidents, save more lives, and reduce insurance and medical costs to society.

Intelligent Braking System approach represents a significant shift from the traditional approach to safety, but it is fundamental to achieving the substantial benefits.

Keywords: Accident, Safety, Crash, Intelligent Braking.

I. INTRODUCTION

The Braking System is the most critical system on your vehicle. Its maintenance and proper functioning are vital to you, your family and other motorists. You should not attempt to effectuate maintenance or repair work on brakes. Servicing or repairing the braking system requires specific tools and adequate technical training. That is exactly what Auto tech Performance offers you.

CONCEPT PROPOSED:

With the proposed framework these sorts of mischances can be turned away. Utilizing a HALL sensor the framework will sense the rate of the vehicle and with the microcontroller, it will compute the braking separation: that is the separation required to convey the vehicle to a complete stop for that speed. Utilizing an Optical sensor, the framework will sense any moving or stationary hindrance in front and ceaselessly monitor its separation. At the point when the driver sees a deterrent in front and backs off there is no issue. Then again, in the event that he doesn't have any significant bearing brakes and continue the

same velocity, he goes to a point where the separation of the impediment equivalents to braking separation. This is the last risk for the driver to apply the brake and back off the vehicle. In the event that regardless he goes at the same speed, the microcontroller in the framework will actuate the brakes and evade an impact by conveying the vehicle to as top. Regularly, one would not stop at a moment that the vehicle is touching the impediment. Some separation is left before the snag. The separation is additionally accounted by the microcontroller. Assume for 50 km/hr if the braking separation is say 12.28 m, then 0.5 m is included and the braking separation is computed as 12.78m.

II. METHODS AND MATERIAL

In our attempt to design a special purpose machine we have adopted a very a very careful approach, the total design work has been divided into two parts mainly;

- System design
- Mechanical design

System design mainly concerns with the various physical constraints and ergonomics, space requirements, arrangement of various components on the main frame of machine no of controls position of these controls ease of maintenance scope of further improvement; height of m/c from ground etc.

In Mechanical design the components are categoriesed in two parts.

- Design parts
- Parts to be purchased.

2.1 Material Selection

The proper selection of material for the different part of a machine is the main objective. In the fabrication of machine. For a design engineer it is must that he be familiar with the effect, which the manufacturing process and heat treatment have on the properties of

materials. The Choice of material for engineering purposes depends upon the following factors:

1. Availability of the materials.
2. Suitability of materials for the working condition in service.
3. The cost of materials.
4. Physical and chemical properties of material.
5. Mechanical properties of material.

Project Process planning flow chart
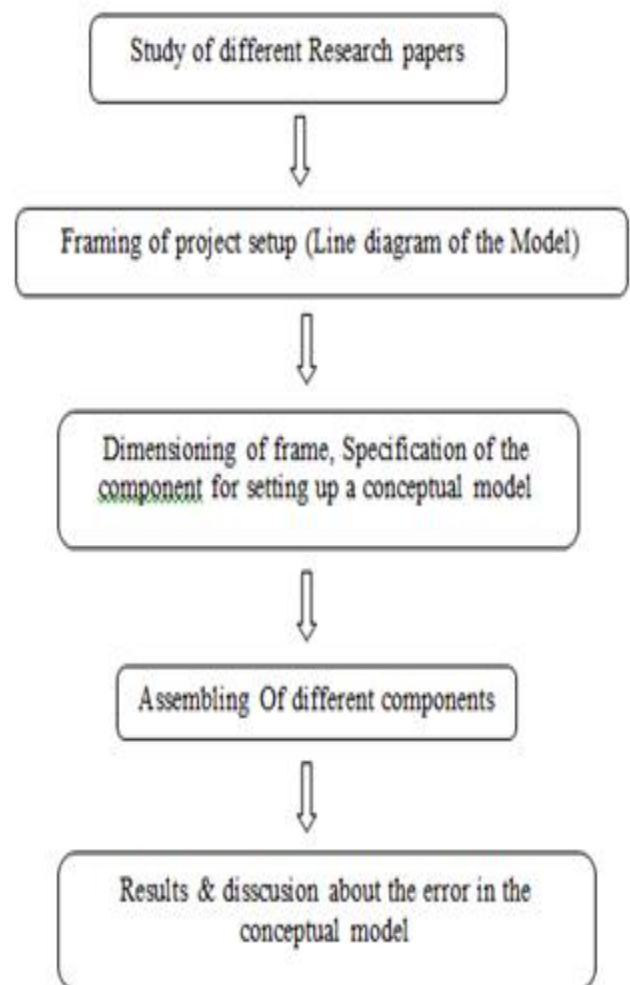
Figuer 1. Flow chart for working process

Project Work Flow Chart

Transmitter
(Optical waves)

↓

Obstacle Detected

↓

Reflected Wave

↓

Optical Receiver

↓

Braking Circuit

↓

Car Brakes
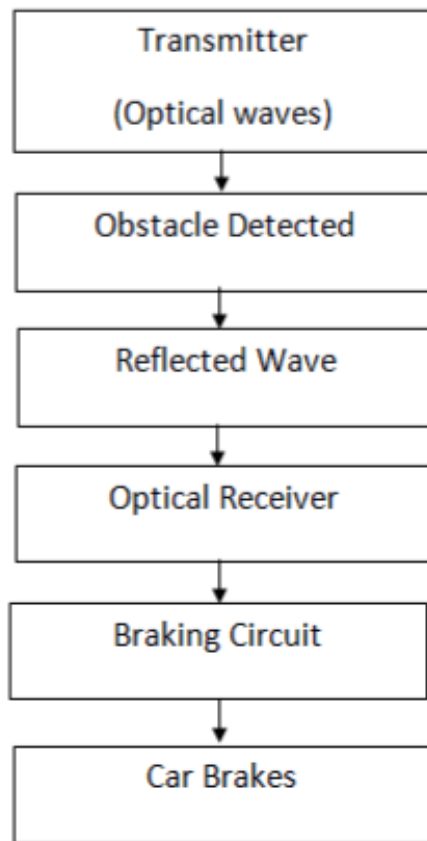
Figuer 2

III. RESULTS AND DISCUSSION

3.1 Working of our project :

The **IR TRANSMITTER** circuit is to transmite the Infra-Red rays. If any obstacle is there in a path, the Infra-Red rays reflected. This reflected Infra-Red rays are received by the receiver circuit is called "**IR RECEIVER".** The IR receiver circuir receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the solenoid valve.

Mechanism consists of a ratchet and pawl arrangement which will be mounted on the front axle of the vehicles. In this work, ratchet and pawl mechanism is identified to prevent the backward motion to the car. one push button is provided , on pushing the button the pawl will came in engage position with the ratchet and will prevent the reverse motion of the vehicles.

Project CAD Model (CATIA V5R20)
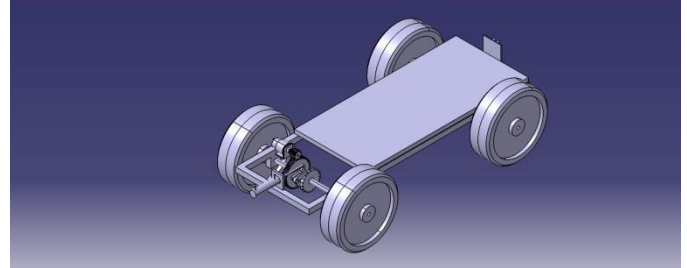
Figure 3

COMPONENT SELECTION

Ratchet and Pawl:

A ratchet consists of a round gear or linear rack with teeth, and a pivoting, spring loaded finger called a pawl that engages the teeth. The teeth are uniform but asymmetrical with each tooth having a moderate slope on one edge and a much steeper slope on the other edge.

When the teeth are moving in the unrestricted (i.e., forward) direction the pawl easily slides up and over the gently sloped edges of the teeth, with a spring forcing it (often with an audible 'click') into the depression between the teeth as it passes the tip of each tooth. When the teeth move in the opposite (backward) direction, however, the pawl will catch against the steeply sloped edge of the first tooth it encounters, thereby locking it against the tooth and preventing any further motion in that direction.

Figure 4

a) Ratchet and Pawl
- IR SENSORS
- MICROCONTROLLER
- TYRES
- DC MOTORS
- BRAKES
- SENSOR

COMPONENTS WORKING
OPTICAL SENSOR

This senses the distance of the obstacle from its location and gives an equivalent analog output for the distance sensed

Working Principle:

The optical sensor uses infrared signals to detect the distance and the obstacle. It has a transmitter and receiver. Transmitter transmits the signals. If any obstacle interrupts that signal then it has been reflected towards the receiver. Then it gives signal to the microcontroller.

Location:

This sensor is fitted in front of the vehicle. This sensor gets switched on once the vehicle is started and the sensor gives out the analog output continuously depending on the position of obstacle.
Specification:
Range : 1-32 m
Resolution : 12 inches
Signal Output : 0-5 V
Excitation Voltage: 12-24 V

MICROCONTROLLER

The whole control of the system is in the hands of ATMEGA8-16PI microcontroller. A microcontroller is a computer on a chip. It is a type of microprocessor emphasizing self-sufficiency and cost effectiveness, in contrast to a general purpose microprocessor.

Reasons behind selection: This is a low power, elite CMOS 8 bit microcomputer with 4K bytes of glimmer programmable and erasable read only memory (PEROM). The chip streak permits the project memory to be reconstructed in framework or by an ordinary non unpredictable memory developer. It is an intense microcomputer giving exceedingly adaptable and financially savvy answer for some installed control applications.

BRAKES

Band brakes will be utilized for breaking the vehicle. As indicated by the most extreme velocity and the heaviness of the vehicle the band brake and the bearing required has been outlined.

INTERFACING

Of the ports of the microcontroller two were utilized as data ports one for optical sensor and other for nearness sensor. The other port was utilized as yield port to offer sign to the stopping mechanism. The signs from closeness sensor were given in port B through two bits. The yield is taken from port C

FUTURE SCOPE

The major consideration while doing this project is safety of human and nothing is important in front of human life. This mechanism is user-friendly. And in our market survey we came to know that no any industry is manufacturing such mechanism for low budget vehicles which is very shocking. On one hand Government in giving more emphasis on vehicle safety measures but till most of them are neglecting the safety measures.

Also the engagement-disengagement can be done by providing the sensors to the actuators which will sense the gradient roads and speed of the vehicles and accordingly engagement will take place.

LIMITATIONS

In our model use electronic circuit and operates on 12 volt DC battery if unfortunately any voltage fluctuates occurred in the line damage the circuit components and due to this system got failure.

IV. CONCLUSION

The system is working efficiently in both modes forward and reverse direction. When the sensor senses any inclination of vehicle our system gets activated & our pawl ratchet unit gets activated , thus in hilly areas vehicles with such system and can drive safely. Thus we have an "auto braking system" which helps in understanding how to achieve low cost automation.

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Eye Sensor Braking System with Pnumatic Bumper

Prof. A. M. Dagade[1], Prathamesh Durge[2], Akshay Mahale[2], Pravin Pukale[2], Ajinkya Dhanokar[2]

[1]Professor, Department of Mechanical Engineering, (SKNSITS), Pune, Maharashtra, India

[2]B.E (Mechanical), Department of Mechanical Engineering, (SKNSITS), Pune, Maharashtra, India

ABSTRACT

The technology of pneumatic system has gained tremendous importance in workplace automation from old-fashioned works and coal mines to machine shops and space robots. It is important that technicians and must have a good knowledge of pneumatic system, air valves and accessories. The aim is to design and develop a control system based an intelligent electronically controlled automotive bumper activation system called "Intelligent Braking with Pneumatic Bumper ". This system consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system and braking unit. The IR sensor is used to measure and control eye blink This project involves controls the eye blink using IR sensor. The IR system is used to transmit the rays. In our eyes. The IR system is used to receive the reflected system rays from our eyes. If the eyes are closed then the output of IR receiver is high or the IR receiver output is low. It to know the eye is closing or opening position of the eye. Output is given to logic circuit to indicate the final output. alarm and the control signal is given to the bumper activation system braking unit. Pneumatic bumper system is used to provide safety to the vehicle. Now a day vehicle accident is the major problem. This breaking system is an innovative project for the purpose of preventing accidents that happens in the restricted roadways. The purpose of this system is based on intelligent electronically control automatic bumper and brake activation system known as "eye sensor braking with pneumatic bumper system". This system improve the response of vehicle braking control to keep safe distance between two vehicles.

I. INTRODUCTION

Today India is the most fast developing country in the world. India is in the list of largest use of various types of vehicles on road . The available resources to run the vehicles like quality of roads, and new technologies in vehicles are causes for accidents. The total number of peoples which are dead during accidents is also large as compared to the different causes of death. Though there are different causes for these accidents but proper technology of braking system and technology to reduce the damage during accident are mainly effects on the accident rates. So today of proper braking system to prevent the accidents and pneumatic bumper system to reduce the damage of vehicles. this system modification goal, we design the Automatic Braking system with Pneumatic Bumper system. The project which has been fully equipped and designed for vehicles. The aim to design and develop a control system based on electronically controlled automotive bumper activation system is called "Intelligent Braking with Pneumatic Bumper". The project have IR transmitter and Receiver circuit, Control Unit, and Pneumatic bumper system. The IR sensor measure and controls the eye blink. If eye blink count is low then alarm will be on and bumper will be activated as well as brake will be applied.
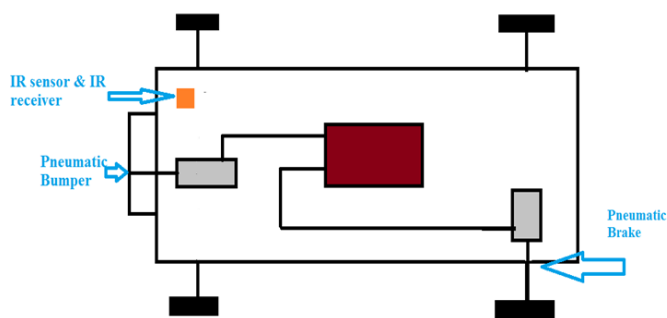
Figure 1. Block Diagram System

Objective

Increasing the sureness of braking Application system. Increasing the response time for braking system. As Improve the pre-crash safety. Avoiding the percentage of passenger injury by using external vehicle safety. Reducing the requirement of internal safety devices like air bags.

Problem Definition

In vehicles there are different types of mechanism operated for braking system like hydraulic, pneumatic, mechanical, etc. All the braking mechanisms receive the input power directly from the driver so totally manual operated. When the driver saw the obstacle or any vehicle in front of his driving vehicle, he gets irritated or becomes mazy. Due to the driver fails to give proper input to system and proper working do not occur. Also the driver may not pay the full attention during night travelling so there are chances to accidents. After the accident occurs, there is no provision to minimize the damages of vehicles. The bumpers have specific capacity and when range of the accidental is very high then the bumpers is fails and the force transferred towards the passengers. So the system never reduces the damage of vehicle and passengers. Overcome the unwanted effects we have to design the Automatic Braking System with Pneumatic Bumpers.

Scope

The objective of this work is to develop a New Automatic operated Machine.
This concept allows us to achieve our goal as well as better space management.

The new model takes into account all the real time conveying system and provide solution over their short coming.

The New model will get good efficiency compare to old method

II. LITERATURE REVIEW

Design of Accident Prevention System Using QRD 1114 and CNY70 Sensors Name of authors: Apeksha S. Chavan1, Dipali D. Pansare2, Swapnil P. Kadam3, Naval K. Mayekar4, Kavita V.Jha5, Poonam R. Bhagwat6

Sleep related accidents tend to be more severe, possibly because of the higher speeds involved and because the driver is unable to take any avoiding action, or even brake, prior to the collision. Horne describes typical sleep related accidents as ones where the driver runs off the road or collides with another vehicle or an object, without any sign of hard braking before the impact. Accidents are also caused when street lights are out specially on highways, long distance routes. Here, usually the upper dipper lights are in upper mode. So, when the driver fails to change the mode of the light and at the same time when the car comes from the opposite side.it causes the opposite driver to miss the judgement and gives rise to accident. Accidents are also caused due to the intruders coming suddenly in either side of the vehicle i.e. front, left or right. Due to which the driver misses the judgement and meets with an accident. Apeksha S. Chavan1, Dipali D. Pansare2, Swapnil P. Kadam3, Naval K. Mayekar4,KavitaV.Jha5,Poonam R. Bhagwat6

Prevention of Accident Due To Drowsy By UsingEye Blink B.Praveen kumar, K.Mahendrakan

Accident due to drowsy is prevented and controlled when the vehicle is out of control. And also the drunken drive also prevented by installing alcohol detector in the vehicle. The term used here for the reorganisation that the driver is drowsy is by using

eye blink of the driver. In recent times drowsiness is one of the major causes for highway accidents. These types of accidents occurred due to drowsy and driver cant able to control the vehicle, when he/she wakes. The drowsiness is identified by the eye blink closure and blinking frequency through infrared sensor worn by driver by means of spectacles frame. The alcohol consumption is also verified during the starting process of the vehicle using alcohol detector. If the driver is drunk then the buzzer indicates and the vehicle doesn't allow the driver to start the vehicle. If the driver is drowsy, then the system will give buzzer signal and the speed of the vehicle is reduced and the obstacle sensor will senses the adjacent vehicle to avoid collision with that, and if there is no vehicle in left adjacent side then the vehicle move to the left end of the road by auto steering and controlling and vehicle will be parked with prior indications.

Research paper: AUTOMATIC BRAKING WITH PNEUMATIC BUMPER SYSTEM Name of authors: Srinivasa Chari.V1, Dr.venkatesh P.R2, Dr.PrasannaRao N.S3, Adil Ahmed S 4

The technology of pneumatics plays a major role in the field of automation and modern machine shops and space robots.. The aim is to design and develop a control system based intelligent electronically controlled automotive bumper activation and automatic braking system is called AUTOMATIC PNEUMATIC BUMPER AND BREAK ACTUATION BEFORE COLLISION. This project consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system and pneumatic braking system. The IR sensor senses the obstacle. There is any obstacle closer to the vehicle (with in 3-4 feet), the control signal is given to the bumper activation system and also pneumatic braking system simultaneously. The pneumatic bumper and braking system is used to product the man and vehicle. This bumper and braking activation system is only activated the vehicle speed above 30-40 km per hour. This vehicle speed is sensed by the proximity sensor and this signal is given to the control unit and pneumatic bumper and

braking activation system. It is the project which has been fully equipped and designed for auto vehicles. The technology of pneumatics plays a major role in the field of automation and modern machine shops and space robots. The aim is to design and develop a control system based on intelligent electronically controlled automotive bumper activation system is called "automatic pneumatic bumper and break actuation before collision". The project consists of IR transmitter and Receiver circuit, Control Unit, Pneumatic bumper system. The IR sensor senses the obstacle. There is any obstacle closer to the vehicle (within 1feet), the control signal is given to the bumper and break activation system. This bumper activation system is activated when the vehicle speed above 40-50 km per hour. The speed is sensed by the proximity sensor and this signal is transfer to the control unit and pneumatic bumper activation system.

Automatic Safety System for Automobiles Name of authors: Dr. P. Poongodi PPG Institute of Technology, Coimbatore, Tamil Nadu, INDIA – 641012. P. Dineshkumar, Karpagam University, Coimbatore, Tamil Nadu, INDIA – 641021.

In this paper, the need for safety of vehicles by reducing the impact of crash by applying a smooth or partial braking with the help PIC 16F877a micro controller is proposed. The driver's risk of measuring a certain object from a particular distance and failing to notice within the critical limit such conditions are met while designing this work. Once a similar situation is faced the acceleration of the automobile will be directly controlled without disturbing the safe throttle (actual throttle mechanism) of the automobile, the designed machine itself takes the control of acceleration pedal if the brake is not applied within the critical distance.
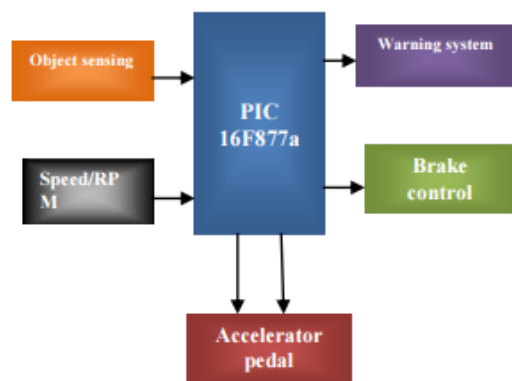
Figure 2

Figure 3

The method is proposed in such a way to be applied to both low cost and existing vehicles as these were already build for the Indian roads. The deceleration is said to be negative acceleration. You are driving your car and the traffic light ahead turns red. You apply the brakes for 3.59 s, and the velocity of the car decreases to +4.99 m/s.If the car's deceleration has a magnitude of 2.53 m/s2. Average passenger car deceleration rate from coasting on level terrain with Auto Tran., from 60-70 mph speed range. The microcontroller used is the PIC 16F877A, which provides a safe and reliable method for controlling. The system needs to be attached to the existing method in which cars are designed so flexibility is a major need. the object sensed using any of the object sensor is given as input along with speed obtained from the RPM counter which will be sent to the controller based on the commands provided it will calculate the speed that's need to be controlled based on the PID algorithm. The above Figure is the proposed braking method the controlling of the rear brake will adjust the torque of the wheel enabling the system to control the application of brakes. The speed control will be only applied if the distance is below 45% to collide or else the driver will only have control after he applies the brake.
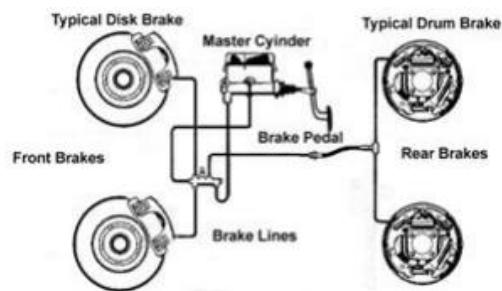
The system will take over if it is too close this will make the brakes and accelerator pedals to be cut from the drivers control and the system will apply the brake and here the algorithm provides a smooth operation of the vehicle and sudden jerks will not be realized. The method was simulated, the results were verified through MATLAB 2009R and the graphs are plotted. Safety and automation is the main trend of future vehicle development. In the future authors believe that safety and warning measurement will be the basic all existing vehicles. The warning and smooth braking system will not only prevent accidents but ensures comfortable travelling at the highways also. When the driver cannot operate the car effectively or vehicle unrestrained or driver doze off, it can help the vehicle slowing down on braking.

"Fabrication of Auto-Braking System for Pre-Crash Safety Using Sensor" International Journal of Control and Automation Vol. 2, No. 1, March, 2009 Name of authors –Eung Soo Kim

The Auto-Braking System was designed by VHDL and fabricated to keep a distance between two cars. It provides PreCrash Safety System for Intelligent Car. This module can detect the distance between front vehicle and driver's vehicle to keep a constant distance using a sensor and operate the brake system forcibly if the driver does not decrease the speed of car. The system displays the distance between the two vehicles and the speed of your vehicle. The performance of the system was good. The fabricated auto-braking system has the sensor part and signal processing part to prevent an accident as shown in Figure 1. It performed monitoring the environment

and sensor signal processing. The sensor embedded in vehicle will detect the road environment, such as self-velocity, distance from front vehicle, and surroundings vehicles, using infrared sensor and ultrasonic sensor. These sensors were operated all the time during driving. The processing part accepted the signal from sensors and processed the signals and generated the instructions and transferred the generated instruction to control unit of transmission and brake of vehicle. There are three cases occurred in real situations. One case is that the distance between the front car and driver's car is far enough to defend crashing and self-velocity is the same velocity of front car or slower than that of front car. In this case, the driver's car is continuously running without changing its velocity. Another case is that the distance between the front car and driver's car is near and self-velocity is slower than that of front car. In this case, the driver's car is also continuously running without changing its velocity. Another case is that the distance between the front car and driver's car is near and self-velocity is faster than that of front car. In this case, the driver's car is continuously running only when the driver reduce speed. But if the driver does not reduce speed, the auto-braking system may forcibly reduce the speed of driver's car to protect an accident.
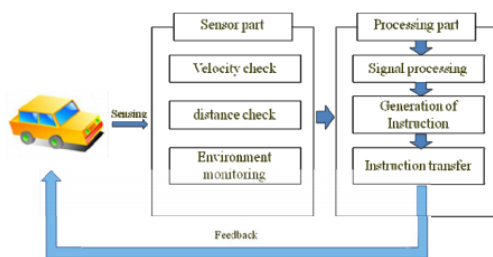
Figure 4

The reason is that if the driver does not reduce speed, the accident will be occurred and the driver will be hurt. The auto-braking system was designed by VHDL and fabricated using FPGA to prevent accident. The system was mounted on a miniature car and tested. When the distance was getting closer, the auto-braking system was working and the speed will slow down if a driver does not reduce the speed of

automobile. We also fabricated the auto-braking system using Labview. We will replace an ultrasonic sensor with a radar sensor as the auto-braking system is mounted on a real automobile.

"A Deceleration control method of automobile for collision avoidance based on driver perceptual risk" IEEE international Conference on Intelligent Robots and Systems, Oct 4881-4886 Name of authors-Takahiro Wada

To reduce rear-end crash of automobiles, it is important to judge necessity of deceleration assistance as earlier as possible and initiate the assistance naturally. On the other hand, we have derived a mathematical model of driver's perceptual risk of proximity in car following situation and successfully derived driver deceleration model to describe deceleration patterns and brake initiation timing of expert driver. In this research, an automatic braking system for collision avoidance will be proposed based on the formulated brake profile model and brake initiation model of expert driver to realize smooth, secure brake assistance naturally. It will be shown that the proposed control method can generate smooth profile for various conditions. In addition, experimental results using a driving simulator will show validity of the proposed system based on subjective evaluation

"A Theory of Visual Control of Braking Based on Information About Time to Collision", Perception, Vol 5, pp 437-459 Name of authors –Lee

Collision Warning Systems (CWS) are safety systems designed to warn the driver about an imminent collision. A CWS monitors the dynamic state of the traffic in real time by processing information from various proprioceptive and exteroceptive sensors. It assesses the potential threat level and decides whether a warning should be issued to the driver through auditory and/or visual signals. Several measures have already been defined for threat assessment and various CWS have been proposed in literature. In this paper, we will focus on two time-based measures that assess

both front and rear collision threats. In particular, a new threat metric, the time-to-last-second-acceleration (Tlsa), for lead vehicles in rear-end collision is proposed and compared with its counterpart, the time-to-last-second-braking (Tlsb). The Tlsa is a novel time-based approach that focuses on the lead vehicle (as opposed to the following vehicle). It inherits the properties of the Tlsb and, as such, is coherent with the human judgment of urgency and severity of threats. It directly quantifies the threat level of the current dynamic situation before a required evasive action (i.e. maximum acceleration) needs to be applied. Furthermore, different warning thresholds are proposed by considering the average driver reaction time. Its effect on decreasing the severity of a rear-end collision is studied and its reliability is tested using a well-established physics-based robotics simulator, namely Webots.

Working

We have pleasure in introducing our new project "eye sensor braking system",which is fully equipped by IR sensors circuit,automatic braking and Pneumatic bumper activation circuit when the driver is not applying the brakes manually in case of emergency. It is a genuine project which is fully equipped and designed for Automobile vehicles. This forms an integral part of best quality. This product underwent strenuous test in our Automobile vehicles and it is good.

The important components of our project are,
IR transmitter
IR receiver
Control Unit with Power supply
Solenoid Valve
Flow control Valve
Braking system
Pneumatic bumper
Air Tank (Compressor)
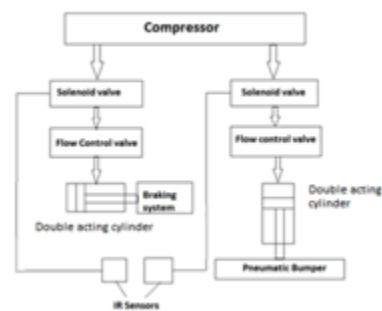
Figure 5. Proposed block diagram of project

The IR TRANSMITTER circuit is to transmit the Infra-Red rays. The IR transmitter is used to transmit the infrared rays in our eyes. The IR receiver is used to receive the reflected infrared rays from our eyes. If the eyes are closed it means the output of IR receiver is high otherwise the IR receiver output is low. This to know the eye is closing or opening position of the eyes. This reflected Infra-Red rays are received by the receiver circuit which is called as called "IR RECEIVER". The IR receiver circuit receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the solenoid valve. This system works when driver does not apply brake manually In this case the chances of accident are very high. When any obstacle is detected by IR sensor the signals are send to both braking and bumper system. Thus the brakes are applied and bumper is activated. This system can help to save the people sitting inside the vehicle and also will save the external body of vehicle from getting damaged.

Advantages:
1. .Easy construction.
2. It provide safety of driver and vehicle.
3. It reduce accident intensity.
4. This system improve the response time of vehicle braking to keep safe distance between two vehicles.

Disadvantages:
1.Cost is high because of use of compressor.
2.IR sensor range is small.

3.only useful for front side protection.

4.Not useful when vehicle will be come at back side.

III. FUTURE SCOPE

Infrared sensors can be replaced by ultrasonic sensors.Pneumatic bumpers can be replaced by external air bags.Infrared sensors can sense eye blinking and give signal to solenoid valve when driver sleeps.

IV. CONCLUSION

Behind the designing of this system, our main aim is to improve the prevention technique of accidents and also reducing the hazard from accidents like damage of vehicle, injury of humans, etc. We observed that our work is able to achieve all the objectives which are necessary. Initial cost of cars with air bags is always high. Usually air bags are given to high end cars. By implementing this project we can reduce cost of high end cars by giving similar kind of safety. Air bags are helpful to provide internal safety to people sitting in vehicle, whereas in our project we will be giving internal plus external safety to car from damage. Thus we will reduce initial cost of cars and also provide better safety.

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Fulcrum Bicycle

Harshal S. Mayure, Shantanu M. Bhad, Nakul V. Atkar, Mohit G. Hiralkar

Mechanical Engineering Department, SKN Sinhgad Institute of Technology and Science, Lonavala, Pune, India

ABSTRACT

In the recent world for transportation purpose, there are many man-developed systems invented out of them bicycle is the only sole remaining type that has a limited propulsive power. Lakhs of people around the world still depends on bicycle for cheap and efficient transportation. Some recreational riders uses their wheels for exercise, adventure and championship. There are some of the most important part which plays actual working operation in the fulcrum bicycle are as follows, fulcrum, connecting links and sprocket. In the fulcrum bicycle, oscillating levers are used and they are pivoted at a point on the frame of bicycle. This change in arrangement changes the existing conventional driving mechanism by the oscillating motion of a lever into rotary motion of wheel. In this mechanism there are two mechanism like downward and upward motion of the lever. The downward motion is due to human legs powered while the upward motion of lever is due to paddling motion of bicycle. The main purpose of this project making is to provide transportation to the people having some disabilities to their legs (i.e. the person cannot perform complete revolution of paddle) and it can also be used for reducing the actual effort required in case of conventional bicycles.

Keywords: Fulcrum Bicycle, Fulcrum Mechanism, Freewheel Mechanism

I. INTRODUCTION

The objectives of this project work is to reduce the effort which is required for cycling and provides a mean of transportation to peoples with small disability to their legs.

1.1 History:

The first mechanically-propelled, two-wheeled vehicle may have been built by Kirkpatrick MacMillan, a Scottish blacksmith, in 1839, although the claim is often disputed.

In the early 1860s, Frenchmen Pierre Michaux and Pierre Lallement took bicycle design in a new direction by adding a mechanical crank drive with pedals on an enlarged front wheel. Several inventions followed using rear-wheel drive, the best known being the rod-driven velocipede by Scotsman Thomas

McCall in 1869. In that same year, bicycle wheels with wire spokes were patented by Eugène Meyer of Paris.

Further innovations increased comfort and ushered in a second bicycle craze, the 1890s Golden Age of Bicycles. In 1888, Scotsman john Boyd Duniop introduced the first practical pneumatic tire, which soon became universal.

In 1894, Michale B. Ryan is granted the first patent for a folding bicycle. In 1989, Michael Kutter develops what is considered to be the first Pedelec, an electric bike where peddling causes the motor to assist the rider. In 2009, Shimano develops electronic gears for faster shifting.

1.2 Problem:

It has been observed that there are mainly three principal drive types commonly used by the manufacturers to drive the rear wheel of two wheel vehicles and these drives are:

Shaft drive, Belt drive and Chain drive.

The table given below gives the comparative information about advantages and disadvantages about these drives.

Table 1

Types of drives	Advantages	Disadvantages
Shaft drive	Very clean, reliable and durable in operation	It is complex, heavy and much more expensive for manufacturing
Belt drive	It is simple and its manufacturing is cheap	Its strength is less than other two and its size is bigger for same amount of power transmission
Chain drive	It is effective, durable and its manufacturing is cheap	It requires lubrication and regular maintenance.

The main advantage of this project is that it reduces the effort while pedaling in an ordinary/conventional bicycle. A person with small disability can use this bicycle without any problem.

1.3 Methodology:

To overcome the disadvantages of the existing drive mechanisms used in conventional bicycle, a new drive mechanism was designed. The designed mechanism is known as paddle Drive. Using SOLIDWORKS software, the new mechanism was designed and the analysis was done using ANSYS software. Finally the new drive mechanism was fabricated, implemented and tested on the conventional bicycle.

II. OBJECTIVES

We need to modify the conventional bicycle into fulcrum linked bicycle and the modification is done so for to reduce the effort which is required for the driving of a conventional bicycle. This change in the bicycle can be achieved by changing the current drive mechanism of our conventional bicycle by attaching an oscillating lever pivoted at a point on the bicycle frame. The lever oscillates by an effort of paddling is due to its other side's lever by human legs.

The next objective of this project to design is to provide the mean of transportation for the people with small disability to their legs or the person who cannot perform complete revolution of a paddle which was earlier required to drive the conventional bicycle. Now the person just only needs to oscillate the lever up and down with his legs to his ability.

The other objective of this project is to minimize the maintenance which is continuously required for a conventional bicycle.

It also provides a new way for cycling to the cycling enthusiasts.

Figure 1. Fulcrum Bicycle

III. DESIGN

There were various forms of bicycle in the past history through which the existing form has evolved. Studies are still going on for making bicycling more comfortable and economical. In this review paper, the details of various designs in the history of bicycle are put in front for studies. Details of Free Wheel Mechanism which provide one directional motion to the drive wheel are exhibited. This review paper summarizes an up-to-date progress in different methods for transmission of human power on the pedal to the rotation of the wheels and the major advantages and disadvantages of these transmission methods reported in the literature. It covers how the energy efficiency of the bicycle is calculated considering the case of a chain driven safety bicycle.
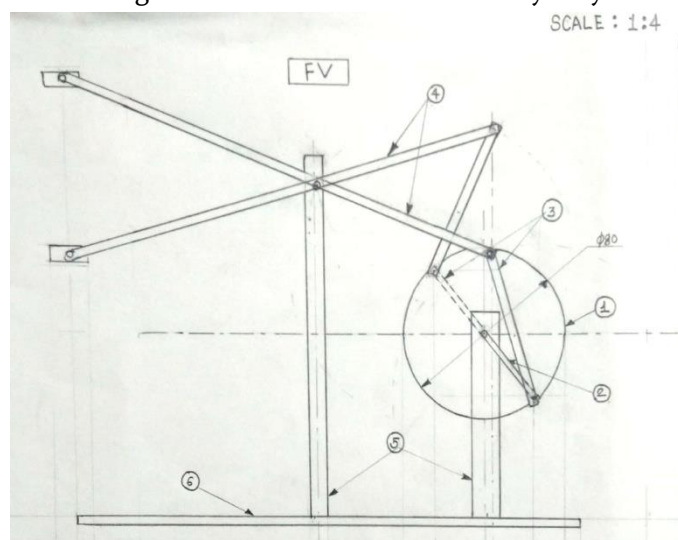
Figure 2. Fulcrum Driven Mechanism

Table 2

Part list		
Sr. No.	Name of the parts	Part No.
1	Sprocket Wheel	1
2	Sprocket Link	2
3	Connecting Link	3
4	Fulcrum	4
5	Supports	5
6	Supporting Frame	6

3.1 Mechanical Advantage:

The main mechanical advantage of oscillating lever is the ratio of the length of the oscillating lever on the applied force side of the fulcrum to the length of the lever on the resistance force side of the fulcrum. It is also known as the ratio of the resistance force to the applied force on the fulcrum.

3.2 Are Angle:

Angles are formed when two lines meet at a point. It is defined as the measure of turn between the two lines. The unit of angle is radians or degrees. It can be measured in degrees using the radius and the arc length of the circle. There are also other angles like complementary angles, supplementary angles, interior angles etc.

IV. RESULTS AND DISCUSSIONS

The Fulcrum Driven Bicycle consists of the following parts such as a sprocket wheel, connecting link and oscillating fulcrum. The parts of the Lever Driven Bicycle is shown in fig.2. The fulcrum consists of link at one end witch is connected with sprocket wheel and other end of fulcrum is attached with rotary paddle. The fulcrum is pivoted across the frame witch changes the existing conventional driving mechanism into fulcrum driven mechanism in witch fulcrum oscillate by the effort of human leg on the paddle. This oscillating motion of fulcrum is converted into rotary motion sprocket wheel by the link and the rear wheel get powered by chain drive. On the other hand another fulcrum advances upward oscillating motion due to link and pivoted joint attachment. Now this can be oscillate down by the human leg to complete the effort cycle of the bicycle.

On the basis of studies and observations of various driving mechanism, we can say that the effort for driving a bicycle was reduced and the Fulcrum Driven Bicycle makes riding effortless and comfortable. It provides a means of transportation on the bicycle to a

person with a small disability to their legs (i.e. a person with a leg shorter than the other). Thus by using the Lever Driven Bicycle the person with the disability will not have to extent his legs for the complete rotation of the crank set for motion. They just only requires oscillating the lever with his legs up to his ability.

V. CONCLUSIONS

By attaching the fulcrum at pivoted point on the bicycle frame we can say that it will reduce the effort for powering the bicycle and thus efficiency of rider increases. After successful fabrication we can say that the conventional bicycle has been converted into Fulcrum driven bicycle. With the use of the Fulcrum driven bicycle we can conclude the following,

1. The mechanical advantage of the fulcrum driven bicycle was found to be more effective and required less effort to operate.
2. As it is already designed in consideration of disable persons, it can provide successive transportation to the persons with a disability to his or her legs. They just need to oscillate the lever up and down with their legs.
3. It also encourage the riders to experience a new way for cycling.

VI. ACKNOWLEDGEMENT

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Aqua Silencer

Vinod Ghodke, Mayur Patil, Neeraj Patil, Sourabh Kale

Department of Mechanical Engineering, SKNSITS College of Technology, Lonavala, Maharashtra, India

ABSTRACT

As we know that generally trees are naturally converting the carbon dioxide into oxygen. But in present we all see that the humans are cutting the trees and forests for the build the cement forest. Because of this human are not getting the pure air and pollution is increasing by the decreasing of trees. This will cause to global warming problems. Acid rain respiratory disease many more. But now do not worry because of the AQUA SILENCER will do this job in future. Air pollution is the main problem to cause the human health. To avoid this problem the aqua silencer is used for the purpose of reduced pollution emissions and noise. In aqua silencer mainly used the water to reduced emission and noise and hence its name AQUA SILENCER. Other components are used in aqua silencer are charcoal, scrubber, gas filter which help for the reduced pollution from the exhaust gases of the vehicles. The aqua silencer is very cheap and easy to install.

Keywords: Aqua silencer, water, PUC test, charcoal.

I. INTRODUCTION

The purpose of this project is to reduced pollutions in an efficient way rather than using a conventional silencer. The conventional silencer is source for air and noise pollutions. Hence, to reduce this Pollution Control Aqua Silencer is used which is the invention to reduce these two pollutions. In order to avoid this type of gases, Aqua Silencer is introduced. It is fitted to the exhaust pipe of the engine; sound produced goes to the water is less hearable than it produced in the environment. This mainly because of small bubbles in water molecules, which lowers its the sound level.
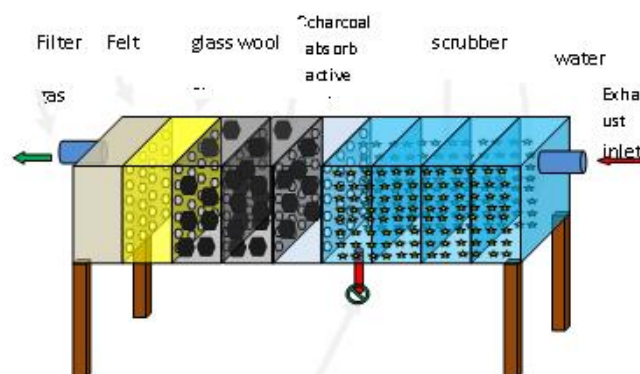
Figrue 1

AQUA SILENCER CONCEPT DIAGRAM

The emission can be controlled by using the activated charcoal layers and it is highly porous and posse's extra free valences so it has high absorption capacity. So, absorb the gases from the engine and release less gases to the environment. The noise and smoke level are considerably less than the conventional silencer, no need of catalytic converter and easy to install. In this silencer, the charcoal, and water is used therefore

it is called hybrid aqua silencer, and it is useful in automobile, industry, DG machines, Marine and Boats also.

NEED OF PROJECT

It satisfies today's most pressing environmental, social, cultural and aesthetic demands. The ability to combine innovative design with advanced technology, along with an acute sensitivity to environmental concerns is very useful for aqua silencer project. With earth's population ever growing, air pollution and air quality is a major issue for many countries around the world. Air pollutants can effectively to respiratory related illnesses in humans and animals, create acid rain, and deplete the ozone layer. Actions such as carpooling, reducing the use of fossil fuels, are all ways that reduce harmful CO2 levels in our atmosphere. There is also a natural source that affects the harmful CO2 gases and that source is trees.

II. METHODS AND MATERIAL

A. CONSTRUCTION

The aqua silencer is basically a metal box which consist of a seven metal plates of eight compartments. In first four compartments consist of a water and scrubber. Then charcoal is consisting of two compartments. In last two compartment gas felt filter is provided. In last three plates having number of holes to pass the gas from inlet to outlet.

The upper part of metal box is closely fitted by the plate with the help of nut and bolts. The four stands are provided in which the metal box is build. In one side of the metal box exhaust gas inlet pipe is provided and other side exhaust outlet port is provided. Bottom side of the box drain out is consist for the water out.

B. WORKING

Basically, an aqua silencer consists of a slotted plate which is installed at the end of the exhaust pipe. The slotted plate assembly is fill by water and scrubber. When engine exhaust enters in side of water and scrubber areas it will rub by scrubber and wash by water in this procedure solid partial of carbon is mixed with water and suspended in bottom.

Some particle which is not dissolve in water is further cleaned by charcoal layer which absorb active carbon and Sulphur dioxide. Further gas is passing through felt filter for final cleaning purpose. A small opening is at the opposite side of inlet of the container to remove the exhaust gases & a drain plug is provided at the bottom of the container for periodically cleaning of container. This resulting exhaust gas from the aqua silencer is less emission pollutants and less noise compared to original exhaust gas from the engine of vehicle. Therefore, the main purpose of the aqua silencer is reduced the air pollution and noise which is exhaust from the gases.

Some chemical reactions which occurs during the process of aqua silencer.

Chemical Reaction 1

The obnoxious product of combustion is NOX – the oxides of Nitrogen. Water will absorb the oxides of Nitrogen to a larger extent. The following chemical reaction will enhance the proof, for the above statement.

$$NO_2 + H_2O = HNO_3 + NO$$
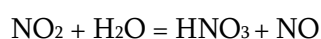
Chemical Reaction 2

When sulphur dioxide reacts with water. The following chemical reaction will take place.

$SO_2 + H_2O = H_2SO_3$ (AQUIS SOLUTION)

It is known as the sulphurous acid, but it exists only in aqueous solution and cannot be isolated in pure form it is an acid with moderate strength.

Chemical Reaction 3

When the carbon-monoxide present in the exhaust gas comes in contact with the water. The following is the chemical reaction:

$$CO + H_2O = CO_2 + H_2$$
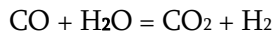
Chemical Reaction 4

Bicarbonate is naturally produced by the reaction of carbon dioxide (CO_2) with water (H_2O) to produce carbonic acid (H_2CO_3), which dissociates to a bicarbonate ion and a proton (H_+). Acid or base metabolism in the body is regulated by this chemical equation:

$$CO_2 + H_2O \leftrightarrow H_2CO_3 \leftrightarrow H_+ \ HCO_3$$

C. SPECIFICATION

1.ENGINE

Stroke - Two stroke petrol engine.

Type - Air cooled

No. of cylinder - Single cylinder

Bore x Stroke - 42.6 mm x 42 mm

Displacement - 59.9 cc

Maximum Power - 3.5 hp at 5500 rpm

Max. Torque - 4.5 Nm at 5000 rpm

2.WATER

Thermal stuff of water

Maximum density - 1000 kg/m3

Specific weight - 9.807 KN/m3

Freezing point - 0 o C

Boiling point - 100 o C

Latent heat of melting - 334 KJ/Kg

Latent heat of evaporation - 2270 KJ/Kg

Specific heat - 4.187 KJ/Kg.K

Thermal expansion - 5 o C to 100 o C

D. MATERIAL SELECTION

Table 1

SR.NO.	PART NAME	MATERIAL	QUANTITY
1	Tank	MS	1
2	Slotted plate	MS	4
3	Drain valve	MS	1
4	Glass wool filt.	GW	1
5	Charcoal	CC	1
6	Felt filter	FE	1
7	Mesh plate	MS	3
8	Top cap	MS	1
9	Adaptor	MS	2
10	Gasket	STD	1
11	Hose pipe	SS	1
12	Nut bolt	MS	24 NOS
13	Welding rod	-	30 NOS
14	Colour	-	2 LIT

III. RESULTS AND DISCUSSION

From the PUC testing of above two stroke petrol engine I find the below result about Carbon dioxide and hydrocarbon.

Table 2

Authorized standard CO	Measured level CO	Authorized standard HC	Measured level HC
Ordinary Silencer 3.52	0.95	6000	270
Aqua Silencer3.52	0.24	6000	214

Table 3

A.SoundCharacteristics	Sound Level measured without silencer	Sound level measured with Aqua silencer
No load	104.05db	76db
50% load	105.56db	77db
100% load	108.53db	78db

IV. CONCLUSION

The aqua silencer is more useful in the reduction of emission gases from the engine exhaust using water and charcoal. By using water in the aqua silencer, the sound can be lowered and also by using activated charcoal, we can control the exhaust emission to a greater level.

The water contamination is found in the aqua silencer is negligible. It is smokeless and reduced pollution free emission and also it is very affordable. It can be also used for two wheelers and four wheelers and also can be used in automotive industries.

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Hybridised Fuel System for Two-Wheeler Vehicle

Aditya Garje , Ashish Bharade, Sagar Band, Mustaque Khan

Department of Mechanical Engineering, University of Pune, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

In today's century the very important role in busy schedule is played by two wheelers because, due to more amount of middle class people in indian society two wheelers are used in large amount. Use of two wheeler in India is on the top. Generally these vehicles use petroleum oil as fuel. Thus use of crude oil leads to growing global warming .so we have CNG as an alternate fuel for these gasoline fuels . CNG has similar properties to these petroleum fuels thus they can be replaced by CNG. High rating of octane has ability to rapid burn and this increase the engine performance and more efficient. India has massive source of CNG. CNG can be easily filled from the existing CNG pumpsand is very light in weight. In the introduction someparameters and results shows why CNG should be used in two wheelers as a fuel. Results obtained are so satisfactory that when applied can change the future of two wheelers.

Keywords: CNG, Bike, Application of CNG,CNG kit designing.

I. INTRODUCTION

Now-a-days, Respiratory diseases are growing world wide,main reason for these live snatching diseases is air pollution, maximum contribution for air pollution is two wheeler. When a bike runs on petrol as fuel, the exhaust mainly contains CO_2, CO, NO_x, SO_x, etc. Global warming is also major issue we are facing. The reason for global warming is same, due to these harmful greenhouse gases from exhaust of two wheelers.

Petrol contains hydrogen and carbon in various structures due to which it is highly volatile, after combustion high amount of toxic gases are released which cause air pollution. Human life is adversely affected by pollution. In such cases there is a need of system that can reduce emissionof such toxic pollutants. Among different methods practiced we have used natural gases, such as propane and butane (LPG) or compressed natural gas (CNG) for reduction of harmful gases. In addition to the environmental aspects, there are also economic reasons for the use of gaseous fuels to four stroke two wheeler engine. A total or partial replacement of petrol to gas is possible. Depending on the used technology and the percentage of petrol fuel replacement it is possible to reduce the content of carbon dioxide in the exhaust gas even by 25%, and content of other exhaust gases also gets reduced as compared to original petrol fuel

For CNG to be commercially used it is necessary that it should be available so that demand gets fulfilled. Recent technological innovations in extracting natural gas have led to significant expansions of natural gas reserves. It does so at relatively low costs ,in fact, low prices in recent years have already contributed to a significant shift toward natural gas in the electric power industry. In addition, due to its ecofriendly properties , it is often assumed that switching to natural gas is comparatively beneficial for the climate.

With the plentiful availability of natural gas and low emissions due to its favorable (H: C) ratio, Natural gas has emerged as one of the most promising and clean alternative fuels for engine applications. Furthermore, its high octane rating allows high compression ratios leading to higher thermal efficiency however CNG suffer from the problems of very low energy density. There are many CNG engine technologies used worldwide, which differ in the way the fuel is introduced into the cylinder e.g. carburetor technology, port injection, duel fuel technology, etc. To utilize the full potential of CNG in engine applications, concept of direct injection (DI) has been investigated under various engine operating conditions by varying fuel injection timings, equivalence ratio, cyclic variations, spark timings etc.

II. METHOD

A. Purpose of Study: Petrol driven engines have dominated the energy scene for decades now and their utilization is increasing every day despite the campaign for other alternative fuel and coupled with the fact that they contribute more to green house gases, they show no sign of quitting the energy scene. Therefore, one wonders if petrol offers better performance than CNG? This paper is intended to answer this question by evaluating recent studies carried out on comparative studies of petrol and compressive natural gas (CNG) as vehicular fuel.

B. Benefit of Research: The findings will give an insight of which fuel is more appropriate for emerging economies like Nigeria in terms of engine choice and Technology. It will also enable researchers and other private organization to know the limitations delaying the full utilization of compressed natural gas (CNG) as vehicular fuel.

C. Previous Work Done: The issue of replacing CNG as an alternative fuel to petrol has been addressed by many researchers to a large extent. And this aspect plays the major role in this research work as it

presents recent studies done on the comparative analysis in the use of petrol and CNG as vehicular fuel.

III. PERFORMANCE ANALYSIS OF A 4-STROKE SI ENGINE USING CNG AS AN ALTERNATIVE FUEL

The research on alternative fuels has become very essential due to depletion of petroleum products and its major contribution for pollutants.In the present work, Compressed Natural Gas (CNG) has been introduced as an alternative fuel to overcome the above problems.Of the higher compression ratio, higher octane number, the CNG is used toallow the combustion without knocking. The emission characteristics of HC and CO are better for CNG compared to petrol. In this work experimental investigations have been carried out pertaining to the engine performance and exhaust emissions of a single cylinder 4-stroke air cooled type TVS Star City plus engine.

In the present work, the experimental investigationsare carried out on a single cylinder 4-stroke air cooledtype TVS Star City plus petrol engine to computeperformance and exhaust emissions of the test engine. Alltests have been carried out under steady state conditionsfor both petrol and CNG fuels and the results have beencompared.

Table 1. TVS Star City plus engine specifications

Engine type	Four stroke, Petrol engine
Induction	Air cooled type
Number of cylinders	1
Bore (mm)	53.5
Stroke (mm)	48.8
Displacement volume (cc)	109.7
Compression ratio	8.4
Max. power	8.4 PS @ 7000rpm
Max. torque	8.7 Nm @ 5000rpm
Valves per cylinder	4

Fuel system	Carburetor
Fuel type	Petrol
Ignition	TCI

Nitrogen	N$_2$	4
Oxygen	O$_2$	0

Table 2. Dynamometer specifications

Dynamometer type	Eddy current, AG10
Max. speed (rpm)	1500
Max. power (kw)	7.5

Table 3. Petrol composition

Component	Symbol	Mass fraction*100
Carbon	C	85.34
Hydrogen	H	13
Oxygen	O	1.4
Sulphur	S	0.00

Table 4. Thermodynamics properties of petrol

Stoichiometric ratio	14.2
Octane number	96
Higher heating value (MJ/kg)	45
Lower heating value (MJ/kg)	42.2
Density @ 25°C (kg/m³) (DIN 51757)	749
Molecular weight (kg/kmol)	106.2

Experimental analysis has been done for both CNG and petrol fuels under engine steady state conditions. For CNG operation the engine fitted with a fully loaded CNG kit. The composition and properties of petrol and CNG are listed.

Table 5. Natural gas composition

Component	Symbol	Volumetric %
Methane	CH$_4$	89.4
Ethane	C$_2$H$_6$	4.6
Propane	C$_3$H$_8$	1.0
Butane	C$_4$H$_{10}$	0.3
Pentane	C$_5$H$_{12}$	0.0
Hexane	C$_6$H$_{14}$	0
Carbon dioxide	CO$_2$	0

The experiments have been carried out for both fuels (CNG and petrol) at engine speed ranging from 1500-7500 rpm. The experiments have been carried out at full load conditions and the various parameters pertaining to performance and emissions are calibrated. Fig. 1 shows a graph plotted between volumetric efficiency and engine. The volumetric efficiency for CNG decreases about 13.3% and it has occurred at engine speed 4000 rpm and its average value is about 12.3% throughout the engine speed range. From the Fig. 2 and 3, it is learnt that the engine torque and brake power of CNG fuelled engine are considerably lower than that of petrol engine. This is due to lower volumetric efficiency of CNG fuelled engine. From the Fig. 4 and 5, it is drawn that the BMEP is inversely proportional to Engine air/fuel ratio for CNG fuelled engine and petrol fuelled engine with respect to engine speed. From the Fig. 4, it can be observed that the BMEP of CNG is lower than petrol fuelled engine and also from the Fig. 5, it can be shown that CNG has high level integration than petrol management system. Fig. 6 shows that about 19% of BSFC is less for the CNG engine than petrol engine for the engine speed range of 1500 – 7500 rpm and also it is concluded that the maximum difference is about 24% at lower speed of 2000 rpm speed for both fuels. From the graph, it is observed that the volumetric efficiency of CNG fuelled engine is lower than petrol engine, as the CNG engine occupies more volume of inlet air.

Table 6. Variation of engine performance parameters

Items	Petrol	CNG	Deviation%
Max. power (kw)	6.20@ 5000 rpm	5.34@ 5000 rpm	13.88
Max. torque (N.m)	8.35@ 2500 rpm	7.13@ 2500 rpm	14.62
Max. volumetric	89.51%@ 4000rpm	77.59% @ 4000	13.3

efficiency		rpm	
Max. BSFC (g/kw.h)	34.45@ 5000 rpm	27.99@ 5000 rpm	18.75
Max. BMEP (bar)	17.06@ 2500 rpm	15.37@ 25000 rpm	9.91
Max. thermal efficiency %	34%@ 2500 rpm	98% @ 2000 rpm	--

IV. GRAPHICAL RESULTS
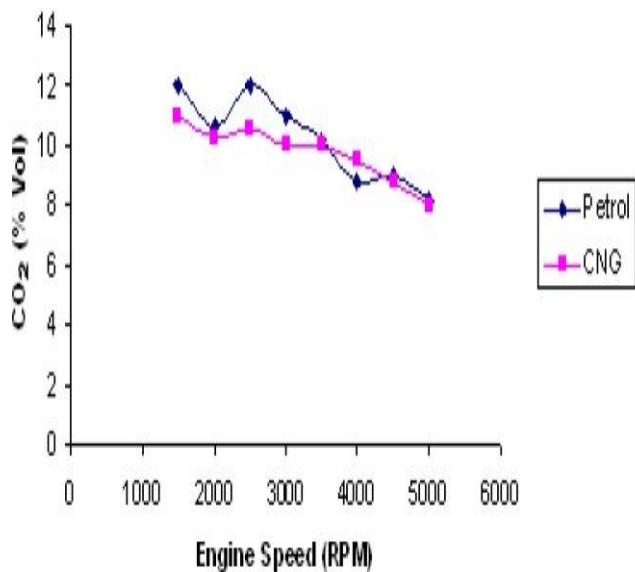
Figure 1. Variation of CO_2 against engine speed
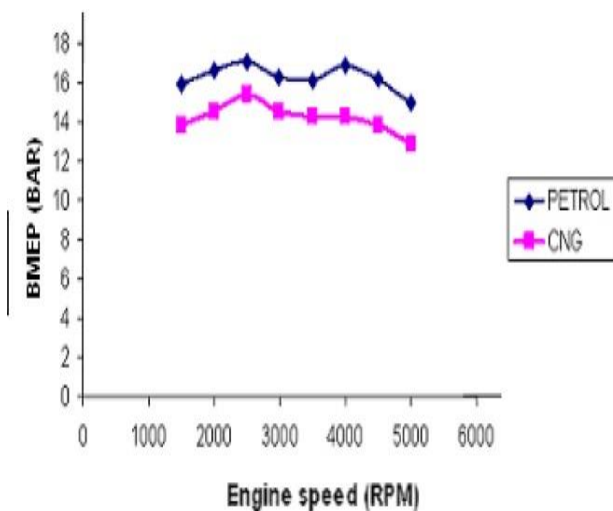
Figure 2. variation of BMEP against engine speed
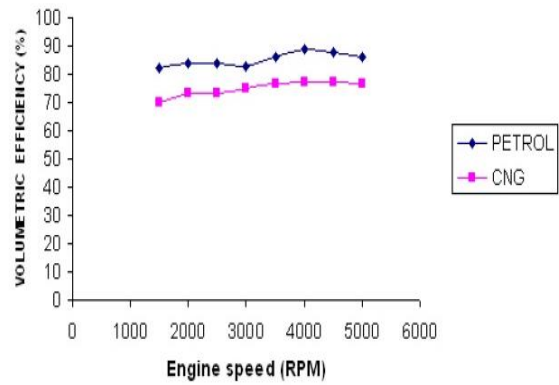
Figure 3. variation of volumetric efficiency against engine speed

V. CONCLUSION

The main focus of this review work was to evaluate the comparative analysis of previous work done in the use of CNG and Petrol as vehicular fuel and as a result, the following conclusions were drawn as follows:

- CNG has low Volumetric Efficiency and 20% reduction in Mechanical Efficiency.
- CNG has no harmful effect on the engine and it si very adequate for S.I engines
- CNG burns more completely than petrol and emits lower amounts of all the regulated exhaust pollutants.

The heading of the References section must not be numbered. All reference items must be in 8 pt font. Please use Regular and Italic styles to distinguish different fields as shown in the References section.Number the reference items consecutively in square brackets (e.g. [1]).

Automatic Active Phase Selector

Prof. Prashant Chaugule, Kendhale Ambadas, Rathod Lokpal, Sabale Akshay, Khavane Kishor

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra, India

ABSTRACT

In three phase equipment's, if supply voltage is low in any of the one phase and you if you wish to run all the equipment properly. This equipment will help you to rescue this situation. However proper rating fuse need to be used in three phase i.e. R, Y, and B inputs lines. Where the correct voltage is available that time.Other low voltage phase shift to correct voltage in same manner, to run all the equipment on the single phase in the building. The circuit consist of relay comparator, transformer. Phase absence is a very common and severe problem in any industry, home or office. Many times one or two phases may not be live in three phase supply. Because of this many times some electrical appliances will be on in one room and OFF in another room. This creates a big disturbance to our routine work. Power Failure is common problem. it hampers the production of industry construction work of new plants and building. It is often noticed that power interruption in distribution system is about 70% for single phase faults while other two phases are in normal condition. Thus, in any commercial or domestic power supply system where 3 phases is available, an automatic phase selector system is required for uninterrupted power to critical loads in the event of power failure in any phase. There is no requirement of backup power supply in that case. Also there is no time consumption as the phase is changed automatically within a few seconds.

Keywords: Arduino uno, Relay module, LCD Display, Load

I. INTRODUCTION

Now, in 21st century, fully world is of automation, and it is the time we must think of Arduino to control. All automatic controllers like remote controller, hand held communication devices, automatic and semiautomatic washing machine, automobile indicating and measuring instruments have its application in each. The project described here being also a Arduino based project used for automatic phase changer. The Arduino Uno is a Arduino board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the Arduino; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

The Arduino used for this project is at mega 328. Now a days many times out of three phases one of the phase cut's off and the circuit breaker trips at that time the MSEB Operator has to operate it manually by turning on the at the time of office hours at that time the hooter shouts and gives us an alert. Keeping in mind the day to day life of human being, the circumstances which occur due to power instability

issues we decided to design such a system which would overcome these issues ultimately and help to reduce human efforts too. Secondly in order to overcome the various phase change issue and avoid damages in industries and automation area plus hospitals & airports

II. LITERATURE SURVEY

[1] DESIGN AND IMPLEMENTATION OF AUTOMATIC THREE PHASE CHANGER USING LM324 QUAD INTEGRATED CIRCUIT

Author:-Oduobuk, E. J., Ettah, E. B., Ekpenyong, E. E. Design and implementation of an automatic three phase changer using LM324 quad integrated circuit was carried out. The system was designed and simulated using. The circuit components were mounted a Vero board. LM324 integrated circuit (comparator) and 2N2222 transistors were used as active components alongside other passive components. Result shows that, when the three phase a.c inputs: Red phase ( ), yellow phase ( ) and blue phase ( ) from public utility supply was fed to the system, the system compared the inputs with regard to phase imbalances, and the input with the highest voltage appears across the output. It also changes over from one phase to another immediately the circuit senses further phase imbalance.

[2] AUTOMATIC PHASE CHANGER:

Author:-Bhanu,Bhawesh

In three-phase applications, if low voltage is available in any one or two phases and youwant your equipment to work on normal voltage, this circuit will solve your problem. However, a proper-rating fuse needs to be used in the input lines (R, Y and B) of each phase. The circuit provides correct voltage in the same power supply lines through relays from the other phase where correct voltage is available. Using it you can operate all your equipment even when correct voltage is available on a single phase in the building.

The circuit is built around a transformer, comparator, transistor and relay. Three identical sets of this circuit, one each for three phases, are used. The mains power supply phase Ris stepped down by transformer X1 todeliver 12V,300 mA, which is rectifiedby diode D1 and filtered by capacitor C1 to produce the operatingvoltage for the operational amplifier (IC1). The voltage at inverting pin 2 of operational amplifier IC1 is taken from the voltage divider circuit of resistorR1and preset resistor VR1. VR1 is usedto set the reference voltage accordingto therequirement. The reference voltage at non-inverting pin 3 is fixed to5.1V through zener diode ZD1. The phase voltage is compared against the reference voltage and if the phase voltage is low the relay trips and shifts the load to other phase.

III. METHODOLOGY

BLOCK DIAGRAM:
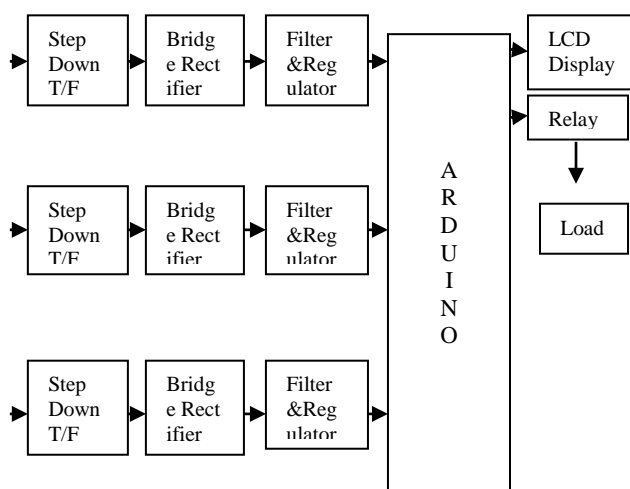
Figure 1. Block Diagram

IV. PROPOSED SYSTEM

- In this project we continuously on Load using three phase.
- If all phase are present Arduino turn on Load on phase 1.at that on LCD display as "Phase 1 selected "

- If first phase absence, Load automatically shift to phase 2 with the help of relay circuit.
- Same if first two phase absent Arduino shift that load to phase 3 with the help of rely circuit.
- System will display selected phase on LCD.
- This project uses regulated 5v, 750mA power supply. 7805, a three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12v step down transformer.

FLOWCHART AND ALGORITHM

ALGORITHM

STEP 1:- Power Up hardware.

STEP 2:- Initialize hardware Module.

STEP 3:- Display On LCD as "Active Phase Selector"

STEP 4:- if all phase are active by default load shifted to R phase.

STEP 5:- if R phase is absent then load shifted to Y phase

STEP 6:- if both R and Y phase are absent then load shifted to B phase.

STEP 7:- if all phases are absent by default load will off.

FLOWCHART
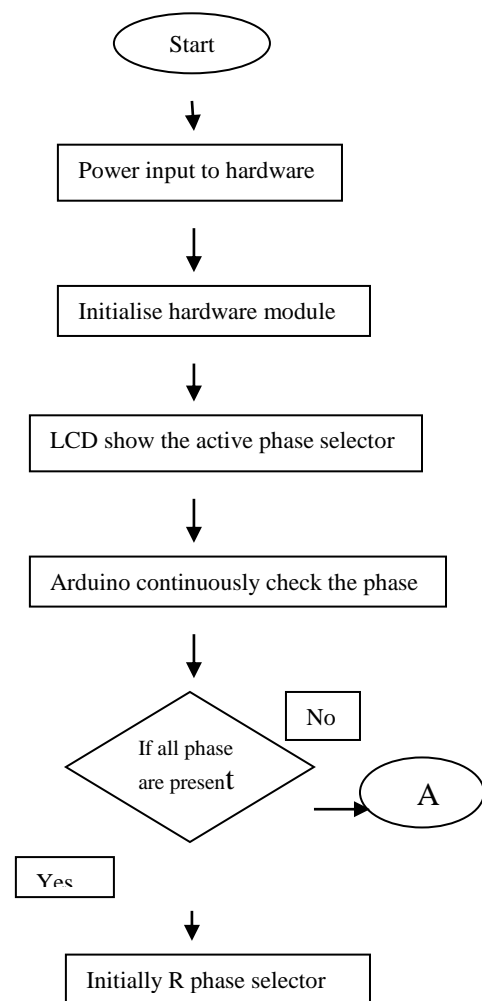
Figure 2. flowchart

V. CONCLUSION

In this system we automatically shift phase if any phase absence .It tested on hardware with some trial n error conditions. We make some truth table for it n using truth table we checking failure condition & depend on that condition we shift phase automatically. The system operates smoothly as expected. It is reliable, durable and portable. The cost involved in developing it, makes it much more affordable than comparable product.

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Automatic Solar Intensity Tracking using PLC for Enhanced efficiency of Solar Panel

Prof. Roshan Shinde, Akshata Mahadshwar, Nitin Magar, Ashwini Bhor, Pragati Jagtap

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra, India

ABSTRACT

Development of a standalone micro-grid structure within a conventional utility grid has become of vital importance, given the current scenario of power generation and its effect on the environment. Solar energy is the primary source of renewable energy in developing the power deficient. But solar panels are less efficient in developing the power due to its fixed panel arrangement. So, many tracking methods are developed to track the sun among them some are less precise in control, some are complex in control system, and some are unable to track the sun during certain whether conditions. In this paper, automatic solar tracking system is implemented using PLC which tracks the sun more effectively with its simple and precise control structure in all environmental conditions. The automatic solar tracker manoeuvres solar panel towards the sun to extract maximum energy during the day time. The tracking is done by programmed light intensity of the panel with the help of LDR sensors and magnetic reed switches, which controls the speed and direction of the dc gear motor attached to the solar panel through mechanical structure and gear arrangement by programming in PLC. The power generation obtained from the proposed PV system increases about 25% with power consumption of the tracker when compared with the power generation obtained from the conventional solar PV system. This can be implemented for a grid connected PV system in order to increase the generation of power. It can also be used to compensate power demand and to obtain high economic returns within shorter duration of time.

Keywords: LDR, DC Gear Motor, PLC, Magnetic Reed Switch, Solar Panel, Grid-Interfacing, Power Quality.

I. INTRODUCTION

In the present day era of modern science and technology, our socio-economic growth depends more or less on electric energy. In the developing countries like India energy crisis is one of the important issues. This energy crisis will be met by using renewable source of energy due to deficient of fossil fuels. There are different renewable sources for the generation of electric energy like solar, wind, gas, water, biomass etc. Among all these solar energy is rapidly advancing as an important source because of cheapness of renewable power and its non-contaminated property. The solar energy is used in many applications like thermal energy storage and electric power generation systems with the help of solar collectors in the form of optical reflectors or photovoltaic (PV) modules to collect solar energy. Usually, the solar panels are used in capture the solar irradiance. But the energy extracted from a fixed panel, during the whole day, is less than maximum attainable. This is due to static arrangement of panel which limits the amount of energy harness from the sun. In order to have an approximately constant energy throughout the day, it is necessary that the solar panel is installed on a solar tracker, with an actuator that follows the sun in the sky. The proposed system performs a new automatic closed loop tracking based on programmable logic

controller PLC. The designed system includes the hardware and software, and the hardware includes PLC, LDR circuits, PV module, battery and voltage regulation circuit; and the software includes PLC program monitoring and PC monitoring to handle the process data. It can automatically adjust the direction of solar panel according to the sunlight direction falling on a photo-sensor as a feedback signal to assure that the solar collector at right angles to the sun's rays for getting maximum solar insolation. It also can locate automatically coordinate location and angle during tracking, without human intervention. It overcomes the issues related to weather conditions (cloudy, rainy) and unattended states with its sophisticated closed loop automatic tracking control algorithm implemented using ALLEAN BREADLY PLC. Its simple structure and lower cost improves the utilization rate of solar energy effectively, and has better value in application prospect.
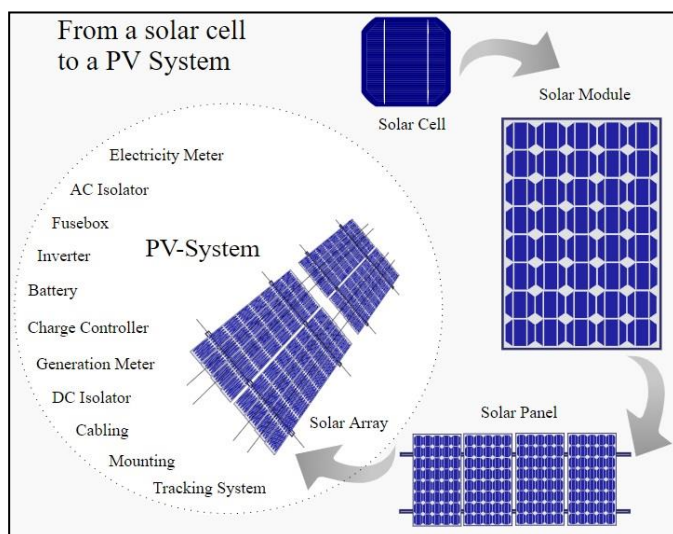
Figure 1. Standard structure of solar panel

II. SYSTEM DESCRIPTION

In this project maximum power has been generated from the sunlight automatically. This system is tracking for maximum intensity of light. When there is decrease in intensity of light this system automatically changes its direction to get maximum

intensity of light. Sun tracking solar system can be divided into four parts;
 a) Mechanical parts
 b) Electrical parts
 c) Electronics parts
d) Programming to control the system

A. Mechanical System:

This part contains a mechanical work. There is a structure is made which support the panel with the two degree of freedom that vary the titration and orientation of the panel. The vertical and horizontal axis has been designed for the supporting of the panel. In vertical axis they remain stable that is they remain fixed with respect to the panel and the other hand in horizontal axis they can be move from east to west and south to north with titration and orientation.
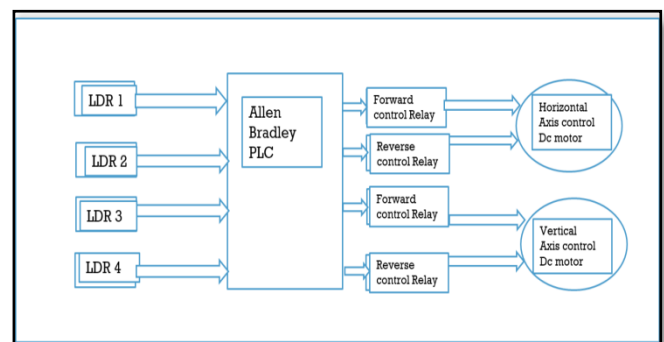
Figure 2. Block diagram of dual axis solar tracking system

B. Electrical System:

The electrical part contains motor, sensors and gears. The DC motor can be used for orientation and control the axis of the solar panel, it only rotate by 90 degree in either direction for the total 180 degree movement and its wheel can be controlled by the gears attached to it. There are two DC motor can be used, one is moving in east and west and other in south to north direction. LDR sensors have been used in sun tracking solar system. LDR is a variable resistor and its intensity depends upon how much they receive the light. Four LDR sensors have been used for sensing in four different directions to obtain maximum intensity of light. The difference between the outputs of sensor is given to PLC unit.

C. Electronic System:

In the electronic part, they contain PLC which is also called a programmable logic controller. PLC is easy to use hardware and software electronic device. in sun tracking solar system. PLC can be used for better working of system.

D. Programming to control the system:

In this part the programming has been done to control the tilting and orientation of sun tracking solar system. In PLC simple programming has been written and is very simple Ladder diagram language. There are no extra codes and complex method used for implementation the program in PLC.

A 12V battery is used to provide supply to the control circuit in the tracking system which is charged by PV panel. As the output voltage of PV panel changes continuously according to the solar radiation, the output voltage is regulated using IC LM317T to charge the battery as shown in fig.8. It is a fully adjustable positive voltage regulator which means it provide line and load regulation (i.e. output remains constant irrespective of changes in input and load) with three terminals capable of supplying 1.5A and range of output voltages from 1.25V to 37V corresponding to the input voltage varying in between 3 and 40 volts. The LM317T also has built in thermal shut down and current limiting capabilities which makes it ideal and short-circuit proof for any low voltage.
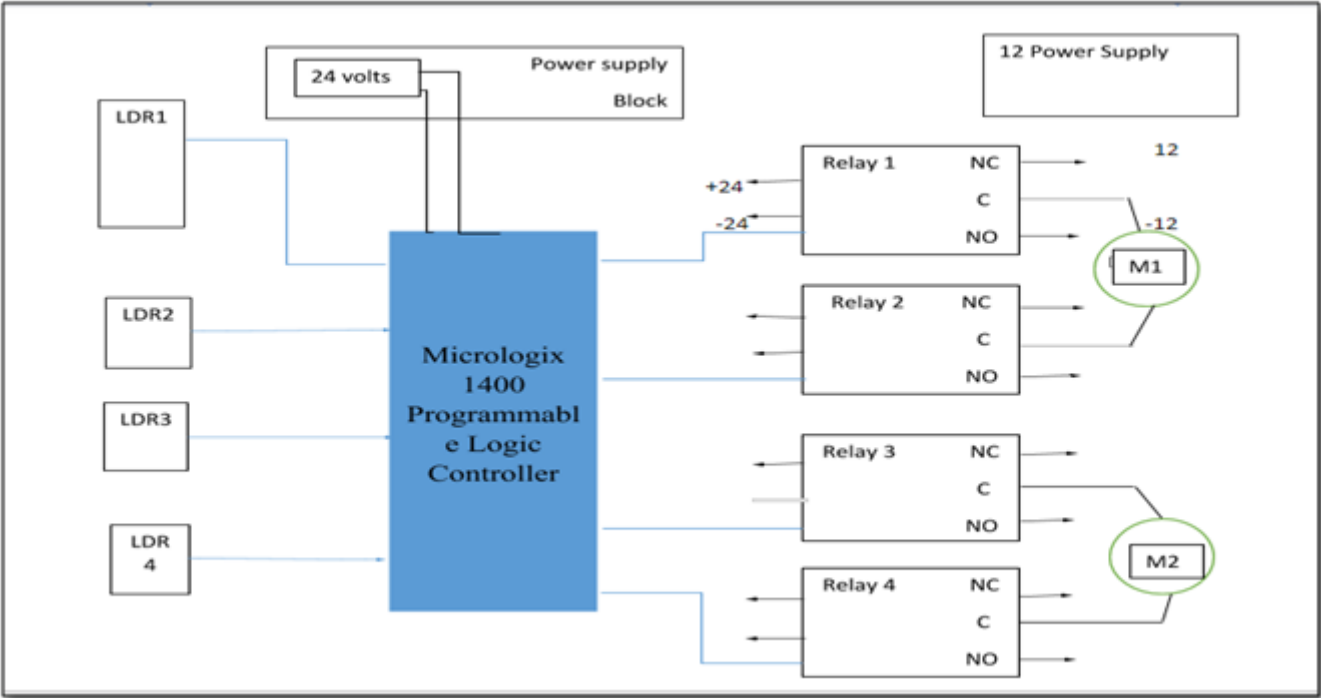
Figure 3. Schematic circuit diagram

III. CONTROL STRATEGY :

There are four LDR's which are connected four sides of the PV panel. The values of the LDR are taken as a input. There are four inputs to get desired output we have to compare those four inputs the flow of process is shown in the given flowchart.

Four LDR's connected to four sides of panel which are north, south, east, west. First step is that to read all the LDR values of LDR n,s,e,w. If input of north LDR is greater than south LDR motor move horizontally forward else the input of north LDR is less than south LDR then motor move horizontally reverse. Both are not then, if input of east LDR is greater than west LDR then motor move vertically forward else input of

east LDR is less than west LDR motor move vertically reverse.
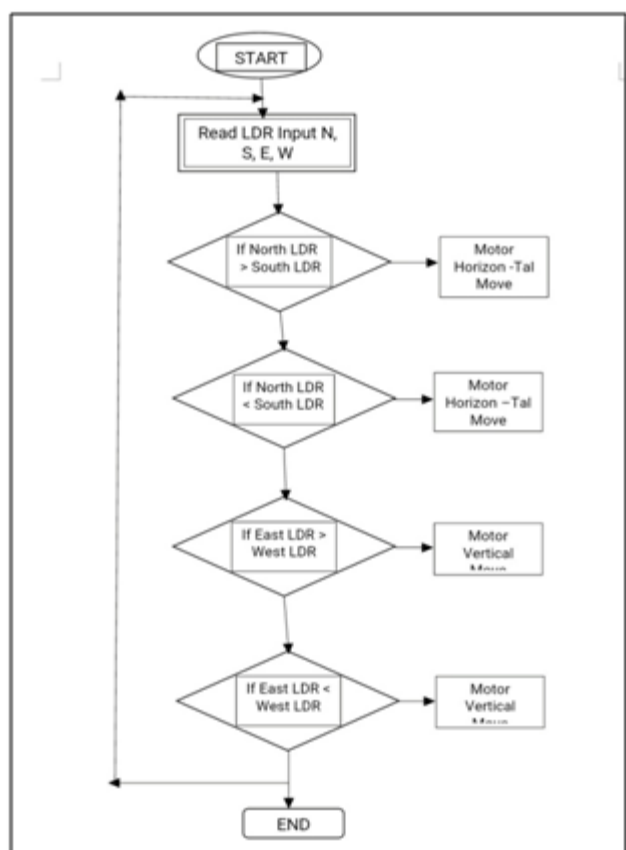
Figure 4. Flow chart of the proposed system

There are two motors one is for horizontally movement and another is for vertical movement. This is the closed loop system so the flow will repeat again and again.

IV. EXPERIMENTAL VERIFICATION

In this experiment we are using four Light Dependent Resistors which having same ratings. Two DC motors are used one is for horizontal movement and another is for vertical movement. Programmable Logic Controller is use as a controller. The output of the controller is given to the Dc motor through relay.

The specifications of hardware and voltage and current ratings of all equipments given in table:

Table 1. System Parameters

COMPONENT NAME	SPECIFICATIONS
Solar panel	Module vtg-12V, SC current 0.61A, OC vtg.-21.6V
DC motor	3RPM,4v-12v,torque 16kg-cm
Relay	Operating voltage. 24V DC, current capacity at AC250V is 10A,current capacity at DC30 is 10A
PLC (Allen Bradely)	Micrologix 1400, supply vtoltage 24V smps,1.5A, Analog 4i/p, 2o/p Digital 19i/p, 11o/p
LDR	Resistance 20-30KΩ, rated power 100mwatt, response time 20msec

The PLC used for the proposed system is Micrologix 1400, the supply voltage for the PLC is 24V smps,1.5A, Analog 4i/p, 2o/p Digital 19i/p, 11o/p. The mechanical structure for the solar panel was fabricated using cast iron rods. The motors were systematically placed on the periphery of the frame without disturbing the centre of gravity of the system. Two 12 volts 3 rpm motors were used for the movement of solar panel. Four LDR sensors of resistance 20-30 KΩ were installed on the solar panel to trace luminous intensity on the surface plate. Two relays with operating voltage of 24V were used to change polarity of supply for forward and reverse movement of motors.
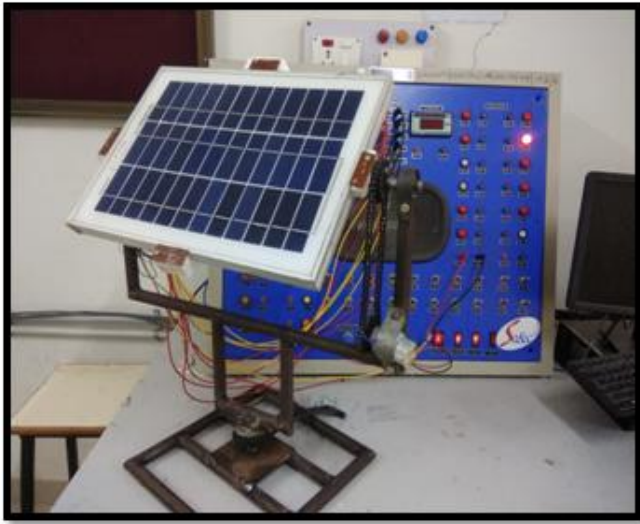
Figure 5. Experimental setup

V. CONCLUSION

We have implemented a model of automatic solar tracking system using PLC to align solar panel in vertically/horizontally to make sure maximum sunrays are available onto the PV panel. The main aim to implement this tracking system to embed into a grid connected PV system to increase power generation and thus reducing the overall cost of a solar plant and high economic returns are obtained. One of the main advantages of using PLC is that huge number of sun trackers build using a unique PLC and control system, thus reduces the cost of system. It is sophisticated and powerful equipment which prevents the damage and loss of information from short circuit at field terminals as the inputs and outputs of PLC are optically isolated. In the proposed system, program is designed in such a way that solar panel always keeps tracking with the sun all over the day and throughout the year with a simple mechanical gear arrangement and a well advanced control algorithm with high accuracy to obtain efficient output from the tracking system. The system ensures that maximum output is obtained from the PV panel thus reducing dependency on conventional grid for power requirements. Energy savings with safety and working conditions are achieved.

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Automatic Water Pumping System Using Arduino UNO

Ramkishan Gopinath Kotalwar, Neha D. Kawale, Ketaki Dinesh Ghumnar, Amol D. Chate

Department of Electrical, SPPU/SKNSITS, Lonavala, Pune, Maharashtra, India

ABSTRACT

Water is an essential component of our world, it is approximated that the water scarcity will lead to extinction of human beings. Our project aims to save water and conserve it for our further generations. The ultrasonic sensor installed on the top of domestic water tank will give the output of the level to the micro-controller which gives its response to the relay instructing it to turn off the motor. The other response from the micro-controller is fed to the ESP Module which gives the live status of the water tank on webpage. The programming of the micro-controller is such that the different levels from the tank are indicated on the webpage through ESP Module. This is also helpful in alerting the user when the level is below to that indicated in program. The relay used before motor is used to switch off the motor when the level exceeds the specified limit.

Keywords: ESP Module, Arduino Uno

I. INTRODUCTION

to Now days it's a challenge to saving of water. Innovative idea of using an automated pumping system which will further help in better management of water and human resources. "SMART WATERING SYSTEM BY ARDUINO" for smarter watering.

Automate watering System will regulate water level in tank without much human intervention, while maintaining level of tank. This project automatically turns ON or OFF by Detecting the water level in tank. An automated watering system will not only minimize the excess wastage of water but also imply reduction of labour and other overheads. This paper highlights the working of the existing technologies such as Arduino, Sensors and so on.

This project requires Arduino board having inbuilt ATMega328 microcontroller. The system has level measurement sensor inserted into the water tank of the home/whether wastage of water and a feedback send to operator by ESP for feedback purpose. An

algorithm has been build out with threshold values of tank level sensor to control the water quantity in tank and also an ESP has been implemented to indicate the water level in tank. We will get output by three methods by LED blinking, LCD display and ESPs web address. This project requires Arduino board having inbuilt ATMega328 microcontroller but innovatively for minimizing the cost we will use handmade Arduino so that middle class people also can afford. This project is need of the hour to convert manual pumping into an automated pumping which with the help of water level measurement sensor will detect level of water leading to turn ON/OFF of pumping motor.

II. METHODS AND MATERIAL

The power supply for the circuit was selected in such a way that it could supply the entire module without running out of voltage and current. The calculations were done prior to ensure that enough required specifications can fulfilled without damaging the components. The microcontroller requires 500ma which the power supply can supply and the voltage

regulator IC was used to supply a constant supply of 5V. The power supply to the ESP module was given by a separate Adapter of 12 V, 3Amp.The MAX232 IC was used for the communication between the microcontroller and the ESP module. ESP module allows microcontroller to connect to Wi-Fi network and makes simple TCP/IP connections using Hayes-style command. The LEDs mount on the tank to indicate the level. LCD interfaces to the Arduino to display the current status of water level. MAX232 IC requires a supply of 5V which was easily supplied by the transformer. The entire module had the heating issue due to the unavailability of the heat sink the circuit. Since the microcontroller was used as an AURDINO UNO board the IC was configured accordingly, and the required setup was made on the breadboard with the ceramic capacitors, resistors, and the crystal oscillator; for providing with the working oscillator frequency of 12MHz to the microcontroller. While you are in this condition and need emergent help, please remember using emergency calls. In order to make or receive mail, webpage must be switched on and in a service area with adequate network signal strength. The program was loaded using the AURDINO KIT and by the use of Arduino Uno debugger. The Atmega IC was made boot-loader initially and then the required program was feed using the debugger.
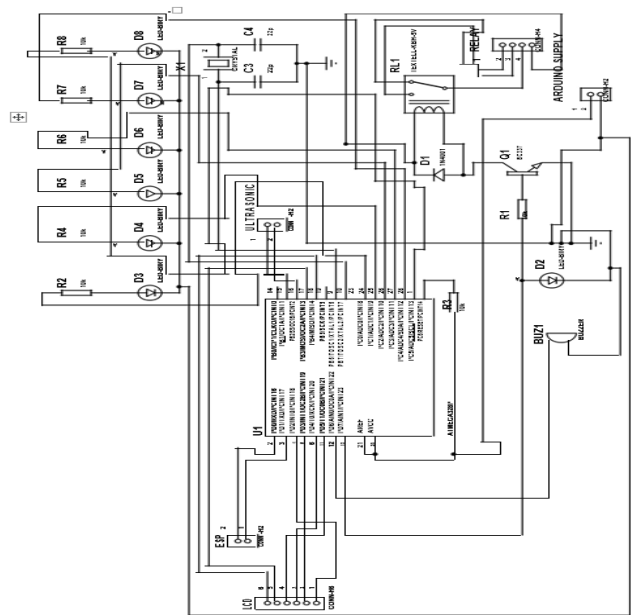
Figure 1.circuit diagram

- 2N3904

Characteristic	Symbol	Value	Unit
Collector−Emitter Voltage	VCEO	40	Vdc
Collector−Base Voltage	VCBO	75	Vdc
Emitter−Base Voltage	VEBO	6.0	Vdc
Collector Current − Continuous	IC	600	mAdc
Total Device Dissipation @ TA = 25°C Derate above 25°C	PD	625 / 5.0	mW / mW/°C
Total Device Dissipation @ TC = 25°C Derate above 25°C	PD	1.5 / 12	W / mW/°C
Operating and Storage Junction Temperature Range	TJ, Tstg	−55 to +150	C

- 2N2222-

Characteristic	Symbol	Value	Unit
Collector–Emitter Voltage	VCEO	40	Vdc
Collector–Base Voltage	VCBO	75	Vdc
Emitter–Base Voltage	VEBO	6.0	Vdc
Collector Current – Continuous	IC	600	mAdc
Total Device Dissipation @ TA = 25°C Derate above 25°C	PD	625 / 5.0	mW / mW/°C
Total Device Dissipation @ TC = 25°C Derate above 25°C	PD	1.5 / 12	W / mW/°C
Operating and Storage Junction Temperature Range	TJ, Tstg	–55 to +150	C

III. RESULTS AND DISCUSSION

Testing of the various components used to ensure the acclaimed voltage and current rating was ascertained was carried out. Other than the results from proteus simulation, the prototype system also did yield an expected result as the system was able to determine four levels of water in a 5 litres container, communicated to a dedicated ESP network when the container was low and full, received command from the TCP/IP when water level was low and then through the microcontroller turned the water pump on and off when required.And also output taken by blinking the LEDs after sensing level and randomly status displays on to the LCD display.

Developing nations waste about seventy percent of useful water and this has been identified as one of the major causes of water scarcity in major cities in the world . With deep underground water accounting for thirty percent of the world's fresh water, its wastage is totally unacceptable and even more so after it has successfully been extracted from the ground where wastage now becomes associated with not just the water but also the power used .

The motivation for this work was to develop a system prototype that uses a newly ESP system. Now a day's

an average of one member in a family having internet connection, this system does perform its task. Unlike a RF Remote controller where the frequency bandwidth is limited, with the ESP module (ESP8266) used, the server of the user could always be reached as long as it is on. The microcontroller turning off the water pump when the tank is full without waiting for a command to do so from the user is to ensure that should the user not respond in time, the main goal of the research will not be defeated. With the prototype system capable of detecting the various levels of water in the tank and also controlling the state of the water pump, the system could be said to be performing tasks of monitoring and controlling. The sensing was achieved using pair of wires by simply capitalizing on the conductive capability when water comes in contact with it when once a voltage is applied to a single one first.

LCD is interfaced with Arduino, when the decided level changes or current status of the water displays on the LCD display.When the water level is minimum then pump is automatically ON and when the water level excceds decided level pump automatically gets OFF.All that current status of the water level displays on to the LCD display.
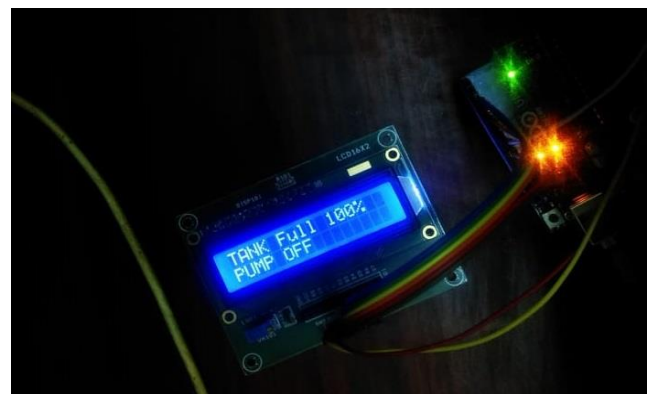
Figure 2. output1

The LEDS mount on the tank to show the current status of water level. According to the water level LED will glow to show current level.

Figure 3. output2

The output according to ESP is shown on its web address.

IV. CONCLUSION

Water overflowing from storage tanks which not only keep the environment untidy but also wastes useful water and energy can be drastically reduced by the implementation of the approached used in this research. This project not only attempts to provide a solution to the problem of water overflowing from tank during pumping from the ground, but does so using easily available internet network while making the user the major decision maker. The efficiency of the system is also enhanced seeing that the microcontroller turns off the pump machine when tank is full as this is the conventional thing to do before notifying the user.

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Design, Manufacturing and Testing of Capacitor Bank for Power Factor Improvements

Prof. Roshan Shinde , Santosh Dalpuse, Kamlesh Bhawar, Satish Khade

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra, India

ABSTRACT

Now days, increasing the need of electricity hence we required a different types of capacitors. In a power system along with constant power it is important to maintain the quality of power electronics devices for industrial, commercial and residential application with increasing non-linear load. Usually the electrical power supply companies impose a penalty, if the average power factor over a stipulated period falls below a certain value. A large part of load of bulk consumers are inductive in nature because of use of induction motors. This causes low power factor (lagging because of predominately inductive loads). Capacitors, on the other hand, constitute leading power factor load; thus compensating a major part of the inductive loads and result in power factor close to unity but still lagging in nature. This improvement of power factor fulfills the requirements of the utility. The main purpose of providing capacitor bank in case of power system is to supply reactive power to the system and they are installed at the receiver end, this is also called as VAR Compensation. The capacitor banks are called Static VAR Compensator.

I. INTRODUCTION

Now a days, increasing the need of electricity hence we required a different types of capacitors. In a power system along with constant power it is important to maintain the quality of power electronics devices for industrial, commercial and residential application hence increasing the non-linear load. Hence due to non-linear load decreases the power quality. This reduces the efficiency of power and results into financial losses. In current situation more than 90% of load is inductive. That's why power factor is lagging then by using the capacitor bank we can make power factor near to unity.

Capacitors are electronic components that store, filter and regulate electrical energy and current flow and are one of the essential passive component used in circuit board. Capacitors are primary used for storing electrical charges, conducting alternative currents (AC) and blocking or separating different voltages levels of direct current(DC) source.

A capacitor is a passive two terminals electrical component that store potential energy in an electrical field. The effect of capacitors is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit. The capacitors were originally known as a conductance or compensator.

Figure 1. Capacitor banks for PF correction

The physical form and construction of practical capacitors vary widely and many capacitors types are in common use. Most capacitors contain at least two electrical conductors often in the form of metallic plates or surface separated by a dielectric medium. A conductor may be a foil, thin film, sintered bead of metal, or an electrode. The non conducting dielectrics act to increases the capacitors charge capacity. Materials commonly used as dielectrics include glass, ceramic, plastic film, mica and oxide layers. Capacitors are widely used as parts of electrical circuits in many common electrical devices.

Capacitor is defines as the ratio of the electric charge on each conductor to the potential different between them. The unit of capacitance in the International System of Units (SI) is the Farad (F), defines as one coulomb per volt (1C/V). The capacitance of a capacitor is proportional to the surface area of the plates (conductor) and inversely reduced to the gap between them. In practice, the dielectrics between the plates passes a small amount of leakage current. It has an electric field strength limits, known as the breakdown strength.

Film capacitors consists of two metal foil electrodes made of aluminium foil separated by a piece of plastic film. The plastic film is made by alternating two pieces of aluminium foil with two layers of plastic film. These interleaved layers are wound around a spindle in a manner that prevents the metal layers from touching. Film capacitors can wound in two different ways- inductive an non inductive.

II. IMPORTANT PARAMETERS FOR DESIGNING OF CAPACITORS

1) Nominal capacitance (C) :
The nominal value of the capacitance of a capacitors is the most important of all the capacitor characteristics. This value measured in pico farad, nano farad. Smaller capacitors can have a nominal value as low as one pico farad, while larger electrolytic can have a nominal capacitance value of up to one farad. All capacitors have a tolerance rating from -20% to as high as +80% for aluminium electrolytic affecting its actual or real value.

2) Working voltage :
The working voltage is another important capacitor characteristic that defines the maximum continuous voltage either DC or AC that can be applied to the capacitor without to the capacitors without failure during its working life. DC and AC voltage value are usually not the same for a capacitor as the AC voltage value refer to the rms value and not the maximum or peak value which is 1.414 times greater. The specified DC working voltage is valid within a certain temperature range, normally -30^0C to $+70^0$C.

3) Tolerance :
The tolerance value is the extent to which the actual capacitance is allowed to vary from its nominal value can range anywhere from -20% to – 80%. Thus a 100 micro farad capacitors with $\pm$20% tolerance could legitimately vary from 80 micro farad to 120 micro farad and still remain within tolerance. The most common tolerance variation for capacitors is

5% or 10% but some plastic capacitors are rated as low as $\pm1\%$.

4) Leakage current :

Capacitor leakage current is an important parameter in amplifier coupling circuits or in power supply circuits. Electrolyte type capacitors on the other hand may have very high capacitors, but they also have a high leakage current due to their poor isolation resistance, and are therefore not suited for storage or coupling application. Also,the flow of leakage current for aluminium electrolytic increases with temperature.

5) Working temperature :

Change in temperature around the capacitor effect the value of the capacitance because of change in the dielectrics properties. If the air or surrounding temperature becomes to hot or to cold the capacitors value of the capacitors may changes so much as to effect the correct operation of the circuits.

6) Polarization :

Capacitor polarization generally refers to the electrolytic type capacitors but mainly the aluminium electrolyte, with refers to their electrical connection. The majority of electrolytic capacitors are polarized types that are the voltage connected to the capacitors terminals must have the correct polarity, i.e. positive to positive and negative to negative.

III. MANUFACTURING PROCESS

1) Winding :

Slit anode and cathode foils after slitting process are stitched wit lead tabs and wound into cylindrical element together with spacer paper. Spacer paper is to contain liquid electrolyte that works as real cathode are restores damaged dielectric film, as well as maintaining the distance between anode and cathode foils contact to prevent short circuits.

Figure 2. Winding and casing for capacitor banks

Di electric material: POLYPROPYLENE
Conductor: ALUMINIUM FOIL

2) Pressing :

A 4 kg pressure is applied to the stacked layers of the dielectrics sheets to crimp and form them. As a rule, the processes so far are undertaken in a clean room. The voltage applied for breakdown capacity of capacitors is 40 kv.

3) Measurement and packing :

Finally, the completed chips are checked to verify that they have the prescribed electrical characteristics, after which they are tapped or packed in some other forms and shipped. As per the requirements we design the winding.

Example: star delta, delta star or star star, etc.

4) Removing moisture :

There are drying ovens reaching vacuum upto 0.005 mm of Hg. Also vacuum drying of oil whereby last traces of trapped air and moisture removed.

5) There testing section :

AC and DC high voltage upto 100 kv& 300 kv. An impulse voltage generator. Scearing bridges for LV & HV capacitors along with CO_2/SF_6 reference electrode. A variety of shunts reactor which enables

us to carry on thermal endurance tests on all types of capacitors and reactors.

6) Process inspection and packing :

Capacitors finished with aging are packed through electrical sceening and appearance inspection.

7) Outgoing inspection :

Outgoing inspection is conducted based on our sampling plan and criteria.

IV. TESTING OF THE PRODUCT

1) Visual examination :

Examine the capacitor for finish, workshop, marketing and dimension wise.

Figure 3. Winding and casing for capacitor banks

2) Insulation resistance test :

Apply a stabilised voltage of 1000 volts D.C. applied between all the terminals and contained using 1 KV Megger.

Insulation resistance should be>50 mega ohms.

3) Output test :

Measure the capacitance with the help of digital capacitance meter. Calculate the value of KVAR and note down these values in the testing register.

Figure 4. output test for capacitor banks

4) Tan delta :

Measure the Tan Del with the help of schearing bridge. Note down the value in the register.

5) Voltage test between terminals :

Applying proscribed DC voltage between terminals .

Figure 5. Voltage test of capacitors

6) Test for efficiency of discharge devices :

Apply the DC voltage between the terminals and allow the capacitor to discharge through its discharge device. Measure the voltage after 30 sec.

7) Sealing test for leakage of oil :

Keep the capacitor in the oven at 70^0C for 12 hours.

V. CALCULATION

5KVAR, 3 Phase, 50Hz, AC Delta connected, 440V supply

KVAR=$KV^2 * 2\pi f c$

$\frac{5}{3}$=$(440*10^{-3})^2 * (2\pi * 50 * 10^{-3})c$

C=$\frac{1.67}{(0.44)^2 * 0.314}$

C=27.47$\mu fd/ph$

Table 1. System Parameters

Description	Symbol	Value
Capacitance	C	27.47 $\mu fd/ph$
Length of film	L	10.24m
No. of Turns	N	50
Voltage Stress	V	36.7V/μ

VI. CONCLUSION

In this project we learn about Design, manufacturing process and testing of capacitor. While designing of capacitor practical value and theoretical value is different because of different types of losses also gain the knowledge of "how to work on high voltage.

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Electrical Vehicle Charging by Electromagnetic Induction Via Loosely Coupled Coil

Shubham Shende, Namdev Mane, Shubham Kulkarni, Govind Savat, Sachin Kahandal

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra, India

ABSTRACT

In this project, a method of electric vehicles charging with the use of large bus vehicles moving along national highways and provincial road proposal and described. This method relies on charging vehicles from bus while moving either with plug-in electric connection or by electromagnetic induction via loosely coupled coils. Open research challenges and several avenues or opportunities for future research on electric vehicle charging are outlined. Wireless charging of gadgets is one of the new arriving technologies in the world at the moment. The most widely used method at the moment is wireless power transfer by inductive coupling. Wireless power transfer is one of the simplest and economical ways of charging as it drop the use of conventional copper cables and current carrying cable. The system consists of transmitters and receivers that contain magnetic loop sky wire critically tuned to the same frequency due to operating in the electromagnetic near field, the receiving devices must no more than about a one-fourth wavelength from the transmitter.

Keywords: WPT-Wireless Power Transmission, Inductive Coil, Transmitter Circuit, Receiver Circuit, Electric Vehicle, Electromagnetic Induction.

I. INTRODUCTION

Electricity is today necessity of modern life. It is challenging to imagine passing a day without electricity. In the future transport area electric vehicles are consider as replacement of internal combustion engine driven vehicles. Principle of wireless electricity works on the principle of using coupled resonant body for the transference of electricity. By deploying wireless power transmission we can reduce the transmission and distribution losses and increase efficiency to some extent. Wireless energy transfer can be useful in such applications as providing power to independent electrical and electronic devices. This energy which is transferred can be derived from renewable sources. With the help of resonant magnetic field that wireless electricity produces, while reducing the wastage of power. The receiver works on the same principle as radio receivers where the device has to in the range of the transmitter. The system consists of wireless electricity transmitters and receivers that contain magnetic loop sky wire critically tuned to the same frequency.

II. SYSTEM DESCRIPTION

Energy Coupling:

Energy coupling occurs when an energy source has a means of transferring energy to another body. One simple example is a locomotive hauling a train car the mechanical coupling between the two enables the locomotive to haul the train, and overcome the forces of friction and inertia that keep the train can

still the moves. Magnetic coupling occurs when the magnetic fields of one gadget. An electric transformer is a device that transfers the energy from its primary winding to its secondary winding, without the windings being connected to each other. It is used to "transform" AC current at one voltage to AC current at another voltage. Interacts with a second gadget and induces an electric current in or on that gadget. In this way, electric energy can be transferred from a energy source to a powered device. In divergence to the example of mechanical coupling given for the train, magnetic coupling does not require any physical contact between the gadget generating the energy and the gadget receiving or capturing that energy.
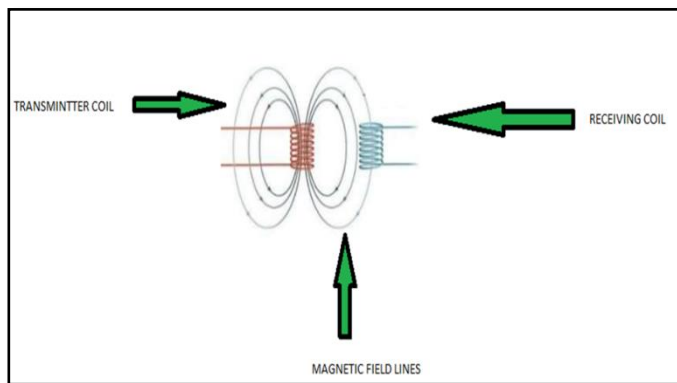
Figure 1. Inductive loosely coupled coil

Transmitter Circuit:

The input from mains is given to the power frequency controller. The output of this system is given to MOSFET/IGBT. The main purpose of using MOSFET/ IGBT is to convert DC to AC and also for amplifying square wave at the gate input. The voltage given to the transmitting coil generates the magnetic field around it. The capacitor is connected to the coil parallel and hence the resonating circuit is formed. Until the resonant frequency of receiving coil matches with the resonant frequency of the transmitting coil magnetic field won't get induced in the receiving coil. For this purpose of matching the resonant frequency we used different values of "L" and "C" for resonant frequency matching purpose. To match the resonant frequency of the receiver and the transmitter coil we used the switches to vary the time periods of the square wave by which we are controlling the frequency at output.
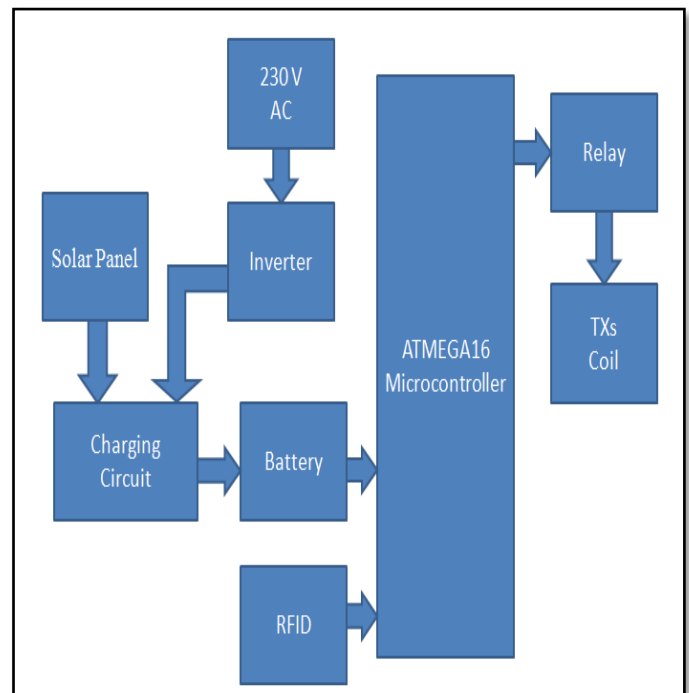
Figure 2. Transmitter Circuit

Receiver Circuit:

As the receiving coil comes in the range of the magnetic field of the transmitting coil, the voltage across the transmitting coil gets induced in the receiving coil because of mutual inductance and matching of resonance frequency. The received voltage is in AC form, we have to convert it into DC for DC load hence we used a rectifier circuit which provides constant DC at the output for driving the load. And if the load is ac load then we can give direct output to it.
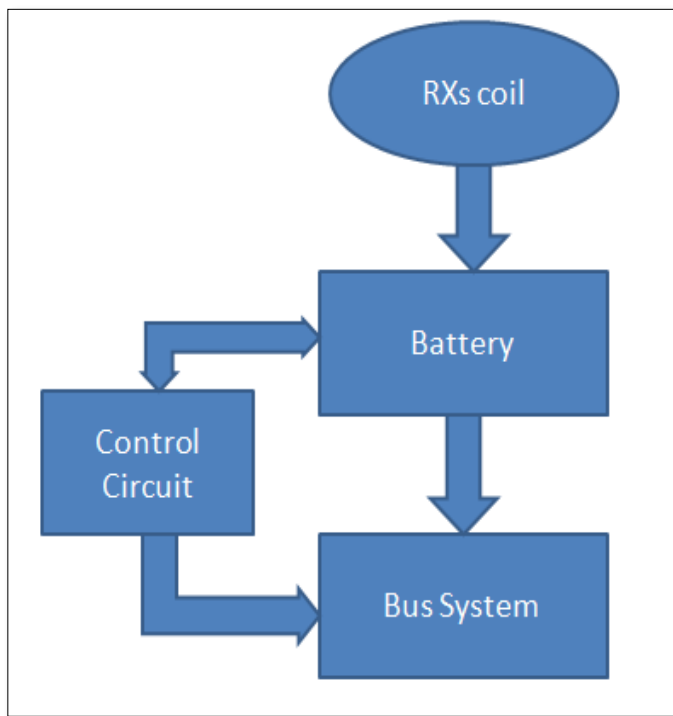
Figure 3. Receiver Circuit

III. CONCLUSION

The objectives of the project were met. An electronic device that wirelessly transmits power and then charges batteries was developed. We were able to design discrete components such as the oscillator, coils and a full bridge voltage rectifier for the system design process.

Conclusions that were drawn from the project study are as follows:

1. It can also be concluded that WPT can be used in other applications. In the project we were able to charge a electrical vehicle battery from power that was transmitted wirelessly.
2. From the analysis it was seen that at 0cm separation distance, the power transfer was most efficient as seen by the charging of EV battery.
3. From the project WPT for short range or near field occurred up to a distance increases which the power transferred began to significantly drop.
4. Lastly, we can conclude that WPT is not affected by non-magnetic materials shielding the two coils. This therefore means that it can be effectively used in the medical field to charge pacemakers and other devices.

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Fault Location Isolation and Self- Restoration System

Shweta Rahulwad, Pooja Sable, Shweta Saindane

Electrical Department SKNSITS Lonavala, Maharashtra, India

ABSTRACT

The primary goal of any distribution utility is to provide customer with reliable power supply and high quality service while maintaining the maximum cost efficiency as we knows, design of (MV) overhead lines are frequently radial in nature which is more complex and introduced difficulty in identifying the fault and fault occur on such lines are infectious in nature which results in affecting the reliability of supply or may cause damage to the equipment so the costumers and utility both are suffering from uninterrupted power supply which need to pay attention towards it. So to overcome this situation it is necessary to install the outage managements system which refers (FLISR) fault location isolation, and self- restoration system. Basically FLISR system is outage protection system which is used to reduce the outage duration of distribution network. This paper presents FLISR technique to identify and isolate the fault location and bypass the remaining healthy load to the other distribution network. This nature of system of load restoration is known as "self- healing" nature.

Nomenclature:-

Smart grid

OMS　　- outage management system

DA　　- distribution automation

FLISR　- fault location isolation self- restoration

IED　　- intelligent electronic device

RC　　- recloser

SAIDI　- system average interruption duration index

SAIFI　- system average interruption frequency index

SCADA- supervisory control and data acquisition

I.　INTRODUCTION

to There is lots of advancement are done in current electric utility network than the earlier decades. So the system has become more complex which has results in increasing the frequency of the fault which reduces the reliability of supply, and may cause poor power quality. Reliability of supply greatly affects some of the phases of system such as transmission network consumer premises. Due to interrupted or unreliable power supply consumers have to survive without electricity which may cause customer dissatisfaction. But now a day's importance of power system supply reliability is increasing in wake industry deregulation. In addition to the prize of electric supply its quality and reliability are also key factors that will determine winner and loser in the industry.

As per IEC (Indian Electricity Standards) electric utilities are measured on the basis of power supply reliability index and quality which they provide to their customer and if the regulators feel that their

performance is not good as it should be then they suffer from regulator's penalties. There are several different indices which are used to measured the reliability effectiveness such as SAIDI, CAIDI, and SAIFI.

So to overcome the demerits of interrupted power supply and unreliability new advanced system is introduced in electric utility which is known as FLISR- fault location isolation and self-restoration system.

FLISR is one of the advanced system which supports the modern DMS (distribution management system) such as SCADA, Self-healing smart grid network and control room operation. FLISR includes automatic sectionalisationand automatic circuit configuration. In FLISR technique field devices, software and require communication network are coordinated to achieve DA operation. Using that the location of fault is determined and flow of electricity is reconfigured rapidly due to which some of all the customers are avoids experiencing outage.

II. BACKGROUND

In earlier decade, in electricity utility network there was less reliability. So that supply was not maintained properly at that time. Due to which utilities were suffering from regulator's penalties, if they feel lack of reliability of supply.

In earlier system there was no interconnection between the areas, so that when fault occur on any of the line then the whole area connected to that line were experiencing outage, till system is restore.

So to overcome this drawback of previous system some advancement took place which includes identify and isolate the faulty section from the healthy one. Due to which healthy section can be prevented. But again

there was some drawback of this system that those faulty section which are isolate from healthy section still consumer experiences outage until supply is restore.
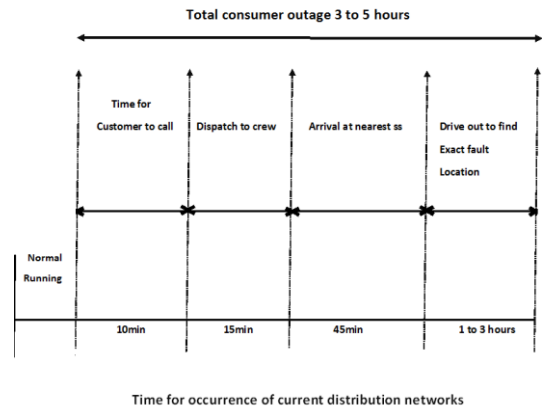
Figure 1. Time require for SR without FLISR system

To overcome this drawback the new system is introduced in smart grid concept that is FLISR. Which helps to restore the supply quickly after identifying and isolating the faulty section. In that system the supply restoration is done by other healthy feeder line.
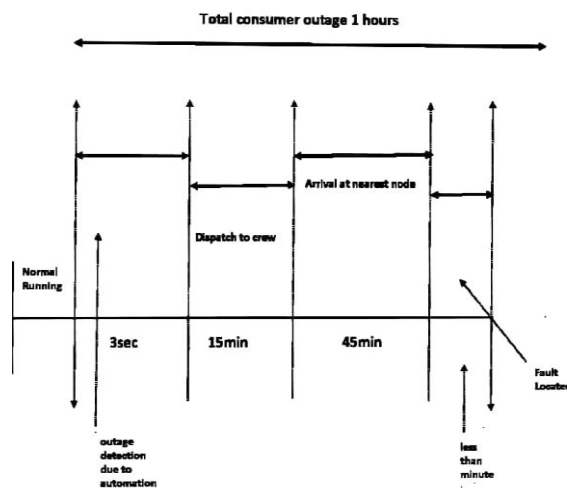
Figure 2. Time require for SR using FLISR system

III. TYPES OF FLISR SYSTEM

This paper discuss various types of FLISR system.
Centralized (C-FLISR)
Decentralized (DC-FLISR)

Distributed (D-FLISR)

Centralized approach may be install as one of the application of DMS system or distribution- SCADA. Which uses more complex switching logics and effective load distribution. In this each switch controller communicates with the control center directly and this require accurate load model information and response time of system may be comparatively high.

Decentralization FLISR system is install at the substation level using single automation device in each substation. The remote IO module which is install at each recloser need to communicate to DMS module. As compare to C-FLISR, DC-FLISR system having a fast response. This solution may not be best optimize but less expensive and easy to install.

The distributed approach uses control devices at each switch/recloser and communicate among each other to determine where the fault is occur. Reliability of this system is high as compare to the previous systems. The only disadvantage of this system is there is a requirement of control device on each relay. In this paper we focused on D-FLISR system.

IV. PROPOSED SYSTEM

The fault location isolation and self-restoration system is one of the advanced feature of DMS which has self-healing nature.
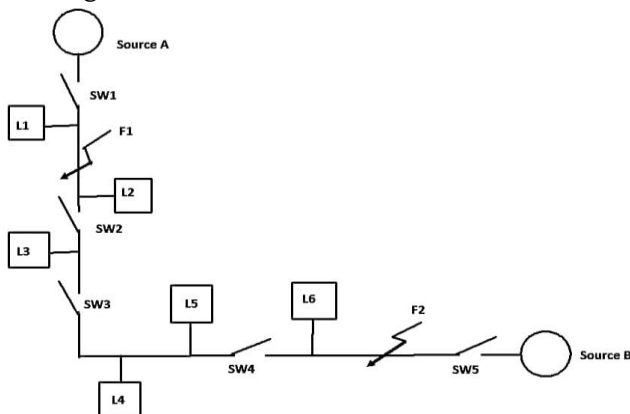
Figure 3. Single line diagram for FLISR technique
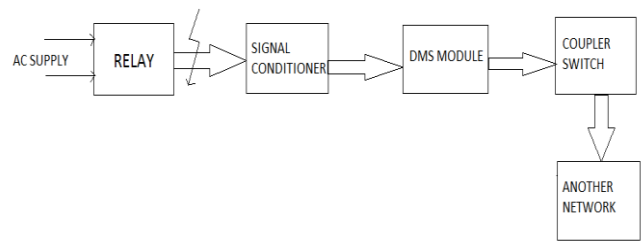
Figure 4. Block diagram for FLISR technique

Above figure 4 shows typical distribution system which is having loop configuration. Suppose there are two feeders, in normal situation, both the feeders are fed by their separate source which are connected by coupler switch (NO) tie switch. Each substation having relay/re-closer which is controlled by substation protection IED. There are number of relay/re-closer install on each feeder when fault occurs the re-closer tries to clear the fault itself by reclosing. If the fault cannot be cleared then re-closer will trip and isolate the faulty section. The resulting outage will be detected by SCADA system. And this will activate FLISR module.

V. FLISR PROCESS STEPS

Following are the process steps of typical FLISR system-

1. Fault Location- The first step is obtaining the fault location which is precipated by IED devices (DMS).When the fault occur the faulty section of the trip feeder needs to be located. This faulty section is the portion between the two switches.

2. Fault Isolation- After identifying the fault location on a feeder line its need to be isolated from the healthy feeder line by using switches.

3. Capability Estimation- After isolating the fault of faulty feeder line and before the fault restoration, a capability estimation need to be carry out to determine that the fault restoration is possible or not.

4. Service Restoration- After going through capability estimation process it is determined that whether the

complete or partial load of the faulty feeder can be transferred to healthy feeder or not. Accordingly the coupler switch get closed and bypass the supply (manage itself according to the situation).
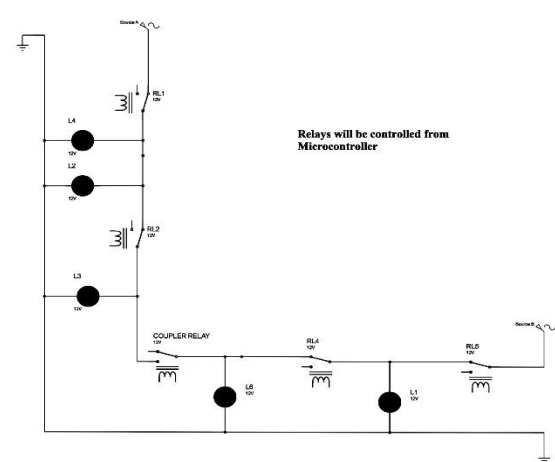
Figure 5. Circuit diagram for FLISR technique

When the fault occur the threshold value of signal (voltage/current) exceeds beyond the permissible limit and circuit get tripped it means the faulty section get isolated from healthy section. Exceeding value of signal is transferred to the signal conditioning circuit which converts AC alternating current) signal to DC (direct current) and this DC signal is given to the DMS module (Arduino). Then DMS module activated and make the normally open switch (coupler) to get close and bypass the supply from the healthy feeder line. In such a way FLISR system is beneficial for reducing the outage duration and maintaining the customer satisfaction.

VI. RESULT

Fault on area-1:
Line break fault (current increases)

Conditions	Relay 1	Relay 2	Coupler relay 3	Relay 4	Relay 5
Normal	NC	NC	NO	NC	NC
Abnormal	NO	NO	NO	NC	NC
FLISR technique	NO	NO	NC	NC	NC

Fault on area-2:
Line to network fault (voltage increases)

Conditions	Relay 1	Relay 2	Coupler relay 3	Relay 4	Relay 5
Normal	NC	NC	NO	NC	NC
Abnormal	NC	NC	NO	NO	NO
FLISR technique	NC	NC	NC	NO	NO

Fault occur on both areas:

Conditions	Relay 1	Relay 2	Coupler relay 3	Relay 4	Relay 5
Normal	NC	NC	NO	NC	NC
Abnormal	NO	NO	NO	NO	NO
FLISR technique	NO	NO	NO	NO	NO

(Relay 1 & 2:- Area 1 and Relay 4 & 5:- Area 2)
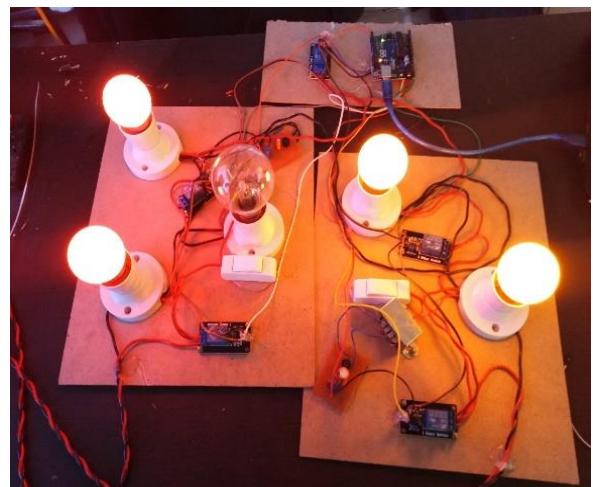
Figure 6. Normal working condition of FLISR system

VII. CONCLUSION

In the prototype model we have design FLISR system using arduino. The number of customers are interrupted oftenly during the two faults line break fault and line to neutral fault. These faults are reduces by using FLISR system, hence the reliability of the supply is improved, fault investigation time is reduced

so the outage duration is reduced and some of the customers can be prevented from the outage and achieve the customers satisfaction. Through the integrated user this technology grid will be able to self-heal and to provide the high reliability and quality of power supply.

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Flexiable AC Transmission System by SVC

Yash S. Sarve, Vaibhav P. Pawar, Ajinkya A. Wagh

Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

The project is designed to enhance the power factor of transmission line with the help of SVC i.e. static variable compensator. SVC uses TSC (Thyristor Switched Capacitors) based on shunt compensation that is controlled from a programmed microcontroller. Initially, power factor compensation was achieved using rotating machines like switched capacitor banks or a condenser that usually gets damaged quickly, hence the project uses TSC for compensation. The mechanism of shunt capacitive compensation is applied to improve the power factor. By connecting an inductive load across transmission line lags the power factor due to lagging load current. Hence to compensate this shunt capacitor is used which draws leading source voltage current thus improves power factor.

I. INTRODUCTION

Voltage problem or voltage stability is always being a limiting factor in power system stability control. The problem can be solve by using the flexible AC transmission system (FACTS) such static VAR compensator (SVC), controllable series compensator (CSC). Phase shitter (PS), thyristor-controlled series compensator (TCSC) and others. The main function of FACTS is to increase existing transmission network capscity while maintaining or improving the operating margins necessary for grid stability. This project result hopefully will show the SVC can improve the voltage level of the transmission line.

II. METHODOLOGY

Static VAR compensation using TSC is used for reactive power compensation during both lagging and leading power factor condition. Static var Compensator is a shunt type of device. SVC is a device which is connected in series with load and which performs the task of providing inductive or capacitive current to the system. SVC is based on thyristors without the gate turn-off capability and includes separate equipment for leading and lagging vars; the thyristor-controlled or thyristor switched reactor for absorbing the reactive power and thyristor-switched capacitor for supplying the reactive power by switching of capacitor banks. In most cases, a combination of both will be the best solution. Effective reactance of TSC is varied in a continuous manner by partial-conduction control of the thyristor valve. A thyristor-based ac switch with firing angle control In TSC conduction time and current in a shunt reactor is controlled.

Thyristor-Switched Capacitors :

The thyristor-switched capacitor (TSC) type of static compensation. The shunt-capacitor bank is split up into small steps, by using bidirectional thyristor switches it can be made switched in and out individually. Fig 2 shows the single-phase branch, consists of capacitor C and the thyristor switch TY

and a minor component, the reactor *L*, which is used to limit the rate of rise of the current through the thyristors and also to prevent resonance with the network. The capacitor is switched out through the suppression of the gate trigger pulses of the thyristors.
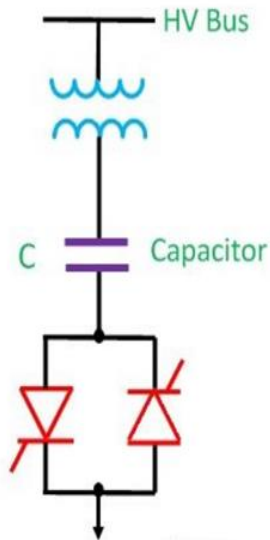
Figure 1. Single branch of TSC

The capacitor in the stand-by state loses its voltage as it is provided by the resistance R and it is immediately get ready for a new connection, even if it has not been completely discharged. Static compensators of the TSC type are characterized by having the following properties:

- Stepwise control
- Average delay of one half-cycle (maximum one cycle) in the execution of a command from the regulator, as seen for a single phase
- Very low inrush transients
- No generation of harmonics
- Low losses at low-compensator reactive-power output

III. BLOCK DIAGRAM
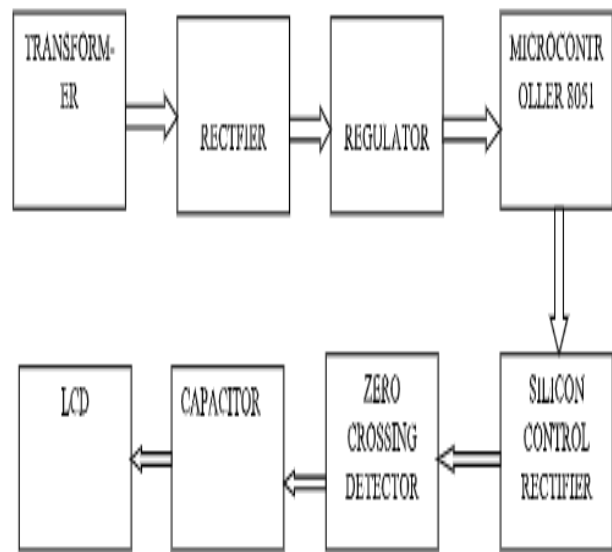
Figure 2

IV. COMPARISION

Issue	STATCOM	SVC	SSSC
V/I characteristic	good under voltage performance Current source	good overvoltage performance Impedance	good under voltage performance Voltage source
Control range	Symmetrical otherwise Hybrid solutions	freely adjustable to any range by TCR/TSR /TSC branches	Symmetrical
Modularity	Same converter usable for various applications (STATCOM, UPFC, CSC, B2B etc) Redundancy no degraded mode	TCR/TSR/TSC branches used in SVC and TCSC/TPSC Redundancy Degraded mode operation	Same converter usable for various applications UPFC, SSSC configurations are used in the CSC
Investment costs	120 to 150 %	100 %	130 %
Response time	1 to 2 cycle	2 to 3 cycle	3 to 4 cycle
Transient behavior	Self protecting at critical system faults	Available before, during and after critical system conditions	Self protecting at critical system faults
Space requirements	40 to 50 %	100 %	60 to 70 %
Availability	96 to 98 %	> 99 %	90 to 92 %

V. CONCLUSION

The paper explains various power quality problems and the FACTS controllers that are used to mitigate the power quality problems. The standard FACTS controller for a particular type of problem is also given. The simulation results give the clear observation of how the FACTS devices improve the power quality.

The simulation work is done on Static Var Compensator (SVC) and Static Synchronous Compensator (STATCOM) Static Synchronous Series Compensator (SSSC). SVC, STATCOM and SSSC are providing better power quality under variation of source voltage and when the system is suddenly loaded. The thesis includes the simulation results of the SVC, STATCOM and SSSC only. The future work given as the simulation results of the systems for various power quality problems with all remaining FACTS devices. Then it can be very easy to find an exact FACTS device for a particular type of power quality problem.

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GSM Based Transformer Healthcare Monitoring and Protection

Sushant Mahadik, Shubham Paithankar, Chitesh Nagarikar

Electrical Department, SPPU, SKN Sinhgad institute of technology and science, Lonavala, Maharashtra, India

ABSTRACT

Power transformers are one of the most important electrical equipment that are used in power transmission system as they perform the function of transforming the voltage levels. Hence maintenance of power transformer is mandatory; as they are located at different geographical areas periodical monitoring is not possible all the time due to insufficient man power. Due to this reason transformer failure may occur which leads to unexpected power shutdown. To overcome this shutdown due to transformer failure we proposed a system for monitoring the transformer. The aim of our project is to monitor and protect oil level, oil quality, temperature and voltage level of transformer without involving man power. If any critical condition occurs the SMS will be sent to the control unit. This monitoring system consist of PIC 16F877A micro controller, LM35 temperature sensor, level sensor, GSM and LCD. The proposed system is simulated using LabVIEW and hardware results are obtained using miniature model of transformer. Result obtained in the proposed system with suitable modification can be applied to the real time system.

Keywords: Power Transformer, Oil Level, Oil Quality, Temperature

I. INTRODUCTION

In recent years, increased emphasis has been placed on power reliability and economy. In particular, major changes inutility industry has caused increased interest in more economical and reliable methods to generate and transmit and distribute electric power. In this regard monitoring the health of equipment constituting the system is critical to assure that the supply can meet the demand. As has been seen recently in northern grid failure on 30th and 31st July 2012 due to inefficient load management functions lead to wider blackout, leaving almost 700 million people without electricity in six northern states of our country. The main concern with transformer protection is protecting the transformer against internal faults and ensuring security of the protection scheme for external faults. System conditions that indirectly affect transformers often receive less emphasis when transformer protection is specified.

Overloading power transformers beyond the nameplate rating can cause a rise in temperature of both transformer oil and windings. If the winding temperature rise exceeds the transformer limits, the insulation will deteriorate and may fail prematurely. Prolonged thermal heating weakens the insulation over time, resulting in accelerated transformer loss-of life. Power system faults external to the transformer zone can cause high levels of current flowing through the transformer. Through-fault currents create forces within the transformer that can eventually weaken the winding integrity. A comprehensive transformer protection scheme needs to include protection against transformer overload, through-fault, and over excitation, as well as protection for internal faults.

II. METHODS AND MATERIAL

The figure 1.1 block diagram represents the monitoring device mounted near the transformer. The components in the block diagram monitors various parameters associated with the transformer. The components involved in monitoring are:

1. Potential transformer
2. Temperature sensor
3. Oil level sensor
4. PIC 18F4520 Microcontroller
5. Phase voltages Sensor (PT)
6. Phase current Sensor (CT)
7. VZCD and IZCD for phase shift measurement
8. Transformer oil quality using IR sensor
9. Relay Driver as circuit breaker
10. GSM modem interface with microcontroller.
11. Power supply
12. LCD display
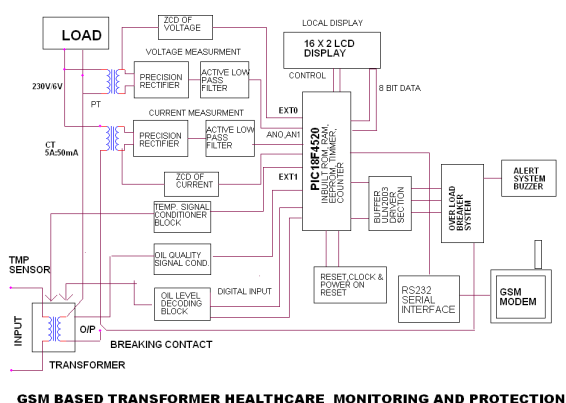
Figure 1.1 Block Diagram

Potential transformer:

It is coupled with input line in order to measure the voltage input to the transformer winding output of the potential transformer is amplified and fed to microcontroller. If the value that is being monitored increases beyond the rating of the transformer SMS is send to the control room and relay trips and alarm starts functioning in the control room.

Oil level sensor:

Float sensor is mounted inside the transformer tank immersed into the oil. As the level of the oil inside the tank decreases below 70% the signal is sent to micro controller hence SMS is send to control room through GSM. If the level of oil decreases below critical level alarm start functioning in the control room.

Temperature sensor:

LM35 temperature sensor is kept immersed in the oil of the transformer tank. The resistance of the temperature sensor varies as the temperature of oil varies is the temperature values increases beyond 90oc SMS is send to the control room through GSM .If the temperature reaches the critical level alarm operates at control room.

GSM module:

Figure 1.2 –GSM module

The figure 1.3 shows the wireless GSM receiver set up at the receiver end. Here we are using GSM SIM900 with in built GPRS. The signals are transmitted through GPRS which is received in the control room and also through SMS.

Oil quality measurementblock:

Oil quality of transformer can be measured using IR pair LED and detector. Pure Oil is transparent, it's quality may defined from its transparencies which changes the conduction of IR detector.

OIL QUALITY SIGNAL CONDITIONER
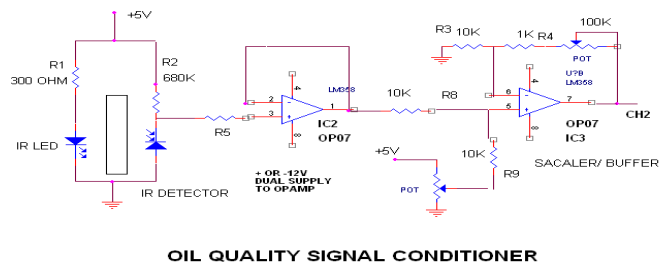
Figure 1.3

LCD display:

LCD display is used to display the status of phase whether phase available or not. i.e phase is present or absent. For our project we require 16 X 2 LCD display.

Figure 1.4 LCD Display

Relay driver breaker and alert system:

In our project we are controlling the phase voltages to output side only when the voltage and current are in within limit. A relay connected in line acts as a switch. The Phase supply is connected to NC terminal of the relay. When relay is OFF then the supply is ON. And when relay is ON then phase supply is disconnected from it.
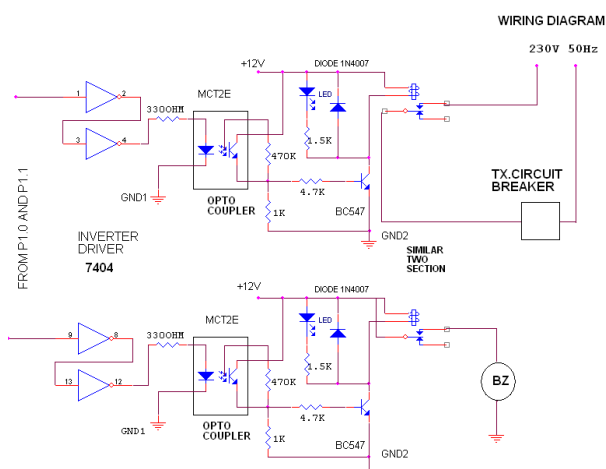
Figure 1.5 Relay Circuit

Power supply:
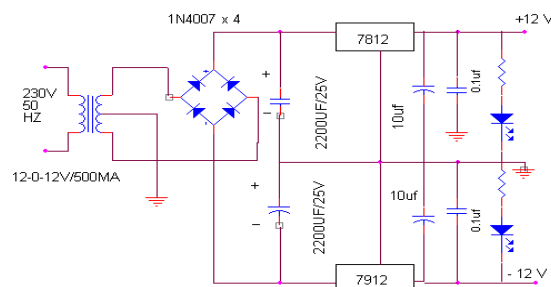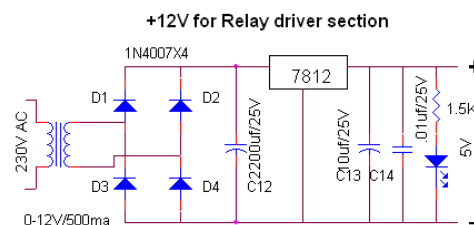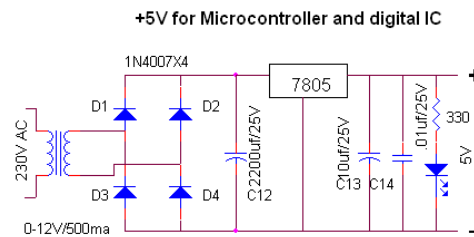
Figure 1.6 Dual Power supply for OPAMP

For our project we require + 5 Volt and + 12 Volt supply. + 5 Volt is required for phase sensor and microcontroller board. And + 12 Volt supply is required to drive Relay.

PIC18F4520:

It is a low-power, high-performance CMOS 8-bit microcomputer with 32K bytes of Flash Programmable and Erasable Read Only Memory (PEROM). The device is manufactured using MICROCHIP high-density non-volatile memory technology.
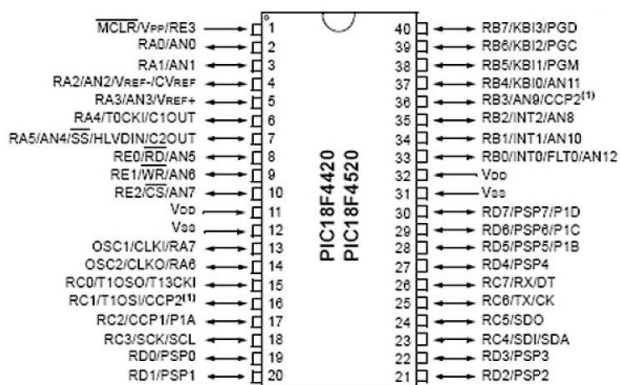
Figure 1.7. Block Diagram of PIC18

III. RESULTS AND DISCUSSION

The project is based on PIC microcontroller programming. Program for PIC microcontroller in embedded C language. Program written burned in to the PIC microcontroller and is saved as a Hex file Program. Hex file is compiled in microcontroller's flash compiler. This compiler convert programs into machine language code and also check programs for error, If any error found notifies & these error are corrected manually. Then it successfully executed in the compiler. After compiling programming PIC microcontroller flash compiler, it is burned in to the PIC18f 4520 microcontroller with the help of universal programs burner kit FP8903 programmer which connected to computer. After successful program burning, PIC microcontroller becomes ready for use. In testing, after successful programs burning, PIC microcontroller is mounted on its base & kit becomes ready for testing. For testing in a program kit has provided with following four parameters of transformer:

1. Voltage>250V=Voltage Fault
2. Temperature >40C=Temperature fault
3. Power>120W=Overload
4. Oil level <30ml =Oil level fault

Therefore, any changes occurred in the above rating during running of project model, these changes shown in the LCD & same data obtained in SMS & at the same time transformer gets disconnected from a supply with the help of relay. Result obtained during testing as per Given input and fault condition is displayed on an LCD.

IV. CONCLUSION

The proposed system provides the prototype model of the protection and monitoring of the real time power transformer and simulation is done for the same using LabVIEW module and results are obtained. Hence this can be applied in real time system and satisfactory result can be obtained.

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Hyperloop Transportataion System

Abhijeet Toraskar, Maruti Bawadhane, Vinayak Gurav, Sachin Kahandal

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra,

India

ABSTRACT

There are four modes of transportation like rail, road, water & air. But, they are either relatively slow or expensive. To overcome this difficulties hyperloop concept is develop. In this project, explain the concept of hyperloop transportation system. It is high speed ground transportation system used for passenger & fright transportation. It uses the pod like vehicle which travel at high speed more than airline speed in low pressure vaccum tube. It works on the principle of magnetic levitation.Two permanent magnets are used one for the track and other for pod. So, pod is suspended on track due to the force of repulsion & propelled by the Brushless DC motor.

Keywords : Hyperloop, Magnetic Levetation, Capsule, BLDC Motor, Embedded System, Bearing, Vaccum Tube.

I. INTRODUCTION

The Hyperloop is a concept for high speed ground transportation, consisting of passenger pods traveling at high speeds in a low pressure vaccum tube. The concept was originally proposed in a white paper published by SpaceX in 2013. And it currently developed between Los Angeles and San Francisco, which was deemed too expensive and slow. The Hyperloop concept required for alternative transportation mode for short-haul travel. For short routes, such as Los Angeles – San Francisco the time required for traveling at the cruise speed is quite low compared to overall end-to-end travel time. Recently, KPMG published a preliminary study commissioned by Hyperloop One –one of the companies commercializing the Hyperloop concept – on the Helsinki–Stockholm corridor where they found that the Hyperloop could cut down end-to-end travel time by 75% to 28 minutes. Furthermore, the market share for high-speed transport is projected to grow rapidly over the next few decades, and the Hyperloop concept could take some pressure increasingly congested airports and light routes.

Momentum is growing in the Hyperloop movement, with a number of newly founded companies attempting to commercialize it. In addition, SpaceX is sponsoring a student competition to encourage innovation and to help accelerate the development of a working prototype, starting June 2015. Over 1,000 teams submitted their intent to compete, and over 100 teams made it to Design Weekend in January 2016. The student team from the Massachusetts Institute of Technology the MIT Hyperloop Team won 1st place overall in that design weekend.

Academic research into the Hyperloop concept has focused mostly on system integration. A conceptual sizing tool using the Open MDAO framework focuses primarily on the aerodynamic and thermodynamic interactions between the pod and tube, with recent work focusing on the energy consumption of the system. The pods for the SpaceX Hyperloop

Competition were the rest physical prototypes of the Hyperloop concept.

Hyperloop Transportation Technologies (HTT) was founded with the specific intent to use crowd collaboration as an integral component of its business model, from the first day of inception to becoming a multi-billion dollar company. Jump Start Fund believe that smarter companies will be built that way. The crowd has power, offering opinions and expertise that are difficult to come by easily unless harnessed through collaboration,. The crowd sourcing model has proven itself in a variety of contexts, and has shown that it can beat even the brightest scientists and supercomputers that energy.

II. SYSTM DESCRIPTION

a] Basic Principle

Hyperloop is based on a principle of magnetic levitation. The principle of magnetic levitation is that a vehicle can be suspended and propelled on a guidance track made with magnets. The vehicle on top of the track may be propelled with the help of a linear induction motor.
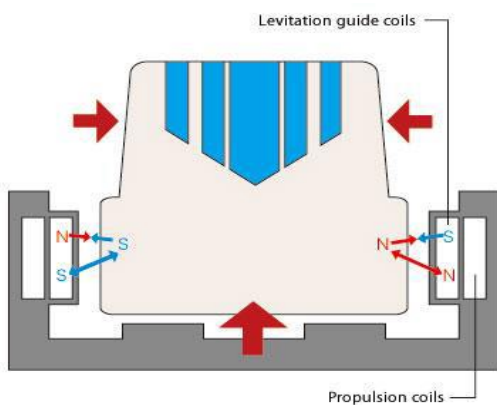
Figure 1. Construction Diagram of Hyperloop

b] Working of Hyperloop System

Working of hyperloop system is based on magnetic levitation principle. As we know that the passenger pod travel through low pressure tube. In hyperloop system an air compressor fan is fitted on front side of

pod which sucks the air. It transfer high pressure air front side to the rear side of capsule (pod) and it propel the pod. It creates the air cushion around the pod, so that the pod is suspended in air within the tube. On the basis of magnetic levitation principle the pod will be propelled by the linear induction motor. By the linear induction motor the capsule send from one place to another place to a subsonic velocity that is slower than the speed of sound. The pod will be self-powered. There is solar panel fitted on top of the tube. By this solar panel there is enough energy is stored in battery packs to operate at night and in cloudy weather for some periods. The energy is also is stored in the form of compressed air. The air between the capsule acts as a cushions to prevent two capsules from colliding within the tube. In above figure it shown that the air through the compressor is send to a bypass nozzle at the rear end of the capsule. If capsule cover too much area of the tube then, the air is not flow around the capsule and ultimately the entire column of air in the tube is being pushed ahead of the capsule and because of this there is friction between the air and tube walls is increases tremendously.

Therefore to avoid this problem the compressor is fitted at the front of the capsule through which the air is flow which will not flow around the capsule and send it to bypass nozzle.
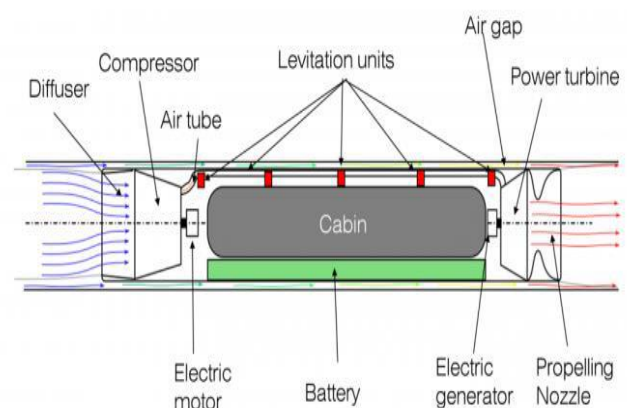
Figure 2. Hyperloop System
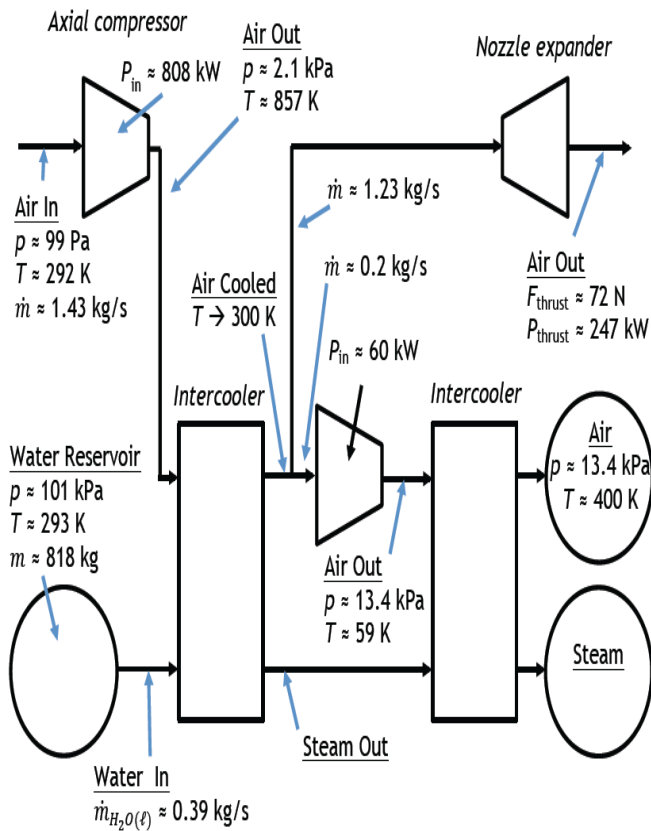
Figure 3. Compressor Line Diagram

III. CONCLUSION

1. A high speed transportation system known as Hyperloop has been developed in this report.
2. Hyperloop transportation system can be used over the conventional modes of transportation that are rail, road, water and air.
3. At very high speed it provides better comfort and cost is also low.
4. By reducing the pressure of the air in the tube which reduces simple air drag and enables the capsule to move faster than through a tube at atmospheric pressure.

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Non Pollution Electric Transportation System

Prof. Sachin Datey , Rohit Parashar, Shailesh Sabhadiya, Shubham Malkhede

Department of Electrical SPPU University/SKN Sinhgad Collage, Pune, Maharashtra, India

ABSTRACT

The impending environmental issues and growing concerns for global energy crises are driving the need for new opportunities and technologies that can meet significantly higher demand for cleaner and sustainable energy systems. This necessitates the development of transportation and power generation systems. The electrification of the transportation system is a promising approach to green the transportation systems and to reduce the issues of climate change. This paper inspects the present status, latest deployment, and challenging issues in the implementation of EVs infrastructural and charging systems in conjunction with several international standards and charging codes. It further analyzes EVs impacts and prospects in society. A complete assessment of charging systems for EVs with battery charging techniques is explained. Moreover, the beneficial and harmful impacts of EVs are categorized and thoroughly reviewed. Remedial measures for harmful impacts are presented and benefits obtained therefrom are highlighted. Bidirectional charging offers the fundamental feature of vehicle to grid technology. In this study, the current challenging issues due to the massive deployment of EVs, as well as upcoming research trends are also presented. It is envisioned that the researchers interested in such area can find this paper valuable and an informative one-stop source.

Keywords: Electric vehicles (EVs), international standards, infrastructure of charging systems, plug-in electric vehicles (PEVs), impacts and challenging issues, vehicle to gird (V2G) technology

I. INTRODUCTION

In recent years, air pollution caused by burning fossil fuels in the transportation, industrial and power sectors is becoming a significant challenge for the global environment. The change in climate, incremental energy cost and fossil fuels dependence are considerable issues of the present world. All these challenging concerns are directly linked to above-mentioned three main sectors that heavily utilize fossil fuels. All around the world researchers and governments are paying momentous emphasis to reduce the reliance on the fossil fuels and replace them with clean solutions

Recently, many research studies have shown that due to green environment, energy-saving feature and easier way of implementation, the technology of EVs hold added benefits over conventional energy-technologies. In urban areas of the world, the EVs are projected to increase substantially and will achieve larger acceptance in the transport market due to their higher efficiency. Many impressive features can be obtained by connecting the EVs to a power grid such as load balancing, reactive power support, active power regulation and sustenance for renewable energy resources

This paper inspects the present status, latest deployment and challenging issues in implementation of EVs infrastructural and charging systems in

conjunction with several international standards and charging codes. It further analyzes EVs impacts and prospects in society. This investigation begins with a summary of charging infrastructural system and different charging power levels for EVs as prescribed by various international standards. This is followed by an extensive analysis of international standards, implemented for development and deployment of EVs. Furthermore, a complete assessment of charging systems for EVs with battery charging techniques is explained.

II. ELECTRIFICATION OF TRANSPORTATION ESSENTIAL FOR CLEAN AIR IN CITIES

Electrification of transport sector is gaining popularity and congested cities are taking bold steps in thisdirection - hence the mushrooming of metros, electric trams, BRT corridors with EVs and promotion of EV adoption in general in several countries. Emphasis on low carbon development and clean air is becoming the central theme in infrastructure planning. Successful and widespread deployment of EVs and its supporting infrastructure is key to reducing greenhouse gas emissions, and mitigating the effects of climate change. Realising the importance of EVs in reducing the intensity of emission, Ministry of Heavy Industries (MoHI), Government of India (GoI) launched National Electric Mobility Mission Plan (NEMMP) in 2013 with a target of 6 to 7 million EVs on Indian roads by 2022. However, the EV rollout has not taken off as envisaged mainly dueto non-allocation of funds in the last two years for this mission. MoHI has conductedseveral brainstorming sessions with stakeholders in order to promote EVs in India.

It is assumed that in the first phase public transport – buses, three wheelers, taxi fleet – willbe given priority.

III. CARBONEMISSION COMPARISON

Table 1

Fuel Type	CO2 Emission (kg per km)
Petrol	0.23251
Diesel	0.273[1]
Electric Vehicle	0.1032

Generation of 1 kWh of energy by coal power plant emits 1 kg of CO_2. In the table above Integrating transportation with electricity, developing the shared ecosystem platform, and scalingup the manufacturing are the key parts of India's roadmap to sell only electric vehicles by 2030.

The implementation has been divided into three phases.
1. In phase 1, the goal is to capture opportunities that are already economic, while preparing forstrategic options that will be viable in near future. This involves building the infrastructurefor transportation. This infrastructure includes both software platform and the physical
on-demand transport vehicles.
2. The second phase involves improving and scaling upon the actions recommended in thefirst phase, while encouraging participation from private players. The goal of this phaseis to install a system-wide mobility solution.
3. The third phase integrates electricity with the transportation system and enables electric vehiclesto discharge electricity to the grid. All the government incentives too will be phased out atthis stage. Currently, the government is working towards policies for various incentives forowners of the two and four wheelers, and for the cities that have higher EV penetration.In the past, government has provided subsidies up to Rs. 150,000 for cars and SUVs, and up to Rs.30,000 for electric two-wheelers.
Energies **2018**, 11, 483 4 of 15 EV adoption is driven by customer incentives (economic and convenience),regulatory incentives and technology readiness. The proposed policy framework

introducesseveral action items to promote technological innovation in the field of mobility transformation,recommends several government initiatives to consolidate the fragmented database, and claims that afleet of electric vehicles can be easily adopted in India as a high percentage of the population does notown a car.

Impacts natural resources	Human behavior changes	Industrial impact
Electric vehicle manufacturing, Battery manufacturing	Encourage carpooling, Transport hubs, Encourage mobility as a service	Transport data, Mobility as a service, Reduced need for oil and gas companies, Availability of reliable electricity

Push factors

Pull factors (Customer-driven)

Push factors	Pull factors (Customer-driven)
Regulations and incentives: More stringent emission targets and regulations through 2025 and 2030, xEV subsidies continue (for now)	Battery prices have dropped faster than expected, improving economics, but oil prices have held back mass-market adoption
Technology: Advancements in technology that reduce battery prices, charging time and enhance driving range	Existing xEV owners are likely to be repeat buyers; and the availability of high performance EVs could create customer demand
Infrastructure: Easy access to fast charging infrastructure to reduce downtime for EV customers	

Factors that determine electric vehicle (EV) adoption. Several potential roadblocks for this implementation have been identified inTheseroadblocks are related to inherent technological, behavioral, and industry related changes. Theecosystem is impacted due to all the new steps added in the supply chain, such as the electric vehicle,and the battery manufacturing processes. Human behavior changes will involve changes to theway humans perceive travel as vehicle ownership is a sign of prosperity [9] in Indian culture. Thegovernment today subsidizes diesel prices as most of the farm equipment is diesel based. Anysubsidy that goes away from farm equipment directly impacts food prices. Several existing industries,including oil and gas and energy, will be disrupted and new industries such as transportation priceoptimizers and mobility servic00 will be created because of this disruption.

it is assumed that in one litre of petrol/diesel an average car runs ten kilometres in cities; and an electric car can run 10 km with 1kWh of electricity. Even if electricity used for charging the EV is generated through fossil fuel, still CO2 emission is less than half the emissions from petrol and diesel cars. In the case of EVs the electricity used for charging is produced in power plants located hundreds of kilometres away from the cities that are

struggling with air pollution. If electric vehicles are charged through renewable sources of energy then emissions from EVs will be nil.

IV. ELECTRIC VEHICLE (EV)

India is a great country with abundant natural resources like coal, water, etc., that can beused for electricity generation. Privatisation has seen more power being produced andthat too, at a time when people across the world are becoming more and more conscious about their environment. Conventional fuels have always polluted and harmed the environment. The search for a non-polluting fuel begins with hydrogen fuel cells and ends with the use electricity for vehicles. An EV is operated by an electric motor, which draws electricity from a battery bank. Different types of batteries for EVs and other applications are being developed for better performance. Storage batteries store a fixed amount of chemical energy. The batteries can be recharged when the electro-chemically active material in these batteries havebeen used up. Most of the EVs, at present, use rechargeable lead acid batteries because ofthe availability and low price. The lead acid batteries are more widely used than Other

batteries.

Plug-in Electric Vehicle (PEV)
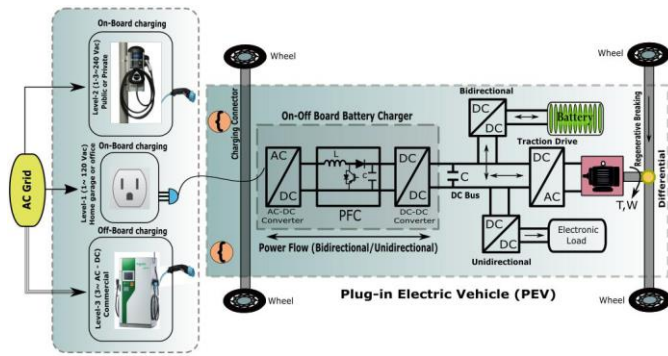
Electric vehicle: a futuristic approach to reduce pollution

EVs could serve as a stimulant in bringing down pollution (Kirsch, 2000).EVs would also help free the Indian government of some of its debts and deficits. Fifty percent of our entire oil requirement for transportation is imported, which, in numbers, accounts for a whopping savings in foreign exchange of over $24 million on petrol alone (Indian Petroleum and Natural Gas Statistics, 1999–2001).

Indian initiative

In 2000, the Mashelkar Committee (Parivesh Newsletter, 1995) set up by the Ministryof Non-conventional Energy Sources (MNES), Government of India, on high energy density batteries for EVs, had recommended the following measures for accelerated commercialisation of EVs in India:

· development of appropriate type of batteries for EVs, including advanced lead acidbatteries as a short-term strategy, nickel metal hydride batteries as a medium-term

strategy, and lithium batteries as a long-term strategy

· development and use of innovative, quick charging methods and devices forcharging of batteries.

The committee emphasised the importance of reduction of volume and weight, especiallyof the on-board charger, and also intensifying efforts to improve fuel economy of EVs byway of improving the efficiency of battery charge, batteries used, electric motor andcontroller, besides, reducing the overall weight of the vehicle, as well as the aerodynamicdrag and rolling resistance.Based on these and other

recommendations, R&D projects for the developmentof efficient, reliable and durable EVs and their components are being supportedby the Government. The use of lightweight materials such as aluminium for thebody and chassis of EVs is necessary in order to reduce the overall weight of the vehicle (Larminie and Lowry, 2003). Aluminium can be recycled after disposal of the EVs.A number of EVs are already plying on the roads today. BHEL (United NationsFoundation, 2002) developed and commercialised a 16 seater EV Bus more than adecade ago. Several improvements, including the control system and vehicle design andperformance based on operational experience of this bus, have been conducted.

Three wheeler EVs are also commercially available in the country. Scooter India Limited(Development of High Energy Batteries for Electric Vehicles, 2000) has developedand demonstrated electric three wheelers, which are now in an advanced stage ofcommercialisation. Other major players for electric three wheelers include Mahindra EcoMobiles, which has come up with a three-wheeler EV called Bijli. Passenger EVs are alsoavailable commercially in the country. Bangalore has developed a battery operatedpassenger car, which goes by the name Reva.With further technical performance improvement, cost reduction and increasing

awareness, EVs are expected to find greater acceptance and market penetration. The maintargeted users of EVs would be public transport systems: urban services industries,service sectors and government at the central and state levels.

Electric vehicle's abilities

EVs would have an effect on the following:

· air and noise pollution

· infrastructure availability

· safety

· vehicle upgradation

· economic resource sustainability.

Growth potential

Like any other cutting-edge technology, as the technology grows, one expects a reduction in cost and improvement in battery performance. There is tremendous potential for EVs abroad as well as in India. It is expected that there will be a steep rise in EVs in India to control the pollution. To be able to realise this kind of potential, support from all industries and the government is a pre-requisite. In India, some state governments have been exempting EVs from road and sales taxes. In addition, the central government is providing a subsidy of Rs. 75,000 on EVs purchased by its organisations. The government needs to push EV sales by providing separate meters for charging EVs and implementing concessional rates of 50% tariff for night charging. EVs are environment friendly, low on operating and maintenance costs and provide us with a quiet and clean driving experience.

Electric vehicle 'Reva'

The growing population in cities, increased traffic congestion and consequent low driving speeds and growing air and noise pollution are problems. The Reva Electric Car Company (RECC) draws its potential customers' attention to these problems, and the increase in petrol and diesel prices. The Bangalore-based RECC, manufacturer of the first on-road electric car in India, is looking at developing more models to add to their portfolio of products. Mr. Chetan Maini, the Managing Director, RECC said, "An electric car makes lot of sense in a city like London. In central London they charge five pounds per day for parking, but if you were to use an electric car, there are no charges". With the increased parking rates recently being imposed by MCD and NDMC and the increased pollution in Delhi, Reva would be an ideal choice if concession is given for parking of EVs. Reva is an ideal option for city conditions such as high air pollution, traffic congestion, small within-city distances, and high fuel prices. Market research reveals that 98% of the urban population travels an average of only 40 Km a day and requires a maximum speed of 40 km/hr. Hence the REVA is ably suited for the market requirement for city mobility (Metro Today, 2003).

The Reva currently offers a lot of features like dent-proof panels, two computers on board, tubeless tyres, specially designed steel space frame etc., which add high values to our current models. Reva is India's first electric car. This two-seater car was named REVA from the Sanskrit word meaning, 'a new beginning'. The REVA does not come cheap. It has a *Electric vehicle: a futuristic approach to reduce pollution* 307 hefty price tag, at Rs. 2.58 lakhs (USD 5931) (excluding Registration and Road Tax), which is almost at par with Maruti's 800 deluxe model. Reva has basically three models i.e., the Base Reva model, the Reva AC and the fully loaded Reva Classe. RECC is planning to come out with more variants of its electric cars. The Chairman of RECC is looking for Sales Tax exemption from the government, which would make a difference of about Rs. 33,000 to Rs. 45,000 (USD 759–1034). *Features of Reva* Stop at a red light and it is so silent that it feels 'dead', but do nothing till the light turns green and then simply press the accelerator again. Its brake, with power-assisted feel, not only stops the vehicle, but it provides charge every time one brakes. It has the smallest radius in its class and needs the least space to park among all cars on the road today. The plug-in car, available in five different colours, with no gears, no clutch, no engine, carburettor, gearbox, radiator or exhaust, is "an ideal for 'stop and go' city driving". The absence of gears and clutch makes it extremely reliable and safe and easy to drive and manoeuvre in our congested cities (The Financial Express, 2001). With the innumerable advantages of EVs, companies in the developed countries have spent huge amounts to develop electric cars that can travel longer distances while also providing a high level of comfort. The Reva is fully automatic and the most eco-friendly and economical car in India and offers ease of driving, ease of parking due to easy manoeuvrability, safety and reliability and can seat two adults and two children comfortably on city roads. It has been tested for safety and reliability to withstand the most trying conditions. Its size, shape and steering characteristics are ideal for negotiating narrow, crowded roads and

limitedparking spaces. Its body is of Acrylonitrile Butadiene or ABS plastic, which can withstand denting. It employs special electronics to make use of the braking energy(brakes are often employed in India's start-stop traffic) to recharge the batteries.If you calculate the electricity cost at the present rate of Rs 4.75 per unit, the cost fora full charge works out to be Rs. 67.55. In fact, Reva's per km running cost is also lower than that of many-wheelers in the market today. The EV uses special batteries that run upto 40,000 km, implying an average life span of three to four years. These lead-acidbatteries for REVA cars are being provided by Exide Technologies, the global leader instored electrical batteries. Exide will provide REVA with these high-performance3ET200 lead-acid batteries under the brand name, Chloride Motive Power. Reva isequipped with eight, 6-volt batteries. Reva is powered by a 10.4 KWh high-densitytubular lead acid battery pack that gives the car a range of 75–80 km per charge.The batteries can be charged 80% in two and half hours and full charge in 6 h.

Advantages of electric vehicle

- zero pollution car
- 50% noise reduction
- low operating and maintenance cost
- low running cost per km
- free from the onus of changing engine oils regularly, tuning the engine, cleaning thespark plug
- regenerative brake converts the energy while pressing the brake into power andsends it back to the power panel
- there is a beeper to indicate completion of 50 Km (of the 80 Km) on a single charge
- can be charged anywhere at home or at work at a 220 V, 15 amp socket
- side-impact beams, steel-frame and dent-proof body panel
- no long queues at pumps
- easy to service and maintain.
- *Disadvantages of electric vehicle*
- cannot be driven faster than 65 Km/h

- can accommodate only two adults and two kids
- can run only 80 Km on a single charge
- replacement pack of batteries after 3–4 years which costs approx. Rs. 32,000.

V. CONCLUSION

Economic and environmental reasons are making EVs a reality of nowadays. The mainenergy storage elements used in these vehicles are batteries of different technologies. Batteries need to be charged and the more common source for that is the power grid. However, the spread use of EVs will bring consequences to the power grid, mainly in terms of load management and electric power quality, which are associated to the batteries charging systems. Many developments in the area of the batteries charging systems are being made, with the development of new topologies and control strategies. This paper inspects the present status, latest deployment and challenging issues in the implementation of EVs infrastructural and charging systems in conjunction with several international standards and charging codes. It further analyzes EVs impacts and prospects in society. The paper highlights international standards regarding charging methods, grid integration, power quality issues, safety limitations, communication networks and equipment maintenance which are required for large-scale deployment of EVs. Furthermore, a complete assessment of charging systems including: inductive charging, conductive charging and battery swapping networks for EVs with various kinds of fast and slow battery charging techniques is explained. Moreover, the beneficial and harmful impacts of EVs are categorized and thoroughly reviewed with remedial measures for harmful impacts and prolific benefits for beneficial impacts. Bidirectional charging offers the fundamental feature of vehicle-to-grid technology. The optimal charging methodologies should be adopted to control the issues of EVs impacts.

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Secure Electricity Distribution System

Chindhote Dattatray, Shewale Babsaheb, Kharat Vikas, Bandsode Shubhangi

Department of Electrical Engineering, SKN Sinhgad Institute of Technology & Science, Lonavala, Maharashtra, India

ABSTRACT

In Current electricity distribution system does not provide any kind of security for Power line cables .In these system one can easily access electricity. To overcome the limitations, we have decided to use the RFID technology for security. Transmission line such as cable, power line or telephone line is used to transfer the electrical signal from one device to other device. It is used in T.V. connection. Power line is used to Home or industrial power, and telephone line for telephones.

It is very wide network of transmission line. If there is problem due rain fall or other problems there will chances for occurring the short circuit or open circuit. It is very difficult to detect the exact fault, technician comes and goes for whole transmission line, and it is hard and time consuming process. So to detect the problems in cable or power line our group has to make a transmission line fault detector.

I. INTRODUCTION

Now a day theft of electricity is major problem in transmission and distribution system, this theft mainly occurs from by passing at point where the user accessible. To overcome this type of theft this is very advantages to distribution system Authorised to control loss.

This paper introduces the automatic tripping system and automatic failure detection signal to authority. In residential area 3 phase 4 wire supply system is given, but to overloading and short circuit any one of phase may get disconnected. In that case supply authority not aware about such case. By means of this technology send the authority. This designed project is installing at distribution box.

Techniques of communication

A) Wired techniques

b) Wireless techniques

- zigbee technology
- GSM technique
- Wi-Fi
- infrared
- Bluetooth

II. BLOCK DIAGRAM
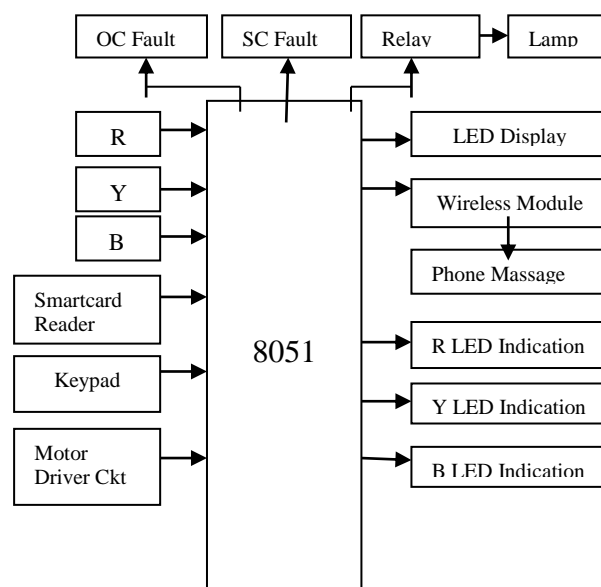
Figure 1. Block Diagram of Project

III. POWER SUPPLY

Our circuit requires 5V DC regulated supply it can built around step-down transformer with rectifier.
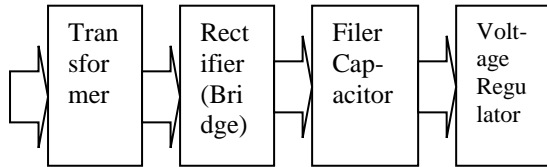
Figure 2. power supply

1) TRANSFORMER:

Transformer selection we required 12V for relay.

Min Input for 7805 is

= Drop across IC 7805 + Required Output voltage

= 3 V+ 5V

= 8 V

So at Input of 7805 we required 8 V with margin

Consider drop across diode 0.7V so 2 diode conducts drop is 1.4 V

= 1.4 V +8 V

= 9.4 V

So at secondary we required 10 V

2) FILTER:

For filter capacitor design

$C = (I_l * t1)/Vr$

Vr= ripple voltage

I_l = load current

t1= time during which the capacitor being discharge by load current

$\theta_1 = \sin^{-1}[(E0\ min)/(E0\ max)]$

So unregulated power supply is design for 10 V

Vr = ripple voltage 10% of output voltage

Vr = 1.0 V

E0 min/E0 max = (10-0.7) / 10+0.7

= 9.3 / 10.7

$\theta_1 = \sin^{-1} [9.3/10.7]$

m = 116.2mA(8.6ms+1.2ms) /1.2ms.

=833mA

From above specification diode 1N4007 is selected

= 60°

Frequency 50 HZ

T1 = 1/50 = 20 ms

T for 360° = 20ms

For 180° = 10ms

For 60° = 20ms * (60°/360)

= 3.4m

3) RECTIFIER:

For bridge

T1 = [time for 90° + time for θ1]

= 5ms + 3.4ms

= 8.4ms

I_l = load current supplied to various IC

I_l = (O/P current of IC 89c51 + O/P current of IC 232 + Current req. for

display)

= 71mA + 30mA + 15.2 mA

=116.2 mA

$C = (I_l * t1)/Vr$

= (116.2 mA * 8.4 ms)/ 1 V

= 976.04 μf

So we select~ 1000 μf capacitor

For diode design

PIV = Vm

Vm = E0 max + 2 Vf

= 10.7 + 1.4 V

= 12.1 V

$I_0 = I_l /2$

= 116.2 mA/ 2

= 58.1 mA

Peak repetitive current

If m = [Il (t1+t2)]/t2

T2 = time for 90° - time for θ1

= 5ms - 3.4ms

=1.2ms

PIV =100V

I = 1A

a. The TUF is increased to 0.812 as compared the full wave rectifier.
b. The PIV across each diode is the peak voltage across the load =V_m, not $2V_m$ as in the two diode rectifier

Output of the bridge rectifier is not pure DC and contains some AC some AC ripples in it. To remove these ripples we have used capacitive filter, which smoothens the rippled output that we apply to 7805 regulators IC that gives 5V DC. We preferred to choose capacitor filters since it is cost effective, readily available and not too bulky.

The value of the capacitor filter can be found by following formula,

$$C = \frac{IL * t1}{Vr}$$

A regulator is a circuit that supplies a constant voltage regardless of changes in load current. The regulator used in our project is IC7805, which is a three terminal voltage regulator. A heat sink is used, so that the heat produced by the regulator dissipating power has a larger area from which to radiate the heat into the air by holding the case temperature to a much lower value than would result without the heat sink.

IV. RESULTS AND DISCUSSION

By this project preventation of theft of energy from the distribution box. Automatic message sending to authority for clear the fault in minimum time to conserve the supply interruption with reliable supply

Figure 3. secured distribution box

V. CONCLUSION

This paper is suggest successfully with on single phase transformer 230 to 12V output for build and automatic message sending to supply authority about the phase failure as well as protect the distribution box with password included smartcard. To prevent unauthorized person accessing the distribution box to control the GSM technology to send the message.

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Energy Optimization Using Greenest Possible Source of Electrical Energy to Increase Efficiency of Human Lives

Rameshwar Mali, Pradip Solanke, Eknath Misal, Sachin Kahandal
Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Energy optimization with the help of electricity generation from living plants as it is the greenest source of electrical energy production with zero emissions of greenhouse gases. The generated electricity will contribute in saving the life of millions in upcoming years as pollution has immense growth in these two decades which makes us to think of greenest solutions of electrical energy production. A small charger of plant electricity will give fresh and healthy oxygen to whole family resulting greener solutions to daily life which consequently nothing but energy optimization for future.

Keywords: Energy Optimization, Plant Electricity

I. INTRODUCTION

Major population within and outside India do not get adequate access to electricity more than a third of the 1.1 billion people across the world who still lack any electricity supply, according to new analysis by the International Energy Agency (IEA).Major population in tribal India do not have any form of energy since they live in the remotest region where electricity supply cannot be delivered. Electricity generation in India where there are various renewable and non-renewable resources present in India. They are wind, oil, nuclear, Hydroelectric, Gas, Coal…etc. In the last few decades there has been immense growth in electricity production from coal but that has led to immense growth in pollution too. To overcome these environmental considerations proposing the concept of electrical energy generation from living plants with zero pollution and emission of greenhouse gases in India.

II. OXYGEN CONSUMPTION BY HUMAN AND PLANTS

[1]Scientists approximated a safe oxygen consumption of 50 litres per hour for a human. Meanwhile, a leaf gives off about five millilitres of oxygen per hour. As population is increasing with emissions of co2 human life degrades exponentially.
- Arbor Day Foundation

[2]"A single healthy tree can absorb carbon dioxide at a rate of 48 lbs/year and can release enough oxygen back into the atmosphere to support 2 human beings."

" A 123-ft tree, 17" diameter at its base, produces 6,000 pounds of oxygen."
- Northwest Territories Forest Management

"On average, one tree produces nearly 260 pounds of oxygen each year. Two mature trees can provide enough oxygen for a family of four.

III. PLANT ELECTRICITY FOR ENERGY OPTIMIZATION

The Plant Power concept is based on the cooperation of plants and microorganisms to produce electricity. [3]Plants take up carbon dioxide from environment and water foe earth and capture light energy from sunlight. This energy is stored in the chemical bonds

of sugars produced, using carbon dioxide and water. Part of thisbiological energy which is chemically stored energy is transferred to the roots of the plants.
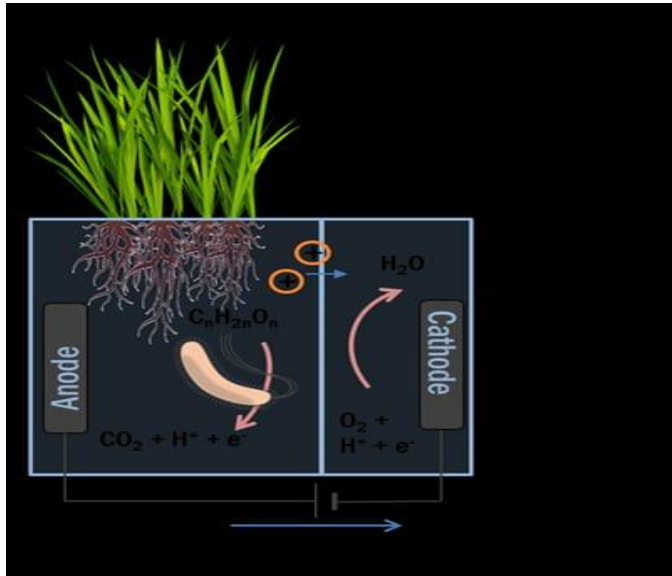
Figure 1. Basic Mechanism

This energy present in the root can then be captured by the so-called electro-chemical active bacteria. These organisms are capable of oxidising the organic matter present in the root zone and transfer the energy rich electrons to an electrode. The energy carried out by the electrons can be used as electrical energy, after which the electrons react at another electrode which is cathode with oxygen to form water. The primary advantage of the Plant Power concept is that renewable, clean electricity can be produced while the facility can be well integrated in the landscape and households to to meet the needs of concept of energy optimization and in addition it will help in reducing pollution to some extent. The aim of the EU project is to enhance the productivity of the Plant Power concept such that it becomes competitive with other bio energy systems

Electricity generation from living plants with the help of organic matter produced during the photosynthesis process to generate its own food .The part of the organic matter generated is discharged into soil via roots .The microorganisms present in the soil decomposes the organic matter into simpler molecules resulting release of electrons as by product. The released electrons are captured using anode plates and are passed on to load and from there to cathode side resulting completion of the electrical circuit to generate electricity. The electrons reached at cathode sides eventually get reduced to H_2o.

In this paper, we have noted few fundamental investigations which are established to demonstrate the potential of harvesting electrical energy from living plants.[4]The electrical energy is harvested by embedding electrodes into the plant to allow flow of ions and hence generate electricity. Multiple random tests have been conducted using different type of plants and electrodes and an attempt to determine the characteristics of the harvesting system. It is found that voltages are produced to greater or lesser extents by all tests where combination of copper-zinc, zinc graphite, copper magnesium and in all this aloe-Vera produces the highest voltage with zinc copper pair. In addition, it is shown in this paper its ability to light up Light Emitting Diode (LED), digital clock and calculator which grants it a potential to be usedfor low power electrical consumption appliances in the future so that greener solutions are developed at every household.

A single plant can produce 1V of electricity with normal sunlight which means 6 plants of regular size can make greenest ever possible charger which along with electricity can produce oxygen amount that human consumes in a day.
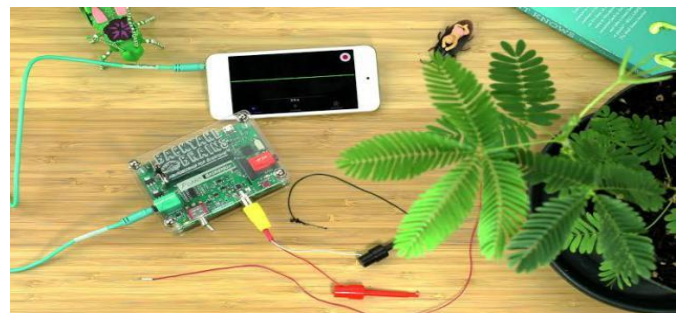
Figure 2. Charging of a cell phone with plant electricity

The same idea can be applied over terrace with beautiful green garden light up with the LEDs leading energy optimization help of plant electricity. The advisability of subsidizing renewable energy depends on how rapidly the investment can take place and the elasticity of investment with respect to those subsidies. In general, the renewable energy sector tends to require large up-front construction costs, which is likely to be attractive in the context of short-term job creation, but the capacity to expand such projects rapidly is likely to be fairly limited.

When the economy recovers and the stimulus justification fades, is there a longer-term job creation justification for subsidizing renewable energy? This question has a static and a dynamic component. The static view is that renewable energy and energy efficiency are more labour-intensive technologies for producing (or are more labour-intensive technologies for producing (or conserving) energy than conventional energy production. The empirical support for these claims is uneven, but even if true, it is far from making the case that green job creation is welfare improving. To the extent that renewable energy costs more, even after accounting for environmental externalities, renewable energy absorbs more resources to produce the same value of output—a unit of electricity—and lowers GDP compared to conventional sources. Another possibility is that renewable energy creates "better" jobs than conventional sources, perhaps by targeting workers whose incremental economic welfare is of particular importance because they are otherwise difficult to employ or because they would otherwise have very low-wage jobs.
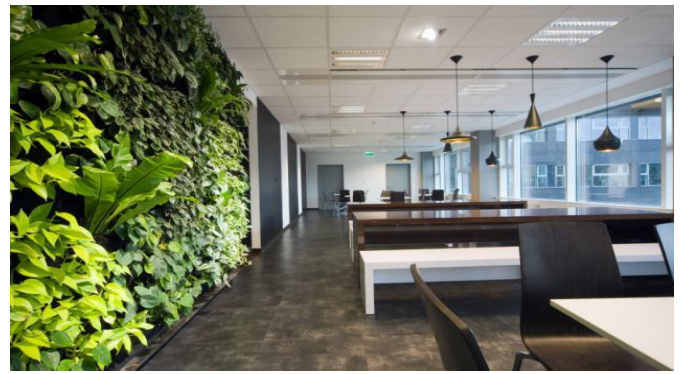
Figure 3. Plants used to generate electricity for home appliances.

IV. CONCLUSION

As plant electricity is a tiny drop in the ocean of energy productions but for those who never experienced light, who lived their whole in the darkest regions for them it becomes another ocean. Plant electricity can make notable contributions in the pollution control. The main contribution it can make into energy optimization. Plant electricity has greater role to play in energy optimization taking into account of population and pollution aspects in recent developments. It can save and make considerable contribution in the green world which will be free of pollution.

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IOT Based Digital Energy Meter for Remote Monitoring with Automatic Grid Changing

Sujata Pangar, Ayesha Pachghare, Supriya Mali, Pratiksha Kale, Sachin Datey
Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Electricity has become one of the basic requirements for human life, being widely used for domestic, industrial and agricultural purposes. In our work, we propose a digital energy meter which measures the energy consumption and the energy measured is transmitted periodically to the remote server or user or electricity board so that energy consumption can be monitored from remote end. Additionally, an important concept used here is the IoT (Internet of Things). IoT is an emerging system with unique identifiers and having the ability to transfer data over a network without human-to-human or human-to-computer interaction. Here using IoT the meter readings are uploaded into our specific web page for remote monitoring.

Keywords : IoT, PIC microcontroller, Energy meter, Web page, LCD Display

I. INTRODUCTION

Digital signal processor or high-performance microprocessors are used in digital electric meters. Similar to the analog meters, voltage and current transducers are connected to a high-resolution ADC. Once it converts analog signals to digital samples, voltage and current samples are multiplied and integrated by digital circuits to measure the energy consumed. There are many methods of error correction in digital electricity meters which are usually based on the known methods of A/D converters error correction. Most of these methods use software correction based on calibration process. While in digital electricity meter, percentage error could be as low as 0.01%. On the other hand consumers are also not satisfied with the services of power companies. Most of the time they have complaints regarding statistical errors in their monthly bills the present system only provides feedback to the customer at the end of the month that how much power is consumed in the form of bill. The

consumer has no way to track their energy usage on a more immediate basis. The consumers are growing exponentially fast and load on power providing divisions is rapidly rising. In the existing system meter tampering can be done easily and it's one of the major drawbacks for an energy crisis.

II. LITERATURE SUEVY

2.1 "Arduino and GSM based smart energy meter for advanced metering and billing system"

Every management system is trying to make automatic, portable and remote control. This work presents a novel smart energy meter for automatic and superior metering and billing system. The integration of arduino and GSM short message service (SMS) provide the meter reading system with some automatic functions that are predefined.

Firstly, we have simulated the project in PROTEUS 8.0 then successfully implemented on the circuit

board in laboratory. The proposed energy meter system can 9 incorporate with embedded controller and GSM modern to transmit the data like consumed energy in kWh, generated bill, security service (line cut/On) over GSM mobile network such as data can be then fed and integrated into existing energy management system located at power companies or organizations to provide the services among the customers without man-power. our implement project is able to provide all required services remotely for metering and billing with high fidelity.

2.2 "Design and Development of GSM based energy Meter"

Traditional metering method for retrieving the energy data is not convenient and the cost of the data logging system is high. So this paper presents of design and development of Automatic meter reading (AMR) system. AMR system is a boom for remote monitoring and control domestic energy meter.AMR system give the information of meter reading, power cut, total load used, power disconnect and tempering on request on regularly in particular interval through SMS. This information is being sent and receives by concerned energy Provider Company with the help of global system for mobile communication (GSM) network. Energy providers receives the meter reading within a second without visiting person.AMR minimize the number of traditional visits required by employs of energy provider company. This system not only reduces the labor cost but also increases meter reading accuracy and save hugs amount of time.

2.3 "Smart Energy Meter with reading Indication using GSM"

This paper proposed the smart energy meter with reading indication using GSM it developed to decreases the electricity consumption bill by providing the energy meter reading to the user with an alert message before increasing of unit charge. The reading from utility administration as SMS is being received by smart energy meter programmable interface and the action is performed by the meter according to provided information microcontroller can be used to monitor and record the readings. In case of a customer defaulter, no need to send a person to utility cut-off the utility can cut off and reconnect the customer connection by short message service. A PC with a GSM receiver 10 at the end, which contains the database acts as the billing point. Live meter reading from the GSM enable energy meter is send back to billing point periodically and these details are updates in a central database. Furthermore, the customer can check the status of Electricity from anywhere. It provides ease in taking the meter readings, accuracy.

2.4 "An Improved ARM/AMI Approach for metering & Energy Monitoring"

The growing demand of energy in day to life has also increases the demand of monitoring and managing it. So a connectivity solution for smart metering address the challenge of liable, secure and robust communications for remote metering and home energy management, Enabling remote metering with web connectivity is needed, In this paper an AMR solution with standalone transceivers to complete system-on-chip with 32 bit ARM core and embedded memory.

III. METHODOLOGY

An electronic energy meter is presented in this paper which is capable to count bill, track theft. Current transformer (CT) is attached with line to measure current flowing through the load and a voltage divider network is connected to the line to measure terminal voltage of load. Then it multiplies them to get power in that instant. Then it processes these values of power to calculate the total power consumed by load.

Fig 3.1: Smart Energy Meter

Automated billing of energy meter is made possible by connecting an IOT modem to the energy meter. As the authorities request for the units of energy consumption the same is send to them through IOT service from the energy meter. Automatic connection and disconnection can be done by passing a code such as a password from the board based on bill payment of the consumer through the IOT module. Once this code reaches the microcontroller at the consumer's end the supply to the load can be turned off or turned on. In case of industrial consumers, the maximum demand has to be recorded by a higher official from the board. Then this person has to official reset this maximum demand after recording it. This is a time consuming as well as a tedious job. Hence it is possible for the energy meter to transmit this data to the board and store it in a special register. This register can only be opened by a higher official from the board. This can be done by communicating the maximum demand with the board through IOT module. This detail with the energy meter serial number is stored in a particular register of the board's microcontroller and can be only accessed by a higher official using his password. Once this procedure is done then the maximum demand of the industrial consumer is reset. Detecting a fault in distribution system can be done by communicating between the distribution transformer and the consumer's energy meter. If there is supply in the transformer and no supply in the consumers end it means that there is a line fault between the consumer and the distribution transformer. This communication is done with IOT.

IV. CONCLUSION

This system helps in control the energy consumption and avoiding energy wastage is very important. This is an Arduino based design and implementation of energy meter by using IOT concept. In the proposed system, meter reading system is designed to monitor continuously the meter reading and transfer the reading to certain server. This data can be access from anywhere on the globe at any time.

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Solar-Wind Hybrid Power Generation

Prof. Gaurav Sadaphal[1], Harshvardhan U. Aand[2] , Vishvajeet D. Narute[2], Irfan A. Shaikh[2]

[1]Assistant Professor, Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Energy generated from renewable energy sources such as wind, solar, hydro power, biomass, geothermal and ocean resources are considered as a great option for generation of clean energy. But the problem associated with energy generated from solar and wind is that it produces less energy than the production by fossil fuels, however, electricity generation by using PV cells and wind turbine increased rapidly in now a days. This paper presents the Solar-Wind hybrid Power system that utilizes the renewable energies in Sun and Wind to generate electricity. It ensures the optimum use of resources and hence improve the efficiency as compared with their individual mode of generation. Also it increases the reliability and minimizes the dependence on one single source. This combination of solar and wind energy generation is more suitable for industrial and domestic areas.

Keywords : Direct Current(DC), Alternating Current(AC), UPS(Uninterrupted Power Supply)

I. INTRODUCTION

As we know that the world is facing a major problem of fast depletion of the fossil fuel reserves. Most of the present energy demand is completed by fossil and nuclear power plants. A small part is met by renewable energy technologies such as the wind, solar, biomass, geothermal etc. There will early be a time when we will face a critical fuel shortage. As per the law of conservation of energy, "Energy can neither be created, nor be destroyed, only one form of energy can be converted in the another". Most of the research now is about how to conserve and utilize the energy in a better way. Research has also been into the development of reliable and robust systems to utilize energy from renewable energy resources. Out of them, the wind and solar power sources have experienced a remarkably rapid growth in the past 5 to 10 years. Both are pollution free sources with abundance of power.

With high economic growth rates and over 17 percent of the world's population, India is a significant consumer of energy resources. Instead of that the global financial crisis, India's energy demand continues to rise. India consumes its maximum energy in commercial, residential, domestic and agricultural purposes in comparison to Russia, China, and Japan. Solar energy is energy obtained from the Sun. It is inexhaustible, renewable and environmental pollution free.

Instead of worst weather condition, the batteries charged by the energy generated from solar cells provides 24 hours power supply. By using the correct technology for the related geographical location, we can extract a huge amount of power from solar radiations. Out of the other renewable energy sources solar energy is expected to be the most prominent and promising alternate source of energy. The global search and the increase in the pricing of conventional fossil fuel is making supply-demand of electricity product almost difficult especially in some remote

areas. Generators are often used as an alternative to conventional power supply systems are now known to be run only during specified hours of the day, and the cost of fueling them is increasingly becoming difficult if they are to be used for commercial purposes. There is a increasing awareness that renewable energy such as photovoltaic system and Wind power have an important role to play in order to handle the situation.

The power system consist of a combination of renewable energy source such as wind turbines, solar panels etc of charge batteries hence called as hybrid power generation and provide power to complete the energy demand, considering the local geography and other details of the place of installation. Such kind of systems are not connected to main power utility grid. They are also used in stand-alone applications and operate independently and reliably. The best application for such kinds of systems are in remote places, such as rural villages, in telecommunications etc. The importance of combined systems has increasing as they appear to be the right solution for a clean and distributed energy production. This paper presents the Solar-Wind hybrid Power system that uses the renewable energies in Sun and Wind to generate and supply electricity to the residential areas, for agriculture, farm houses as well as industrial applications.

II. METHODS AND MATERIAL

Solar cells and windmills are attached with each other and when sunlight falls on solar they produce electricity. This is due to the face of solar panels are made up of semiconductor materials (like silicon) and when light falls on them, electron moves in conduction band takes place and hence electricity is produced. The windmill rotates and it is coupled to a shaft that is further connected to a generator and hence electricity is produced. In a windmill rotor is there which rotates with wind velocity. Wind turbines and solar cells produce DC power. A device is

then used to convert this DC power into AC power called as inverter.

A combined system consists of two generating plants:

1. A solar panel generating plant

2. A wind turbine system

These sources are connected in parallel to a DC line. The power is then converted from a DC to AC by connecting converter device.

Solar Energy

The sun radiates 174 trillion kWh of energy to the earth in one hour. In other words, the earth receives power of 1.74 x 10 17 watts from the sun. Characteristics of the sun is simplified as follows:
mass 2× kg, beam length 700.000 km, age 5× years and estimated roughly 5 billion more years of life. The temperature of surface of sun is nearly about 5800 K while the internal temperature is approximately equal to 15.000.000 K. High temperature reactions occurs due to the transformation of hydrogen in helium. The process of the nuclear fusion is characterized from the following reaction 4 → Energy, is the result of the high temperature of sun and the tremendous amounts of energy emitted continuously. It is calculated that for each gram of hydrogen, that is transformed to He, sun radiates energy equal with U= 1.67× kWh. The solar energy is emitted to the universe mainly in the form of electromagnetic radiation. The estimated distance from the sun is 150,000,000 km while the sun is stationed and the earth rotates around the sun in an elliptic orbit. The travelling speed of light is near about 300,000 km/sec. It takes approximately 8.5 minutes to cover the huge distance and reach on the earth. Actinic of emitted radiation is removed by the aster to the space and the intensity of radiation J, is calculated by the equation below:

P represents the electromagnetic radiation power and d represents the distance from the sun. It is estimated that one-third of the radiation is reflected back. The remaining of energy will be absorbed and retransmitted to the space while the earth reradiates just as energy as it receives and creates a balance of energy balance at the level of temperature which is suitable for life. Solar radiations are used to produce electricity directly from solar cells.
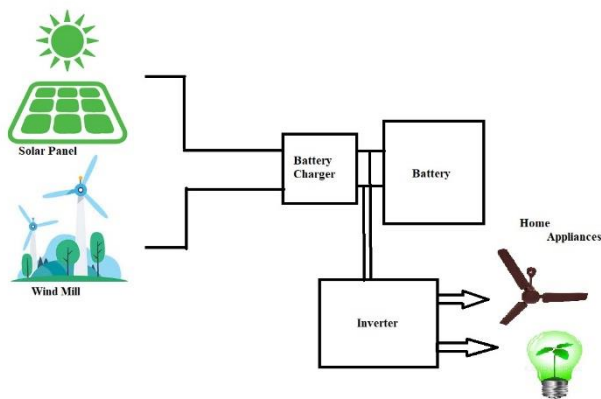
Block Diagram of Proposed System

Wind Energy

Wind is the continuous flow of atmospheric air masses and is determined by its speed and orientation. This movement derives from the changes in the different values of the atmospheric pressure while these values are changes due to the solar heating of various parts of the earth's surface. Despite the fact that the atmospheric air flows horizontally and vertically as well, only its horizontal flow is actually considered as wind. The wind energy produced from the air as a result of its movement. Wind energy is the conversion of a small percentage, about 0.2%, of the solar radiation that reaches the surface of the earth. The wind power around the globe is estimated in 3.6×109 MW while, according to valid estimations of the World Meteorology Organization, the percentage which is available for energy exploitation in various parts of the world is only 1% and it is estimated around 0.6Q (175×1012 KWh).

Battery rating

Batteries are rated in measurements depending on the applications and tasks they are expected to perform. For example, batteries rated in ampere-hours (AH, also called amp hours) are designed to deliver low currents for the large period. To determine the AH rating of a 12-volt battery, use a multi-meter. Connect a basic resistor between the battery's terminals, then monitor the discharge over time until the voltage decreases to 12 volts. You can then use a measurement of the battery's current to calculate the AH rating.
Battery Output Voltage: 12V
Battery Output Current: 7Ah

Battery:

12V – 7Aah
Battery backup

Calculating Run Time:
The following formula can be used to determine run time in most applications using a 12V battery or bank:

$$\frac{10 \times (\text{Battery Capacity in Amp Hours})}{(\text{Load power in Watts})} = \text{Run time in hours}$$

Inverter Design

We all face power interruptions in our houses or offices some time or another. At those times we normally use Generator or an **Inverter**. Power generators needs petrol or diesel as fuel and they are very noisy. We will be discussing about the inverters here.
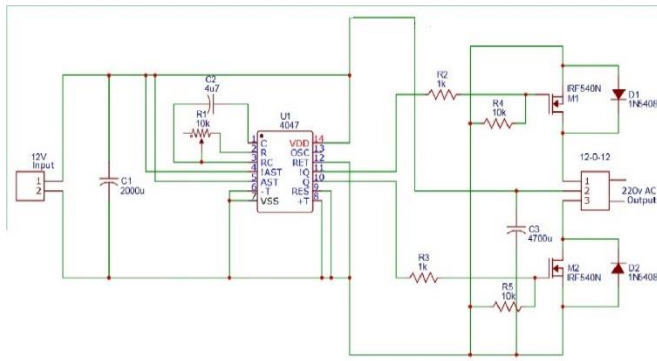
Here we will be talking about the Inverter. **Inverters takes the power from DC power banks,** like lead acid battery pack. These inverters are used everywhere now. This type can be used for medium power applications. But for high power appliances Power generators are most preferred one.

III. RESULTS AND DISCUSSION

This project is to generate green energy from the renewable energy sources such as Solar and Wind Energy. By using this Hybrid Power Generation pollution free earthling system and to maintain the level of non-renewable energy resources is obtained. By using the solar and wind energy generation system the global warming will be reduced.

In this project generation of energy by using domestic Solar panels and domestic wind mill arrangement is made. During day time power is generated from the solar panel and during night and rainy season the power is generated from the windmill arrangement. The battery is used to store the generating energy and gives required timings.

Thus, generating the green energy from the natural resources.

Setup For The Project

IV. CONCLUSION

In this work a hybrid power generation system is designed which shows various characteristics of the system. From the study of the model characteristics it is clear that this hybrid power system provides voltage stability and automatic load sharing capability. For these cause the system is very much useful to provide good quality of power.

Since power prices are forever increasing, we should really consider green power as a method to cut prices. We can gather the power of wind for our home with a mini windmill. Now a day's power demand increases rapidly there must be some alternative source of energy which can fulfill the requirements of power. In this case renewable energy source especially wind energy is the most easily available renewable source of energy; it will be beneficial to develop certain system work based on wind energy for domestic purpose. Development of mini wind mill (vertical axis machine) is the most suitable option for domestic applications.

As the machine size is small, cost of machine is comparatively lower then horizontal axis machine and can easily installed where the power requirement is small like on the terrace of building, gardens, commercial buildings, small industries etc. Initial cost of machine as well as installation cost of machine is higher compare to available energy but it can be recovered within few years with very less maintenance cost. Energy generated after breakeven point is very cheaper compare to available energy.

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Condition Based Operation of Motors Over Intermittent Load

Pritam Bopalkar, Nitin Ambekar, Abhishek Kandikatla, Tejaswini Delekar

Department of Electrical Engineering, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Multi-motor electric drives are widely used in many industries due to increased reliability, weight and size, and other parameters. One of the drawbacks of multi-motor electric drives is non-uniform load distribution. Load balancing using two motor is considered in this paper. The paper deals with a simulation model which allow to investigate the two motor electric drive with a single load. Arduino uno as a controller used here. Conveyor arrangement is implemented in a project. Conveyor belt connected to the two motors. Initially M1 is ON. And M2 is running at no supply. When load increases on belt M2 will get supply. And automatically shares the load and M1 and M2 ON. When load is decreases M2 will automatically get off and the load is driven by one single motor.

Keywords : Two Motor Electric Drive, DC Motor, Load Balancing, Simulation

I. INTRODUCTION

Industrial loads vary in sizes, type of functionality, range of operation, nature of surroundings, etc. The type of motors used varies as per the application. Main-Mill motors, auxiliary motors, pump motors, roller table or conveyor motors, crane motors, high precision / position-controlled motors, etc., may be realized using synchronous motors, induction motors, conventional brushed DC motors and permanent magnet brushless DC motors. Some applications need multiple motors to work in tandem or in parallel. The reasons for using multiple motors may vary from lack of space for big motors resulting in the use of several coupled motors of smaller ratings in tandem, to process requirement of parallel motors. Process such as Mills, conveyor belts, roller tables, cranes, etc., cannot work with just one motor. They need more than one motor working in parallel to drive the common mechanical load. In such applications, load sharing is naturally required, and it is important to maintain the speed and the torque of the participating motors the same or in some proportion as required by

the process. Possibility of uneven load distribution between the two motors. Therefore, when using two motor electric drive it is necessary to determine the uneven distribution of the load and take measures to eliminate the negative effects of this phenomenon (e.g., overheating of one of the machines).

II. METHODS AND MATERIAL
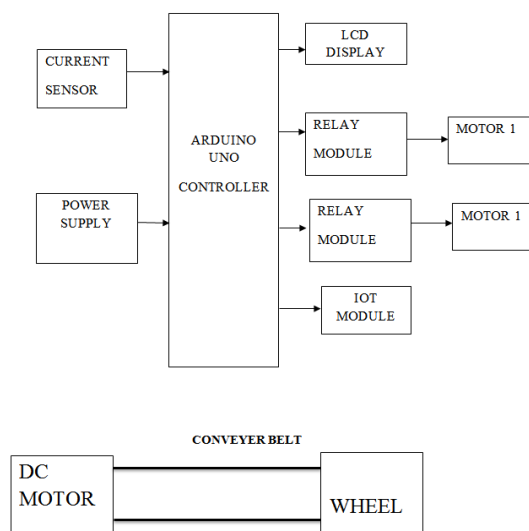
Fig 1. Block Diagram

Block diagram of the two Dc motors, operating on one shaft is as shown in fig 1. Determination of uneven load distribution and load balancing between the motor are essential problems [1, 2]. They are considered in this article on the example of the two DC motors, actuating the load mechanism (LM).

III. SIMULATION DIAGRAM
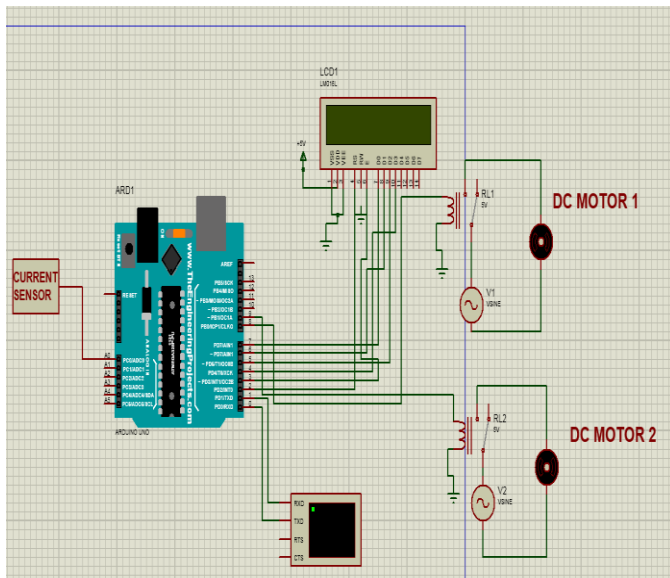
- Arduino uno as a controller used here
- Converyor arrangement is implemented in a project
- Conveyor belt connected to the two motors.
- Initially m1 is ON. And M2 is running at no supply.
- When load increases on belt m2 will get supply. And automatically shares the load and m1 and m2 ON.
- When load is decreases m2 will automatically OFF REST OF LOAD SHARE BY M1 LOAD.

IV. COMPONENTS

- ARDUINO UNO
- LCD DISPLAY
- DC MOTOR
- CURRENT SENSOR
- IOT MODULE
- RELAY

Arduino uno

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.
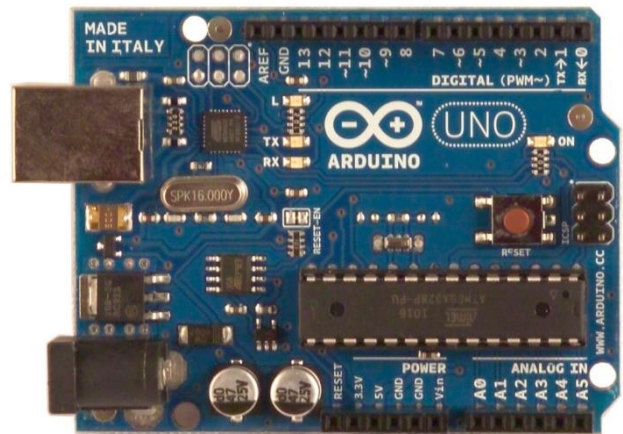
LCD DISPLAY

LCD screen consists of two lines with 16 characters each. Each character consists of 5x7 dot matrix. Contrast on display depends on the power supply voltage and whether messages are displayed in one or two lines. For that reason, variable voltage 0-Vdd is applied on pin marked as Vee. Trimmer potentiometer is usually used for that purpose. Some versions of displays have built in backlight (blue or green diodes). When used during operating, a resistor for current limitation should be used (like with any LE diode). the cost of fuel is reduce. And the future emphasis manufacturer to move towards the smart electric vehicle.
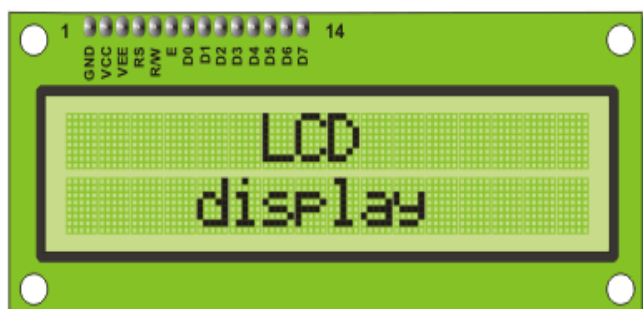
IOT MODULE
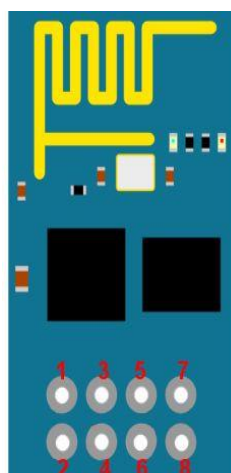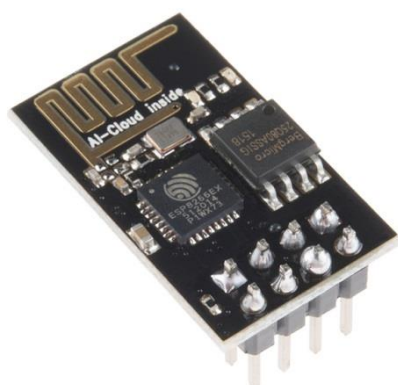
ESP8266 Pins

1. GND - Circuit Ground

2. TX - UART0 Transmit

3. GPIO2 - General Purpose I/O

4. CH_EN - Chip Enable, Active High

5. GPIO0 - General Purpose I/O

6. RESET - Reset, Active Low

7. RX - UART0 Receive

8. VCC - Circuit Power = +3.3V DC

IOT (Internet of things) is a revolutionizing and improving the way we work and live but its only possible with pervasive, flexible and long lived wireless connectivity. At the heart of it all is a tiny device called IOT Module i.e. responsible for connecting virtually anything to wireless networks.

CURRENT SENSOR

Accurate sensor to measure AC/DC current up to 20A. The sensor can even measure high AC mains current and is still isolated from the measuring part due to integrated hall sensor. The board operates on 5V.
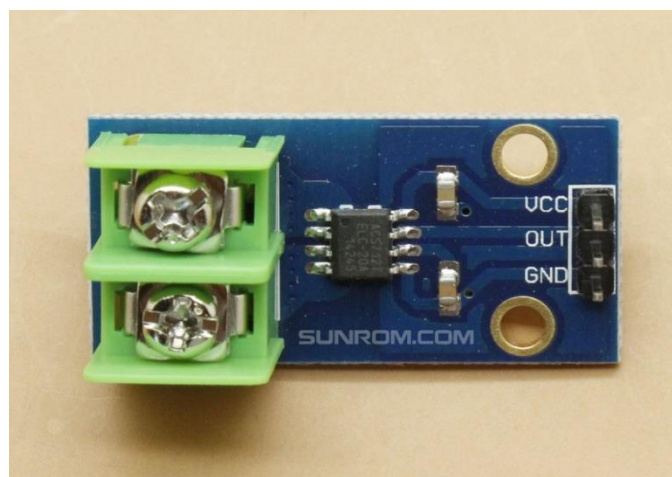
RELAY

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.
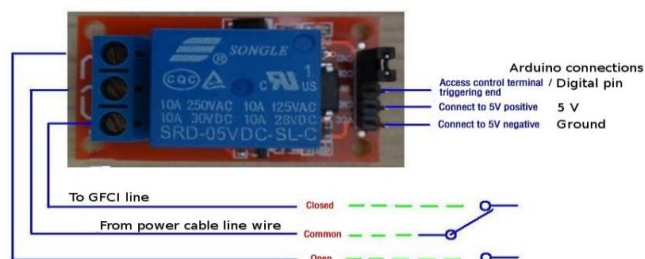
DC MOTOR

A DC motor is an electric motor that runs on direct current (DC) electricity. Basically it converts electrical energy into mechanical energy.

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.
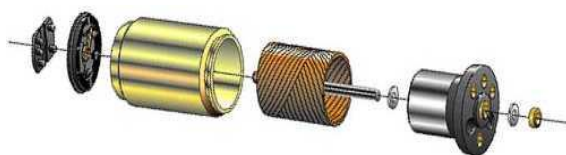
V. RESULT AND DISCUSSION

So considering this aim we made this project, we have sheared the load on two motor for the continuous mode of operation. In industries the invariant load occurs like sudden overload condition and sudden peak off period in that case the continuous operation of motor unit is essential factor so the in this project we use two motors for the load shearing these two operates under the base load and peak load demand. The main objective of this project is to maintain the continuity of operation and to enhance the operating efficiency of the motor under the intermittent load.

In this project we discuss the problem which is currently facing the many industries like rolling mills , sugarcane factories these industries have to operate their production   unit or load caring units like conveyer even under the small load so to avoid this kind of problem we use the two DC motors which operates under the base load and peak load as per the require operation

VI. CONCLUSION

In this article the use of two dc motor electric drives and solving problems related to load equalizing between the motors are considered. The solutions to the problem of load balancing are presented.

A mathematical model of two motor electric drive is introduced. On its base, the method of load balancing using conveyer belt.
Studies have shown that must be changed depending on the load torque of the drive.

The method introduced can be applied to induction motors which have the same number of pole pairs.

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Smart Irrigation System

Prof. Suraj Avatade, Swapnil R. Dhumane, Aftab Alam

Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Adopting an optimized irrigation system has become a necessity due to the lack of the world water resource. The system has a soil-moisture sensor. This project focuses on a smart irrigation system which is cost effective. Automation allows us to control various appliances automatically. The objective of this project is to control the water supply to each plant automatically depending on values of soil moisture sensors. Mechanism is done such that soil moisture sensor electrodes are inserted in soil. Automatic irrigation scheduling consistently has shown to be valuable in water use efficiency with respect to manual irrigation based on direct soil water measurements. The aim of the implementation is to demonstrate that the automatic irrigation can be used to reduce water use. The implementation is an automated irrigation system that consists of a soil moisture sensors which senses the soil humidity and automatically waters the field. The insecticides are detected using image processing in python and accordingly the spraying mechanism is started. The animals are detected using PIR sensor and accordingly the alarm will become on.

Keywords : IOT, PIR sensor, Soil Moisture.

I. INTRODUCTION

Agriculture not only provides food for the human existence, it is also a big source for the economy of any country. Millions of dollars are being spent to safeguard the crops annually. Insects and pests damage the crops and thus are very dangerous for the overall growth of the crop. In the Internet era, where information plays a key role in people's lives, agriculture is rapidly becoming a very data intensive industry where farmers need to collect and evaluate a huge amount of information from a diverse number of devices (eg., sensors, faming machinery etc.) in order to become more efficient in production.

At the present era, the farmers have been using irrigation technique in India through the manual control in which the farmers irrigate the land from time to time. This process sometimes consumes more water. Automatic irrigation scheduling consistently has shown to be valuable in water use efficiency with respect to manual irrigation based on direct soil water measurements. Irrigation of plants is usually a very time-consuming activity which has to be done in a reasonable amount of time; it requires a large amount of human resources. All the steps were executed by humans traditionally.

Nowadays, some systems use technology to reduce the number of workers and to reduce the time required to water the plants. With such systems, the control is very limited and many of the resources are still wasted. Water is one of these resources which is used excessively. Mass irrigation is the method which is used to water the plant. This method represents massive losses since the amount of water given exceeds the plants' needs. The excess water gets discharged by the holes of the pots, or it percolates through the soil in the fields. In addition to the excess

cost of water, labour is becoming more and more expensive. The insecticides are detected using image processing in python and accordingly the spraying mechanism is started. The animals are detected using PIR sensor and accordingly the alarm will become on.

II. LITERATURE SURVEY

SR NO.	PAPER NAME	AUTHOR NAME	ADVANTEGAES
1	Image processing techniques for insect shape detection in field crops	K. Thenmozhi ; U. Srinivasulu Reddy	It provides better identification of crop insects on early stage. Greater accuracy which helps farmers to increase the crop yield.
2	Automatic classification of insects using colour-base and shape-based discriptions	Siti N. A. Hassan, Nadiah S. A. Rahman,	It can identify grasshoppers and butterflies from colored images. This framework can extend to identify a variety of other species of insects.
3	A self-adaptive algorithm for small targets detection in clutter scene inspired by insects compound eye	Min Li ; Huibin Wang ; Chenrong Huang	Compared with the common signal process algorithm, the bio-inspired detection algorithm was fast, easy and robust.
4	Automatic detection of moving wild animals in airborne remote sensing images	Yu Oishi1 and Tsuneo Matsunaga2	Developed algorithm is effective in detecting automatically the walking human in remote sensing images

III. METHODOLOGY

Functional Requirement-

System Analysis gives the complete description of the behavior about the system developed by this project. This includes specification of functional and non functional requirements of the application. The interaction of the users with the application is represented with the help of use cases and there analysis. This also includes the description about feasibility, risk analysis and external interface requirements to accomplish this project. Our product will consist of a central control unit, soil moisture sensors, and a web application that work and communicate effectively with each other.

Raspberry Pi-

Raspberry Pi is a small single board computer. By connecting peripherals like Keyboard, mouse, display to the Raspberry Pi, it will act as a mini personal computer. Raspberry Pi is popularly used for real time Image/Video Processing, IoT based applications and Robotics applications. Raspberry Pi is slower than laptop or desktop but is still a computer which can provide all the expected features or abilities, at a low power consumption. Raspberry Pi Foundation officially provides Debian based Raspbian OS. Also, they provide NOOBS OS for Raspberry Pi. We can install several Third-Party versions of OS like Ubuntu, Arch linux, RISC OS, Windows 10 IOT Core, etc. Raspbian OS is official Operating System available for free to use. This OS is efficiently optimized to use with Raspberry Pi. Raspbian have GUI which includes tools for Browsing, Python programming, office, games, etc. We should use SD card (minimum 8 GB recommended) to store the OS (operating System).Raspberry Pi is more than computer as it provides access to the on-chip hardware i.e. GPIOs for developing an application. By accessing GPIO, we can connect devices like LED, motors, sensors, etc and can control them too. It has ARM based Broadcom Processor SoC along with on-chip GPU (Graphics

Processing Unit).The CPU speed of Raspberry Pi varies from 700 MHz to 1.2 GHz. Also, it has on board SDRAM that ranges from 256 MB to 1 GB. Raspberry Pi also provides on-chip SPI, I2C, I2S and UART modules.

Soil Moisture Sensor-

A Soil Moisture Sensor Probe to sense the soil moisture level. To make probe, we have cut and etched a Copper clad Board according to the Picture shown below. One side of the probe is directly connected to Vcc and other probe terminal goes to the base of BC547 transistor. A potentiometer is connected to the base of the transistor to adjust the sensitivity of the sensor.

PIR Sensor-

PIR sensor detects a human being moving around within approximately 10m from the sensor. This is an average value, as the actual detection range is between 5m and 12m.PIR are fundamentally made of a pyro electric sensor, which can detect levels of infrared radiation. For numerous essential projects or items that need to discover when an individual has left or entered the area. PIR sensors are incredible, they are flat control and minimal effort, have a wide lens range, and are simple to interface with.
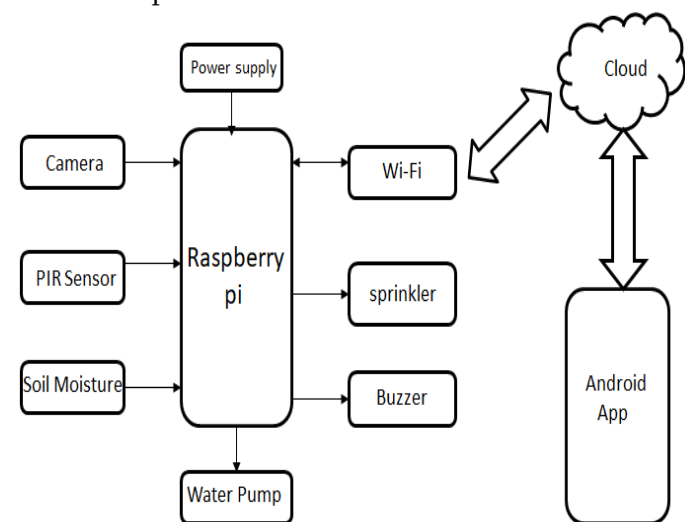
Fig 1. Block diagram

III. FLOW DIAGRAM
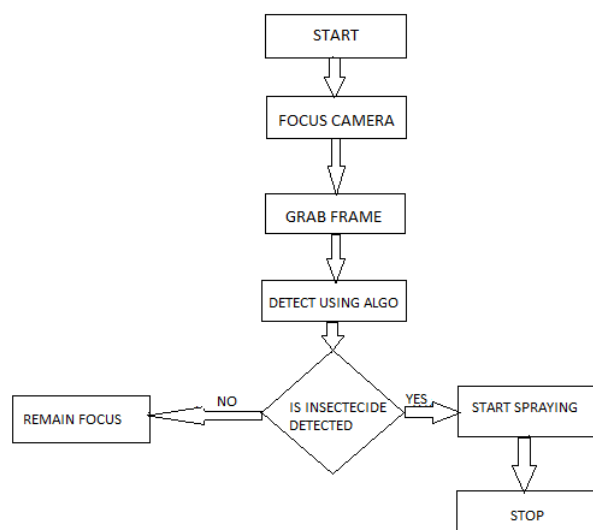
Fig 2. Flow Chart for Insect Detection
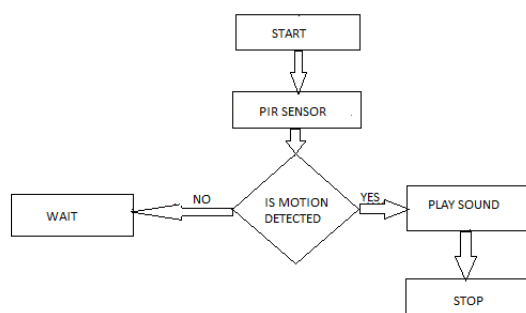
Fig 2. Flow chart for Animal Detection

IV. RESULT
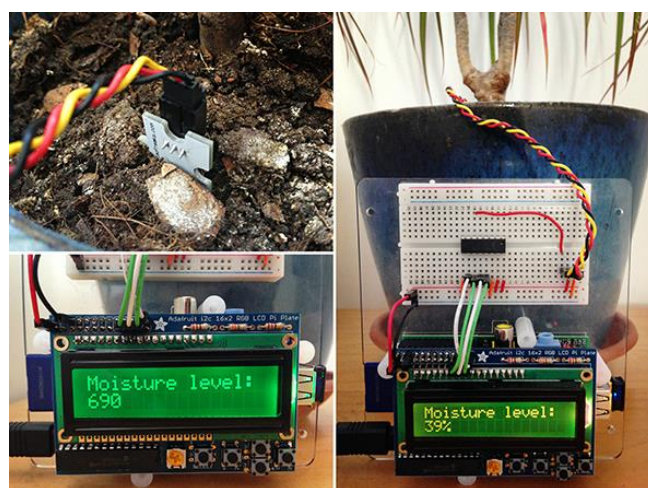
V. CONCLUSION

Using this system, one can save manpower, water to improve production and ultimately increase profit.

The automated irrigation system is feasible and cost effective for optimizing water resources for agricultural production.

The system would provide feedback control system which will monitor and control all the activities of irrigation system efficiently.

Animals can be detected and crop can be prevented.

Crops can be prevented from the disease.

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Smart Mirror with Artificial Intelligence using Raspberry pi

Javed Sheikh¹ Rupali Sangare², Maulashree Fulzele³

¹Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

²Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

A smart mirror is a device which operates with different types of functions such as capability of displaying multimedia data, text, images, weather forecasting with fingerprint security, PIR sensor and Voice assistance. The smart mirror is made of raspberry pi as the host controller. In working condition, the system by raspberry pi is connected to the network through the Wi-Fi, and obtain information about the weather forecast for the API network interface specified dressing index, time, date and other information, and then through the information displayed in the LED display. The interaction with the smart mirror can be done with mobile phone through the APP mirror, which make sounds, such as asking the mirror the weather, news, time, the mirror can automatically obtain the corresponding information network and broadcast. The micro-controller will be powered using python scripts for mirror software as well as personal assistant. The idea of a smart home is the direction lots of companies are heading and while the kitchen has been getting lots of attention, the bathroom has not. Besides the kitchen, the bathroom is one of the busiest rooms in the home, so it is an excellent place to expand the smart home next.

Keywords : Raspberry pi, Smart mirror, Artificial Intelligence, Python, Fingerprint security, PIR sensor Weather, Time, News.

I. INTRODUCTION

Smart mirror is a wall mounted mirror which displays weather, time, news and other areas of interests. In recent years more and more devices are connected to the internet. The internet has played an important role in connecting more and more people across the world. Devices started to become smarter a smarter, mobile phones became smartphones and most importantly internet was connected to a variety of devices and the concept came to be known as the 'Internet of Things'. Our project aims at exploring other fields where this technology can be used. It aims at including this technology in a mirror, because in general people spend a considerable amount of time in front of a mirror.

We have seen clocks mounted on the wall, we have also seen displays at the airports, similarly we aim at bringing this technology to our homes. Another advantage of this device is to provide Fingerprint sensor, this helps the user with security benefits.

Smart mirror can also be useful for getting quick view of your Google feeds or accessing Gmail accounts by using Voice assistance. The smart mirror would help in developing smart houses by using artificial intelligence and finally finding a place in industries. The smart mirror will show you that information with

the swipe of a hand which will save time. The smart mirror is the result of our team brainstorming on how to solve all these issues and develop something that is functional as well as a showpiece which can be usable to everyone. The next section briefly comments on the literature review and the description of the components and software's associated with it. It is followed with architecture of the proposed mirror. Conclusion and future scope of the mirror are also discussed in the paper.

II. METHODS AND MATERIAL

Our proposed smart mirror consists a one-way mirror, monitor (LED), Raspberry Pi 3 B+, Raspberry Modules, sensors. A wooden frame will be prepared with LED attached behind the glass with all the sensors and the raspberry pi. The power supply is attached to the raspberry pi which will power the LED monitor and the sensors. This system will require internet access which will be provided by the Wi-Fi module (LAN can be also used) on the raspberry pi.

The proposed smart mirror will perform these tasks:

1. A normal two-way mirror and acrylic glass will display real time image.
2. After activation the mirror will display weather, time and news.
3. The mirror can play music and videos.
4. The mirror can zoom in and out real-time images.
5. The mirror will automatically sleep if a person disappears from front with the help of sensors.
6. The mirror can be used as displaying moving images and animations in case of ideal situation with the help of sensors which will detect the presence and absence of any person in front of the mirror.
7. All the social networking websites or apps can be accessed with the voice.
8. The mirror can be synced with other devices which leads to the home automation.
9. The mirror also supports multiple user's profile.
10. YouTube videos are also supported by the mirror.
11. The mirror can even capture images and can store them in SD Card or Cloud Storage.
12. The mirror will be secured with the finger print sensor .
13. The user will be able to operate the mirror with the touch screen features.

HARDWARE SPECIFICATIONS

Raspberry Pi – A Raspberry Pi is a credit card sized computer originally designed for education.

Pi-Camera- A Pi Camera in this project is used to recognize user's face and to click pictures of the user.

Mirror- A one way mirror is used in this project, which is placed on the LCD screen.

Microphone- Microphone is connected with the raspberry pi and was used to input audio information to the monitor. Interaction with the mirror is done over microphone .USB microphone had to be used because the Raspberry Pi does not have regular microphone input.

SOFTWARE SPECIFICATIONS

Raspbian OS- Raspbian is a free operating system based on Debian optimized for the Raspberry Pi hardware.Raspbian comes with over 35,000 packeages ,pre-compiled software bundled in a nice format for easy installation on Raspberry Pi computer.

Python- Python is a widely used high-level programming language for general-purpose programming .Most of the codes of this project were written in python.

III. RESULTS AND DISCUSSION

As we had seen in the comparison table that every mirror is working on different technologies and platforms. These mirrors also differs functionalities and users. We had proposed a mirror which works on common architecture and also had all the required functions for users. We are using one way mirror.

SR N O.	PAPER NAME	AUTHOR NAME	ADVANTAG AES
1	**Design of smart mirror based on raspberry pi**	**Sun Yong,Geng Liqing,Dan Ke 2018**	Small size, simple operation , low cost
2	**Smart Mirror Applications with Raspbe-rry Pi**	**Fatma ok, 2017**	Controlled through voice commands
3	**SmartReflect: A Modular Smart Mirror**	**Derrick Gold,David sollinger, Indratmo 2016**	Interactive mirror, Modular
4	**Artificial Intelligence smart mirror using raspberry pi**	**Abdullahi kafi, M.Shaikh ashikul alam, Sayyed Bin hossain,2018**	Detects face for log-in
5	**Smart mirror using raspberry pi**	**Allaudin mulla,Prasad kanagi,Ritesh Shah,2018**	Consumes the time wastage

BLOCK DIAGRAM

IV. CONCLUSION

With the help of this literature survey we aim at designing a smart mirror that provides an ambient environment between users and the internet. It will help the users in Hence IoT proves out to be an important technology for making household appliances smart. The facial recognition technology used in the smart mirror proves out to be an important means of security.

Smart mirrors can be connected to home appliances and smart phones. The mirrors can detect face and provide access to personalized services. The mirror can also be implemented to recognize emotions. With the help of emerging technologies, smart mirrors can be advanced to touch screen modes. The mirrors can be better enhanced to be deployed in beauty parlours, cloth shops, hotels, etc. with better advancements in technology, mirrors can be used in many other fields their daily activities. The smart mirror can also be implemented in various industrial and home applications.

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Women Security System

Prof. Priyanka Halle[1], Pratiksha Kailas Naik[2], Komal Sanjay Mugadale[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra,
India

[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

The world is becoming unsafe for women in all aspects. The crimes against women are increasing at a higher rate. This paper proposes a quick responding mechanism that helps women during trouble. When someone is going to harass, she can press the button that is attached to the device and the location information can get with the help of GPS. The microcontroller used is PIC16f877A. It is interfaced with a push button, as emergency switch is pressed, location will be tracked parally there is speech ckt which is transmitter to communicate with receiver that can be either police and family or it can be install in public area. Shock circuit is there for the prevention in an emergency situation.

Keywords: GPS, GSM, Pic16f877A

I. INTRODUCTION

Even in this modern era women are feeling insecure to step out of their house because of increasing crimes in our country like harassment, abuse, violence etc. They often work across ethnic, religious, political, and cultural divides to promote peace. We all are aware of importance of women's safety but we must realize that they should be properly protected.in an emergency situation a helping hand would be a relief for them.

The main purpose of this device is to intimate the parents and police about the current location of the women. A GPS system is used to trace the current position of the victim. There are several applications that reduce the risk of sexual abuse by sending SMS but in our model we provide an audio circuit which is more useful for physically challenged people. As an instant prevention, shock circuit is used. The microcontroller

acts as an embedded computing system and it controls the activities of all the subsystems.

The microcontroller is interfaced with all the other modules. program for PIC microcontroller is done in Embedded C language and is dumped using a kit

II. METHODOLOGY
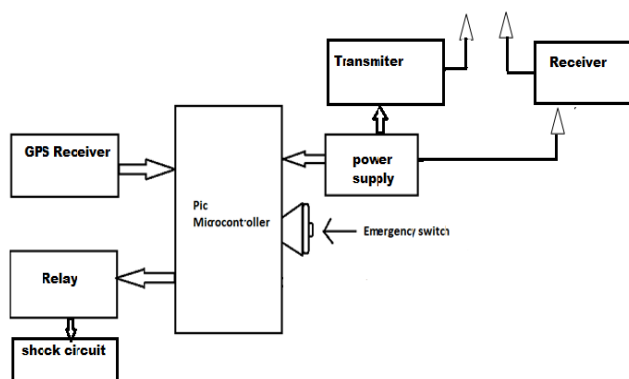
Fig. 1. Proposed Model

We are using GPS and microcontroller (PIC16F877A) acts as an embedded computing system and controls the activities of all the subsystems. It is interfaced with Emergency Switch, GPS Receiver and audio circuit in case of emergency the trigger button is pressed , The system tracks the location information from the GPS and the location using GPS can be traced through Google maps. As emergrncy switch is pressed there is communication between girl who act as transmitter and receiver who is police or family members.there is shock vibrator circuit which provide shock to the person who is going to harm her. Thus the girl will be safe.

III. LITERATURE SURVEY

Sr.no	Title	Author name	Disadvantage
1	A Novel Approach to Provide Protection for Women by using Smart Security Device.	Kaplan seelam Asst. Prof. Department of EIE V.R.Siddhartha Engineering College	There is no emergency switch. Sensitivity of sensor can't determine.Cost is high
2	Women Empowerment: One Stop Solution for women	Jannatul Maowa Dept. of Computer ScienceAmerican International University	Mobile phone can be thrown away by opposite side person.
3	Prototype of an Intelligent System based on RFID and GPS Technologies for Women	Shaik Mazhar Hussain1, Shaikh Azeemuddin Nizamuddin2, Rolito Asuncion3, Chandrashekar Ramaiah4, ajay vikramsingh.	Rfid tag should be in range of reader. Less efficient

IV. RESULT
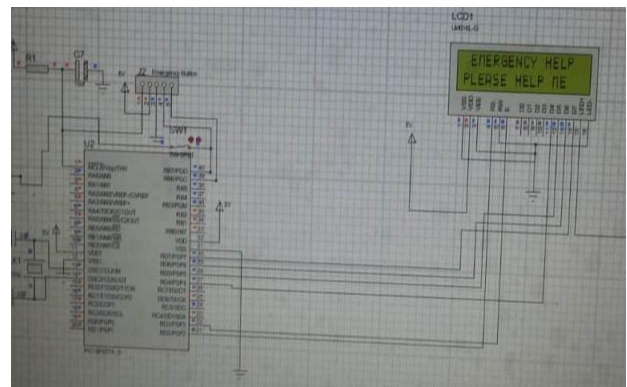
Fig 2. Implementing System

Fig 3. GPS output for location tracking

In our system GPS is used. it gives location in terms of lattitude & longitude. Women can communicate with the help of audio/ speech circuit .shock circuit is used as quick prevention, which provides shock.

IV. CONCLUSION

Being safe and secure is the demand of the day. Our effort behind this project is to design and fabricate a gadget which is so compact in itself that provide advantage of personal security system. This design will deal with most of the critical issues faced by women and will help them to be secure. Existing systems provide the mechanism to track the vehicle but no other emergency mechanism is proposed. The proposed mechanism provides viewing the location of the victim in terms of latitude and longitude which can further be tracked using Google maps. This system helps to decrease the crime rate against women.in this system women can communicate with the police or family which acts as a receiver with the help of audio/speech circuit. Shock circuit is there as an instant prevention.

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IOT Based Solar Power Monitoring System

Prof. Rajeshwari M. Thadi¹, Kiran K. More², Narendra Munjal², Ameet Rahegaonkar ²

¹HOD, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

²Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

As technology is advancing, the cost of renewable energy equipment's is decreasing which has resulted in a massive increase in solar panels installations. most of the installations act as an auxiliary power source. A majority of these are installed in inaccessible locations – as close as a rooftop to as far away as a desert. Hence, they require a sophisticated system for remote monitoring. With the advancement of technologies, the cost of renewable energy equipment's is going down globally encouraging large-scale solar panel installations. This paper is IOT based solar power monitoring is a smart solution for wireless monitoring of solar panel system. The user is blindly monitoring the parameters without knowing the values and were using multimeter to know what value of the system is suitable. Here we are using IOT cloud along with WIFI module to remotely monitor so that continuous access to the Solar power units is provided.This will provide detailed information and thus also useful in fault detection, maintenance by providing records at specified fixed duration of time.

I. INTRODUCTION

With advancement of wired and wireless network technologies, internet-connected mobile devices such as smart phones and tablets are now in widespread use. Thus resulting in a new concept, Internet of Things (IoT), was introduced and has received attention over the past few years. In general, IoT is actually an information sharing environment where objects in every-day life are connected to wired and wireless networks. Recently, it is used not only for the field of consumer electronics and appliances but also in other various fields such as a smart city, healthcare, smart home, smart car, energy system, and industrial security. At present, the solar photovoltaic (PV) energy is one of the pivotal renewable energy sources. The solar energy is becoming a potential solution towards sustainable energy supply in future. As more and more Rooftop Solar Photovoltaic systems are getting integrated into the existing grid, there is a growing need for monitoring of real time generation

data obtained from solar photovoltaic plants so as to optimize the overall performance of the solar power plant and to maintain the grid stability. As local monitoring is not possible for the installer therefore monitoring remotely is essential for every solar power plant. At this juncture harnessing the power of IoT for monitoring solar power plants by using digital technologies and more advanced computational facilities is promising.

Power generation from Solar Photovoltaic plants is variable in nature due to changes in solar irradiance, temperature and other factors. Thus remote monitoring is essential. For developing remote monitoring system for solar photovoltaic power plant, IoT (Internet of Things) approach is taken in this work which actually envisions a near future where everyday objects will be armed with microcontrollers and transceivers for digital communication. The remote monitoring eliminate the hazards associated with the traditional wiring systems and make data

measurement and monitoring process much easier and cost effective and IoT based systems take a giant leap towards monitoring by intelligent decision making from web. The decentralized architecture of the remote monitoring systems and its flexibility of deployment make it most suitable for industrial purposes.

In general remote monitoring systems have to fetch, analyze, transmit, manage and feedback the remote information, by utilizing the most advanced science and technology field of communication technology and other areas. It also merges comprehensive usage of instrumentation, electronic technology and computer software. Prevalent monitoring PV system approaches present poses some problems like low automaticity and poor real-time. These problems can be averted with an efficient remote environment information monitoring and controlling system. This system should include automatic diagnosis techniques the PV station.

Wi-fi technology is also used for remote monitoring and control of Solar panel system for domestic applications. Wi-Fi (IEEE 802.11g) is chosen as it operates at 2.4GHz and offer high data rate of about 54Mbps. But this solution is suitable for microgrid network architecture.

At present, a number of PV monitoring system have been put into operation. These systems often use wireless public networks such as GSM or other wireless communication networks for data transmission. But there are problems of high operation and maintenance cost which restrict the development of monitoring system and ultimately hinder the process of efficient generation monitoring in real time. This has influenced us to investigate a novel remote monitoring and control of PV system based on IoT. The experimental set up includes solar panels,LDR, temperature sensor LM35, voltage sensor, current sensor, WIFI module(ESP8266),arduino uno, interfaces and converters,programming in Arduino IDE

II. LITERATURE SURVEY

This paper[1] introduces IoT gateway based on raspberry Pi, MQTT protocol and SUN communication, and introduces the implementation of IoT based PV monitoring system that monitors PV panel information.

We also introduced a Topic setting method for receiving PV monitoring data in MQTT Client and a log file management function. In the future, we expanded our system to include a database system suitable for the IoT gateway and various analysis tools based on python.

Use of IoT for monitoring of a solar power plant [2]is an important step as day by day renewable energy sources are getting integrated into utility grid. Thus automation and intellectualization of solar power plant monitoring will enhance future decision making process for large scale solar power plant and grid integration of such plants. In this paper we proposed an IoT based remote monitoring system for solar power plant, the approach is studied, implemented and successfully achieved the remote transmission of data to a server for supervision. IoT based remote monitoring will improve energy efficiency of the system by making use of low power consuming advanced wireless modules thereby reducing the carbon foot print. Web Console based interface will significantly reduce time of manual supervision and aid in the process of scheduling task of plant management. A provision of advance remotely manage the Solar PV plants of various operations like remote shutdown, remote management is to be incorporate with this system later The solar PV PCU monitoring using Internet of Things[3] has been experimentally proven to work satisfactorily by monitoring the parameters successfully through the internet. The designed system not only monitors the

parameter of solar PV PCU , but it also manipulate the data and produce the report according to the requirement, for example calculate unit plot and generate total units generated per month. It also stores all the parameters in the cloud in a timely manner. This will help the user to analyse the condition of various parameters in the solar PV PCU. B. Future work Using this system as framework, the system can be expanded to include various other options which could include wireless sensor networks for monitoring environmental condition of the remote place were the solar PV PCU and controlling the solar PV PCU from remote server.

As the conventional sources of electricity generation are depleting, mankind is in need of renewable.

[4] sources such as solar and wind energy to sustain itself. The clean and abundant solar energy is a good alternative as a source of energy with the only problems of cost of harnessing solar energy, and its variable nature. With technological advancements, cost of devices is decreasing with a rapid rate. Hence all we need is a good, up-to-date monitoring system which can perform major tasks automatically without human intervention and can provide data to the user whenever and wherever needed.   To cope up with rapidly changing technology, IOT is the best solution for monitoring of solar installations. IOT based remote monitoring of the Solar PV installation will also save energy and man-labour. Because of the use of IOT in this proposed system, there is a large scope for future work. can add modern devices and sensors without the fear of compatibility. Flexibility of this system is its uniqueness. Adding more sensors, it can measure AC voltage and current output, power consumption of load, solar irradiance and corresponding output of the solar panels and a lot more. Further extremely useful for wireless IOT based monitoring and control to improve conventional solar based electrical vehicle system for converter design and the adoption of suitable Maximum Power Point Tracking (MPPT) techniques.

This paper proposed cloud-based operation and management system for solar system[5]. The functionality such as power generation monitoring, power consumption information and fault diagnosis are possible. The PV generation and consumption information are stored in the data repository and user interfaces are provide for database management. The suggested system make possible to monitor and manage information of the PV generators through the user interfaces. In addition, the content of the offsite database in the distributed cloud data store can be stored in the cloud-based SaaS platform. Furthermore, the fault diagnosis engine analyzes the data at the remote site and provides a service to diagnose operational conditions. The cloud-based solar cell operation management system can bring the market competitiveness of renewable energy and solar power generators and PV generation system owners can have the advantage of being able to effectively operate their facilities.

III. METHODOLOGY

In this method, we would be monitoring various parameters such as light, voltage, current, temperature. Arduino Uno is a microcontroller board based on the atmega328p that is being used in this project the light incident on the solar panel would result in the generation of current and voltage. the sensed voltage and the current along with temperature and light will be monitored by using their appropriate sensors at the web end.

The data from these sensors will be given to the Arduino Uno board. The data sensed from current, voltage, LDR will be given to the analogue input port of the Arduino Uno board and the temperature sensor output will be given to the digital input port. The input power required for Arduino board will be 5v dc and this would be fed by using a dc adapter. the Arduino board is programmed using Arduino software IDE in such a way that it would send the data to the wifi module ESP8266 connected to one of the output

ports. Here the WIFI module acts as a mediator and sends the data to the cloud. The API key is being used inside programming code of Arduino so as to communicate or establish a path between cloud when the API keys at the web end and the controller are same then only data can be sent securely to an authorized user.

Here we have used Thing Speak cloud database in order to store the data, the data is been tabulated inside as the values are eventually received so far. To view the data live from web we will be using Thing Speak GUI by logging in to site. Thus the data can be displayed on the website as well at the same time it can be stored in the database. The stored data can be dissolved completely by the respective user or at the database end.
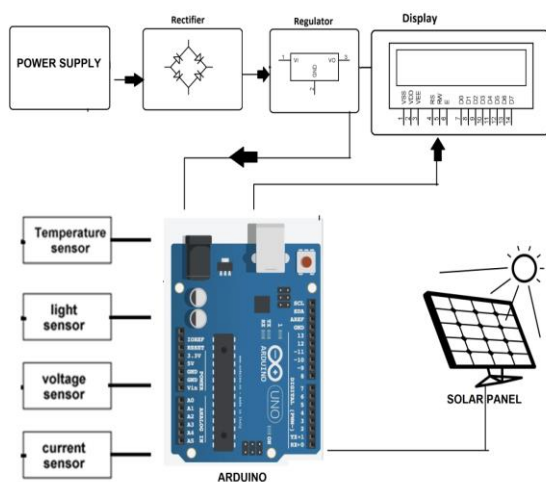
Fig 1. Block diagram

FLOW DIAGRAM
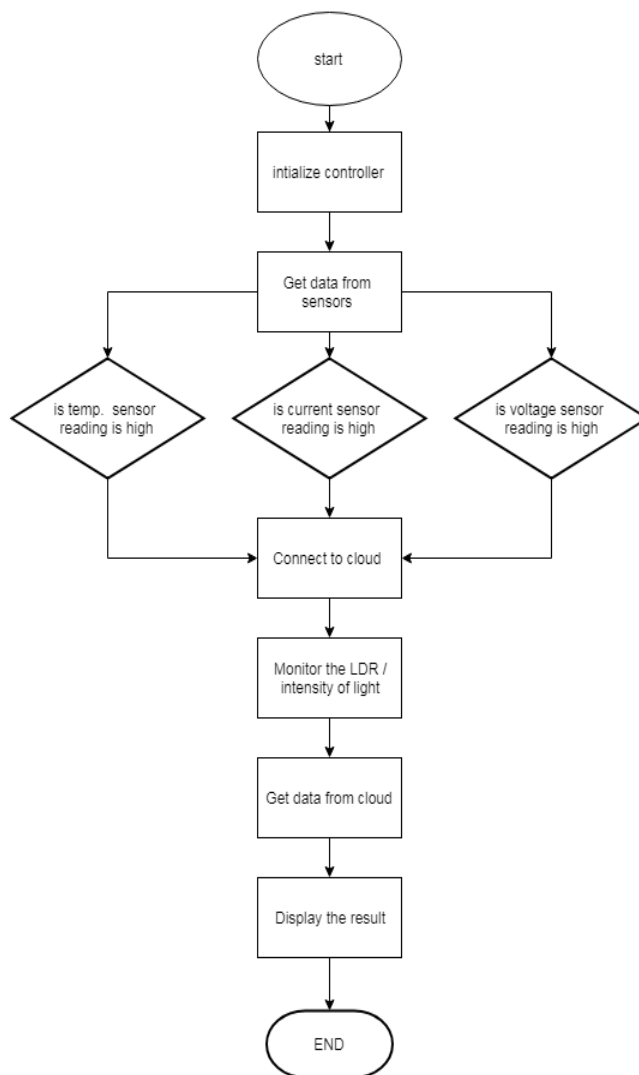
Fig 2. Flow diagram

IV. RESULTS

Following are some real time results observed from our proposed system by taking values of sensors.

Date Time	Voltage	Current	Temperature	LDR74
2019-03-22 10:06:33	4	50	32	77
2019-03-22 10:06:48	4	50	32	75

2019-03-22 10:07:05	4	51	31	75
2019-03-22 10:07:21	4	50	32	75
2019-03-22 10:07:37	4	50	31	74
2019-03-22 10:07:52	4	50	32	72
2019-03-22 10:08:08	4	51	32	76
2019-03-22 10:08:23	4	50	32	75
2019-03-22 10:08:39	4	50	32	75
2019-03-22 10:08:54	4	49	32	70
2019-03-22 10:09:10	4	49	31	73
2019-03-22 10:09:26	4	300	32	75
2019-03-22 10:09:41	4	300	32	73

Table 1 : Results / Thing Speak Data

V. CONCLUSION

The solar power monitoring using Internet of Things has been experimentally proven to work satisfactorily by monitoring the parameters successfully through the internet. The designed system not only monitors the parameter of solar, but it also manipulates the different sensor data and produces the report according to the requirement. It also stores all the parameters in the cloud in a timely manner. This will help the user to analyses the condition of various parameters in the solar power control.

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Navigation Shoes for Visually Impaired

Prof. Suhas Chavan[1], Neha Bhole, Jyoti Kale[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

The real time problems which are faced by blind peoples are really important for the daily routines because of the inability to see the blinds are really getting disturbed so that there is need of the artificial intelligence and the combination of the IOT and the software application so that we are going to change the view of the blind towards the technology. The oldest and traditional mobility aids for persons with visual impairments are the walking cane and guide dogs. In our proposed system we design a shoe that navigates the route from source to destination. Since the system is implemented in shoes we used a battery for power supply. Bluetooth is used to get the location coordinate from mobile phone by using GPS setting from mobile.We need an android app for searching the route destination to source route. Our control unit gives voice signal according to the route coordinates in shoes to alert blind people.

Keywords : IOT, Artificial Intelligance, Arduino Nano.

I. INTRODUCTION

In the Proposed system for Blind, low vision,visual impairment and vision loss have dramatic impacts on individuals experiencing such disabilities. These carry with them physiological, psychological, social, and economic outcomes, hence impacting the quality of life and depriving such individuals from performing many of the Activities of Daily Living (ADL), the most crucial of which is navigation and mobility. Blindness is a qualitative term that describes the clinical condition whereby individuals have no light perception as a result of total vision loss. Blindness also refers to those who have so little vision that they have to rely predominantly on other senses as vision substitution skills. On the other hand, visual impairments is a qualitative term used when the condition of vision loss is characterized by a loss of visual functions at the organ level, such as the loss of visual acuity or the loss of visual field. When we need to drive on Obscure Street or we need to discover our goal for this reason we are utilizing GPS for course following yet it is most certainly not advantageous to utilize GPS amid the driving. So to overcome or to fathom this issue we are accompanying new innovation which will fulfill our trip to following the course. Our venture would spin around thinking of a savvy shoe model that could match with advanced cell utilizing Bluetooth and help to give navigational data through vibration unit set all around shoe. People with visual impairments face unique challenges in the educational environment. Not only must they be able to access text information across all curricular areas, but they also need to be able to participate fully in instruction that is often rich with visual content. Assistive technology is one way of supporting them in that process. "Assistive technology" refers to a range of tools, devices, and strategies that allow a visual

impaired one to accomplish a task that they would otherwise be unable to do, or would have difficulty accomplishing effectively. Assistive technology can be simple or complex. The term "visual impairment" describes a broad range of visual abilities and needs.

Many people suffer from serious visual impairments preventing them from travelling independently. Accordingly, they need to use a wide range of tools and techniques to help them in their mobility. The increasing number of blind persons attracts the development of many assistive devices around the world. Starting from the example of Malaysia, The increasing trend of people with disabilities has been reported by Country Report Malaysia, the 7 th ASEAN and Japan High Level Officials Meeting on Caring Societies in 2009. As stated in the report, in 2008, there were only 30,522 children with disabilities detected. The amount increased to 13.7% in 2009 where 35,368 people with disabilities were registered with the Department of Social Welfare. One in every 179 people is blind. 21% of Indians, across the world, is blind. In India itself, around 8 million people out of around 39 million people are blind. And in a million, 53 thousand people are visually impaired, 46 thousand people have Low Vision and 6800people have complete vision loss i.e. they are blind. And unfortunately, as per the current statistics only 5% of them have access to any kind of assistive technology.

One of the techniques to help the blinds in their mobility is orientation and mobility specialist who helps the visually impaired and blind people and trains them to move on their own independently and safely depending on their other remaining senses. Another method is the guide dogs which are trained specially to help the blind people by navigating around the obstacles to alert the person to change his/her way. However, this method has some limitations such as difficulty to understand the complex directions given by these dogs, and they are only suitable for five years. The cost of these dogs are very expensive, also it is difficult for many of blinds to provide the necessary care for the other living creature.

II. METHODS AND MATERIALS

1. PROBLEM DEFINATION

Blind people face the problem every time for their locomotion.With the rapid advances of modern technology, both in hardware and software front have brought potential to provide intelligent navigation capabilities in smart shoes. In our proposed system we design a shoe that navigates the route from source to destination.

2. MOTIVATION:

We are motivated to help the blind peoples which are having lot of trouble in travelling from one place to other because of the inability to see.

3. EXISTING SYSTEM:

In the existing system there are navigational sticks which are used for the blind people but these are required to keep in hand always so that the people are not user friendly with this. The sticks are longer in length and were not able to fold so that handling is not comfortable so that there was a need for a wearable product based system. Which will overcome the existing problems

4. PROPOSED SYTEM

The scope of this product covers its usage by visually impaired and blind people who cannot find their way without use of an explicit tool or some other persons help. The idea is to use a daily use apparel that is our shoes to guide the user to his/her destination with description of obstacles in his/her path. The product does not deal with guiding about how to avoid the obstacle but it defines a way to notify the user about the presence of that obstacle so that the next step from the user will be taken accordingly with-respect-to the position of the obstacle.

This product is an innovation designed for helping the visually impaired people to be able to navigate without using any external tool other than their smart phones and shoes. It works as an audio guidance system which takes inputs from the sensors attached

to the shoes of the user and gives the output in form of audio instructions. The application designed for the same shall also have an interface with Google Maps in order to have the real time navigation.

This product initiates and performs following major functionalities:

1. For navigation internally call the Google API

2. Voice commands for reading and directing the path from the source to the destination.

3. Detection and categorization of the objects near the user's environment.

4. Intuit the user through voice commands for the existing position of the user and the obstacle which is in its vicinity along with its type.

5. Recognizable hardcoded keys on a smartphone device, such as volume up or volume down key for starting up the application for a visually impaired person. Google maps running in the background as well as on the screen whenever the app gives a call to the Google maps internally.
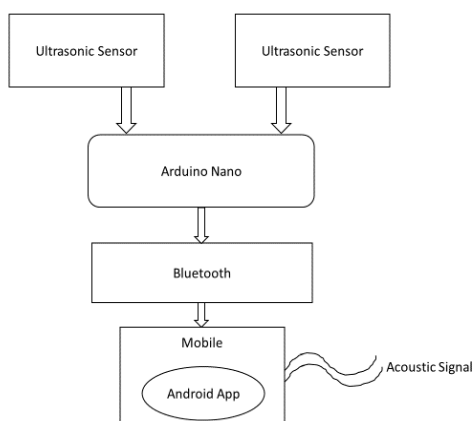
Fig 4.1 : Proposed System Architecture

The sensors send their data to an arduino nano chip mounted at the back of the shoe. This sensed data is then sent to an android smartphone using a Bluetooth module HC05. The specially designed android app that is running on the user's smartphone establishes a connection with this Bluetooth module and sensor data is received by the android device.

This received data is processed at the android system and necessary guidelines are provided to the user through voice commands. This complete processing occurs between the navigation systems running in the background based on users destination input. The voice instructions include the navigation guidelines along with the details of presence of an obstacle in the users path.

The constitution of both the shoes is almost similar with an exception of one of them having a transmitter and another one having a receiver for inter communication between the shoes.

1. **Ultrasonic Sensors:** Role of these components is to detect oncoming obstacles.

2. **Arduio Nano:** It is a microntroller.

3. **Bluetooth:** It is used to connect to the internet

4. **Android Application:** This component aggregates all the incoming data and generates necessary output

5. **Google Maps:** This API is called by the android app to run in the background.

I. LITERATURE SURVEY

Sr no	Paper Name	Author Name	Advantages
1.	Voice Based Navigation System for Blind People	Anushree Harsure Chitra.M	It is light and convenient and it doesn't obstruct any of the client's detects while it is being utilize.

	Using Ultrasonic Sensor.		
2.	Implement ation of Obstacle Detection and Navigation system for Visually Impaired using Smart Shoes	Tejal Chandek ar, Ranavikr ant Chouhan , Rajaniga ndha Gaikwad, Hrushike sh Gosavi, Prof.S.A. Darade	The design is aimed to develop an easy to use Android application to cater to the special needs.
3.	Design and Evaluation of Vibrating Footwear for Navigation Assistance to Visually Impaired People	Qianli Xu, Tian Gan, Shue Ching Chia, Liyuan Li, Joo-Hwee Lim, Phyoe Kyaw Kyaw	The system has great potential to provide smart and sensible navigation guidance to visually impaired people especially when integrated with visual processing units.

II. OTHER SPECIFICATIONS

1. ADVANTAGE:

i. Blind person's location can be tracked.

ii. Detect obstacles and alerts the blind person through speech output.

iii.The system enables the blind person to move with the same ease and confidence as sighted   people.

iv. Comfortable and easy to use

2. APPLICATIONS:

i. Blind People

ii. Trackers

iii.Tourists

iv. Personal use

III. RESULT

IV. CONCLUSION

The proposed system will automate according to the real time pathways and the obstacles coming in between. Obstacles will be processed by the given algorithm programmed into Arduino as well as the communication will be initiated as per the Android interfacing Algorithm. The sensors will sense the obstacle and will give out the values, thus measuring the distance of the obstacle from the sensors. Depending on the values given by the sensors the arduino will process the values for simplicity and through interfacing device will be passed to the Android smart phone. Once the values are received, with the text-to-speech algorithm, user would be able to hear the distance from the current position. However, this process works with no internet connection for better usability of the user. For navigation purposes an API is used to run a Google maps application in the background at the same time when the shoes detect the obstacles.

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Implementing WSN - Garbage Collector by Speed Synchronization of Multiple Motors

Prof. R. M. Thadi[1], Mayur S. Chaudhari[2], Rajat A. Jawale[2], Aniket S. Pawar[2]

[1]HOD, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

The paper emphasizes on design and fabrication details of the river waste cleaning machine. The work has done looking at the current situation of our national rivers which are dumped with crore litres of sewage and loaded with pollutants, toxic materials, debris etc. Speed control of motor is very important especially in the fields including industrial applications, robotics, textile mills, etc. Among all these method master-slave synchronization is a widely used technique. Replacing the traditional mechanism, Multi-motor applications have become effective and efficient field in industrial applications. The synchronization is done by using Arduino Uno which controls the master slave whose speed is followed by the other motors which all have to be synchronized. For PWM generation Arduino Uno is used. The ADC is available in Arduino Uno which creates feedback loop. This ADC checks the voltage level of the motor and accordingly the voltage level of the motor can be maintained at a fixed level. A driver circuit is used to drive the motor. Hence, a closed loop motor speed control circuit is designed and the total amount of power delivered to the motor is varied depending on load conditions. In this technique, the regulation of motor's speed is achieved by changing the voltage of the motor which is adjusted by the duty cycle of PWM.

Keywords : Arduino Uno, PWM Technique, Driver Circuit, Speed Synchronization.

I. INTRODUCTION

In India, the major environmental issue is Water pollution. The untreated sewage is the major source for the Water pollution in India. Agricultural runoff of an unregulated small scale industry is the main other source of the Water pollution. In India, most of the lakes, rivers and surface water are polluted. The polluted items are sometimes illegally dumped into a water body or wet land, also along the riverbanks or lakeshores in both the rural and urban areas. due to improper design, poor maintenance or lack of reliable electricity supply required to operate the plants, together with employees and poor management, majority of the government-owned sewage treatment plants remain closed. In these areas the waste generated water is normally percolated in the soil or is evaporated. The waste remained uncollected accumulates which leads to the unhygienic conditions and thus the pollutants are released that leach into surface and ground water. In India out of 3,119 towns and cities, just 209 have partial sewage treatment facilities, and only 8 have full wastewater treatment facilities has been reported by World Health Organization in 1992.

The untreated water which pollutes the river water is used for daily purposes as drinking, washing and bathing. A report in 1995 stated that, the untreated
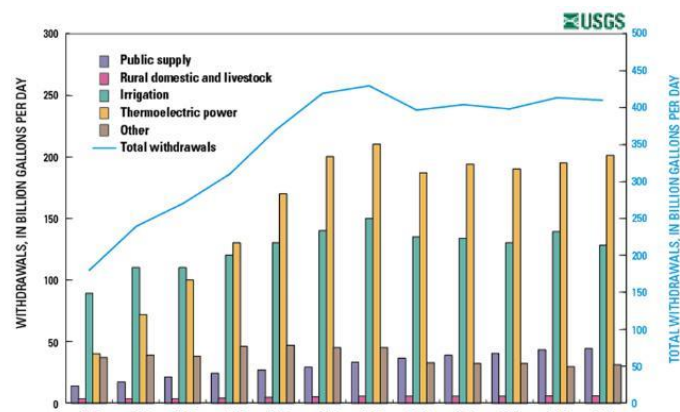

Figure 1.1: Survey in India

Sewage and partially cremated bodies were directly dumped into the Ganges River, by the 114 cities. The main source of surface water pollution is the defecation caused due to the lack of toilets and the sanitation facilities in rural and urban pill areas of India. By taking this into consideration, this machine has designed to clean river water surface. This paper emphasizes on the design and fabrication details of the river waste cleaning machine. The work looks at the current situation of our national rivers which are dumped with corer liters of sewage and loaded with pollutants, toxic materials, debris etc. In the last few years has made it possible to apply modern control technology to control efficient and reliable operation of many applications such as the paper mills, cruise, electric vehicles, textile mills, Floor mills and robotics. Many of these operations, including electric motors and therefore there is a need for feasible, effective control strategies with digital control of these motors. The garbage collector involves synchronized speed motors. For example, to avoid the damage the speed of spindle waving and the wrapping of clothes should be synchronized and similarly, in some cases the speed of long conveyor belt driven by multiple motors is need to be constant.

II. LITERATURE SURVEY

In industrial applications by replacing the traditional mechanical systems, the Multi-motor applications have become very attractive. The speed where is to be matched during acceleration, movements and changes in load requires "truly" speed and angle to be synchronized within at least two eyes the multi-motor synchronization is used. Practical results in a two 1.5 kW induction machine test ring are presented, showing the advantages and limitation of those techniques during different load conditions. [1]The work reported in this paper makes use of a V/Hz motor control scheme, but conclusions drawn can be applied to any motor control technique. Parallel research is ongoing; results are reported in future publications.

To design and make a rotor robot model as an automatic garbage collector to check the presence and amount of the garbage which accumulates the river and also with no effective and efficient flow.[2] The test results obtain data by specification of AGATOR includes IC ATMega16 with 5 Volt voltage and 1,1 m Ampere current, IC Driver with 12 Volt voltage and 1,2 Ampere current, and Limit switch as the controller. Supported devices of the robot are mechanical robot, robot control system, sensor system, and actuator robot. The maximum load drives the garbage receptacle until 5 kg. The average speed of the robot when take out the garbage is 0.26 m/s.

The conveyor belt included in this application and driven by the multiple motors gets the energy by the speed synchronization done. Sudden changes in load cause hunting and oscillatory behavior in DC machine. The process can be harmed by such behavior. There are so many methods which are used for controlling the DC machines.[3]All the other motors to be synchronized follows the speed of master slave, which is controlled by the microcontroller chip and thus, the synchronization is done.

RF (radio frequency) is used to wirelessly control a DC Motor by the microcontroller control unit which includes its design and implementation. For the development of industrial power transmission systems the DC Motors[4] has played a vital role The improved advance wireless technology has encouraged the use in many different fields, such as military drones, surveillance systems . The successful design and implementation of the Wireless DC Motor control will enable the wireless supervision of robots and machines that utilize DC.

Figure 3.1: Block Diagram of Speed Synchronization of Multiple Motors

III. METHODOLOGY

Proposed work in this project is based on synchronization between the two motors. The synchronization is done by using microcontroller. Master controller will set the required speed and it will communicate with two slaves. Speed sensing is done by proximity detector or magnetic sensors and speed controlling is done by using either SCR control or IGBT. There will be separate control for each. he main principle of the control is the speed of master and slaves are measured and compared in such a way to get speed synchronization of multiple motors. A new Master-Slave configuration is developed. This paper discusses the working where a continuously variable speed operation is provided for the multiple motors by using a single low cost PIC controller. These controllers developed variable speed drives with minimum external hardware, thus increasing the reliability. Synchronization error is reduced by master-slave technique. For the industrial applications DC drives have been a backbone due to the features as their simplicity, ease of application, reliability and cost. For more horse power ratings the DC drives are normally less expensive also are less complex with a single power conversion from AC to DC.

The great advances of microcontroller based control system are due to microcontroller flexibility and different abilities. This is because all the control strategies can be implemented in the software. The PWM duty cycle is generated using a timer of microcontroller by varying pulses of input voltage for the on and off duration which causes the PWM voltage control with high accuracy. Good dynamic speed and load disturbance applied to the master will get load regulating response of the drive system and also reflected and followed by the slaves, but disturbances the high performance of motor drive is an important caused in any of the slaves will not affect or thrown for the industrial application. DC drives have back to the master, nor any other slave. This reliability, ease of application, simplicity and less cost configuration is used in industrial applications when because of all these it becomes the backbone of synchronization in speed or position is not a man, industrial applications. In order to enhance the because during load impacts, synchronization between performance of motor, motor speed regulation and to axes cannot be guaranteed. Reduce the steady-state error of the rotational speed of motor, a high-performance PIC microcontroller is used for implementation. The main principle of the control is the speed of master and slaves are measured and compared in such a way to get speed synchronization of multiple motors. The machine includes the conveyor belt that collects the waste; it is stored and travels to get discharged to the dumping ground. The

machine is made such as when the wheel rotates and the garbage gets collected at the storage and water gets flow away and the conveyor belt passes the garbage to get discharged.

A. Synchronization of Motor

Proposed work in this project is based on synchronization between the two motors. The synchronization is done by using PIC. Master controller will set the required speed and it will communicate with the two slaves. Speed control is done using PWM technique. There will be separate control for each. A UART is usually an individual integrated circuit used for serial communication over a computer or peripheral device serial port. In microcontrollers UART are commonly included. The individual bits in a sequential manner and also the bytes of data are taken by the UART and are transmitted. At the destination second UART reassemble the bits into complete bytes. Each UART contain a shift register which is the fundamental method of conversion.
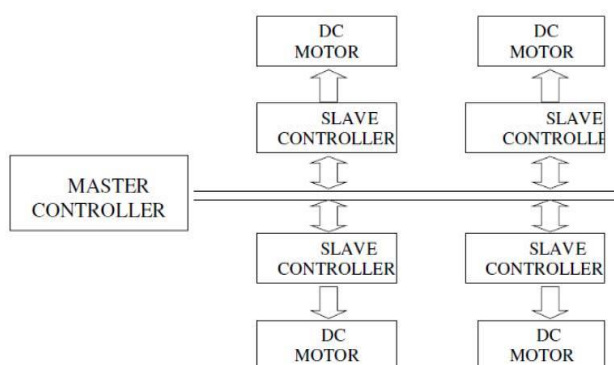
Figure3.2 : Block Diagram of Synchronized Motor Control

B. Master-slave

Master-slave configuration of a two motor system is shown in Fig. The slave takes the output of the master as the speed reference. The main motive here is that
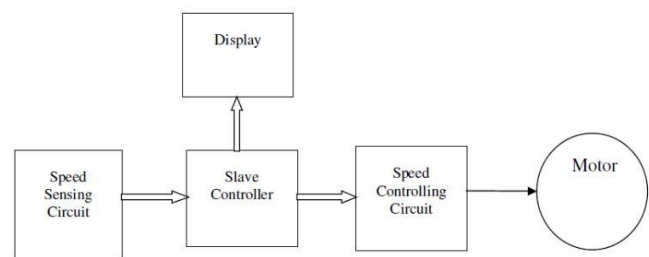
Figure 3.3: Block Diagram of Slave System
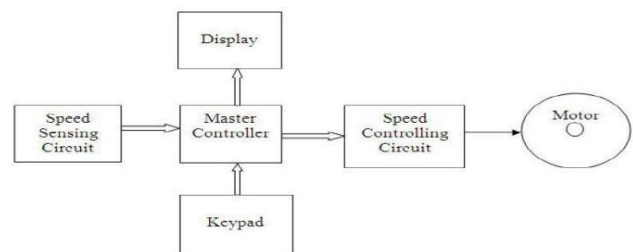
Figure 3.4: Block Diagram of Master System

C. PWM based automatic closed loop speedcontrol of dc motor

Many industries like textile industries, automation industries, paper mills, etc. Conveyer belts are often used. These conveyer belts are used to transfer the raw material or the produced material from one place to another. For a feasible operation, the conveyer belt must run at the exact speed at all locations. This means motors should run at a synchronized speed. This project demonstrates a prototype to achieve synchronization of multiple motors such that the motors can run exactly at the same speed, as desired by the user. The speed is set for the master motor at the desired rate. Here an RF communication method is used to transmit this speed to the other slave motors, so that those motors can run at the same speed. For each motor, a speed sensing unit is attached to sense the speed. The speed controls of the motors are achieved by each microcontroller connected to a MOSFET.

For the controlling of the speed of a DC motor, PWM has proved an entirely unique approach. The motor in square wave of constant voltage, but varying pulse-width or duty cycle the power is been applied. Duty cycle refers to the percentage of one cycle during

which duty cycle of a continuous train of pulses. The duty cycle of PWM is determined by the pulse width since the frequency is held constant while the on-off time is varied. The figure shows the change of the duty cycle of the PWM microcontroller. The microcontroller having a 25% duty cycle, then it provides a ¼ of power to the motor, when microcontroller having a 50% duty cycle, then microcontroller provide a ½ of power to the motor, when microcontroller having a 75% duty cycle then microcontroller.

D. UART communication

Universal Asynchronous Receiver Transmitter (UART) is a communication protocol, which is mainly used for serial communication. In full duplex asynchronous UART mode, there is no need for clock synchronization between two devices. In this paper, we are analyzing and presenting the results of serially transmitting messages between two PIC16F877A Microcontrollers using the UART protocol in the full duplex model. Depending upon the type of application used, the data communication between devices via several protocols have its own advantages and disadvantages based on parallel or serial modems, wired or wireless, speed or latency. Serial transmission between devices was the easiest lower cost profile comparatively with parallel mode used.

A large number of traditional peripheral communications in the early controllers and computing devices was done serially, which required only two pins for transmitting and receiving. The UART can be interfaced with Serial Peripheral Interface (SPI) for communication with the slave devices from the peripherals, which yielded optimum power constraints when used with System on Chip (SOC).

IV. FLOWCHART
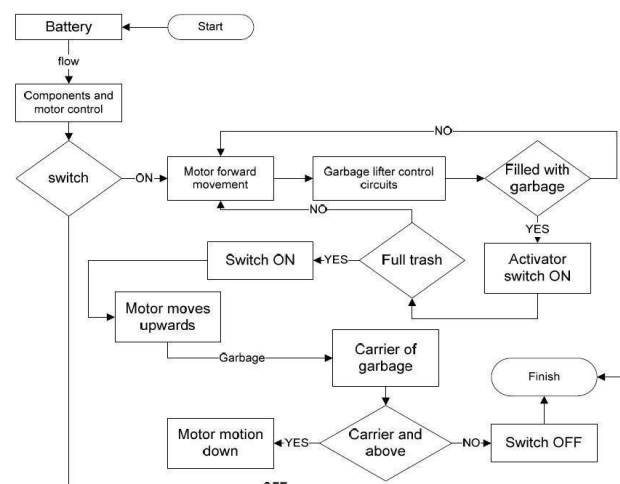
Figure 4.1: Flowchart of the system

V. FUTURE WORK

For the application of Garbage Collector, a wheel is required for the garbage collection. It will be made by any material or by metal. Also an conveyor belt will be made by the synchronization of multiple motors. The system is to be implement wireless using IOT; we can control the communication between sensors and microcontroller.

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Electronic Voting Machine Using Aadhar Card

Prof. J. R Shaikh[1], Piyush Kumar[2], Anurag Kumar[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra,
India

[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Electronic Voting Machine (EVM) is a simple electronic device used to record votes in place of ballot papers and boxes which were used earlier in conventional voting system. Fundamental right to vote or simply voting in elections forms the basis of democracy. All earlier elections be it state elections or centre elections a voter used to cast his/her favourite candidate by putting the stamp against his/her name and then folding the ballot paper as per a prescribed method before putting it in the Ballot Box. This is a long, time-consuming process and very much prone to errors. This situation continued till election scene was completely changed by electronic voting machine. No more ballot paper, ballot boxes, stamping, etc. all this condensed into a simple box called ballot unit of the electronic voting machine. Because biometric identifiers cannot be easily misplaced, forged, or shared, they are considered more reliable for person recognition than traditional token or knowledge-based methods. So the Electronic voting system has to be improved based on the current technologies viz., biometric system. This article discusses complete review about voting devices, Issues and comparison among the voting methods and biometric EVM. The problem of voting still critical in terms of safety and security.
This project deals with the design and development of a web-based voting system using database computing and Aadhar card in order to provide a high performance with high security to the voting system. This EVM which is based on Aadhar card verification, which is more secure than the normal EVM.

Keywords : Finger Print Module , Arduino , Keypad , LCD Display , Buzzer.

I. INTRODUCTION

After getting the freedom from British government, Indian Government provide a right to Indian people to elect their leader. India having the largest democracy in the world. So, to achieve the transparency in voting system is challenging task of election commission. The objective of voting is to allow voters to choose their government and political representatives. The election is the basic process of democracy in which people show their opinions by selecting their candidates. India is spending huge money to improve our voting system to provide a better government to citizens. The voting system should be honest, translucent and fully secure for the better democracy. The current system is used to less transparency because there could be chance of rigging at voting time. The security of the voting process, authentication of voters, protecting the voted data these are the important factors of current election system. Therefore it is necessary to generate a secure voting system.

Electronic Voting Systems: There have been several studies on using computer technologies to improve elections . These studies caution against the risks of moving too quickly to adopt electronic voting machines because of the software engineering

challenges, insider threats, network vulnerabilities, and the challenges of auditing. Electronic voting machine is a simple machine that can be operated easily by both the polling personnel and the voters. Being a standalone machine without any network connectivity, nobody can interfere with its programming and manipulate the result. Keeping the erratic power supply position in many places in the country, the machines have been made to run on batteries. It has mainly two units: Control unit and Ballot unit. The Control Unit is the main unit which stores all data and controls the functioning of EVM. The program which controls the functioning of the control unit is burnt into a micro chip on a "one time programmable basis". Once burnt it cannot be read, copied out or altered. The EVMs use dynamic coding to enhance security of data transmitted from ballot unit to control unit.

Although there has been cryptographic research on electronic voting , and there are new approaches such as currently the most viable solution for securing electronic voting machines is to introduce a "voter-verifiable audit trail" . A verifiable audit trail does not, by itself, address voter privacy concerns, ballot stuffing, or numerous other attacks on elections. Some vendors have claimed "security through obscurity" as a defence, despite the security community's universally held belief in the inadequacy of obscurity to provide meaningful protection.

Electronic voting: It is also known as **e-voting** is a term encompassing several different types of voting, embracing both electronic means of casting a vote and electronic means of counting votes. Electronic voting technology can include punched cards, optical scan voting systems and specialized voting kiosks (including self-contained direct-recording electronic voting systems, or DRE). It can also involve transmission of ballots and votes via telephones, private computer networks, or the Internet. And, of course, EVM helps maintain total voting secrecy without the use of ballot papers. And, at the end of the polling, just press a button and there you have the results.

India's experience in e voting: India is the world's largest democracy with a population of more than one billion. India has an electorate of more than 668 million and covers 543 parliamentary constituencies. Voting is the bridge between the governed and government. In previous manual elections in India, a nationwide ballot could consume around 8,000 tons of paper and 400,000 phials of indelible ink and require some 2.5 million strongboxes to store them under heavy security until the votes were counted. In the past, it took up to three or four days to count the votes, with hired personnel spending day and night in secured areas manually counting each ballot. Sometimes demanding for recounting resulting for the low margin of difference of votes between the top two candidates coupled with large number of invalid and doubtful votes. The electronic voting machines are intended both to reduce errors and to speed the counting process. The country developed its electronic voting machines (EVM) through an indigenous technology. It was designed by Bharat Electronic Ltd, and the Electronics Corporation of India Ltd, with the microchip imported from Japan. The country developed over one million EVM s for its 668 million voters. It would have cost them a great deal of money. The machine was able to Cater for 64 candidates per election, in pages of 16 candidates each. The technology was able to solve a lot of problems associated with the traditional voting system. However, before its adoption there were pilot schemes in five states to familiarize the voters with the technology.

PROPERTIES OF EVM: Researchers in the electronic voting field have already reached a consensus pack of following core properties that an electronic voting system should have :

Accuracy: It is not possible for a vote to be altered, it is not possible for a validated vote to be eliminated from the final tally, and it is not possible for an invalid vote to be counted in the final tally.

Democracy: It permits only eligible voters to vote and, it ensures that eligible voters vote only once.

Privacy: Neither authorities nor anyone else can link any ballot to the voter who cast it and no voter can prove that he voted in a particular way.

Verifiability: anyone can independently verify that all votes have been counted correctly.

Availability: The system works properly as long as the poll stands and any voter can have access to it from the beginning to the end of the poll.

Resume Ability: the system allows any voter who had interrupted his/her voting process to resume it or restart it while the poll stands.

II. METHODS AND MATERIAL

A. Biometric finger print

Fingerprint biometric is one of the efficient, secure, cost effective, ease to use technology for user authentication. It is based on ultrasonic sensors which avoids fake authentication

Fig:1 Biometric sensor

B. LCD 16*2

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LED.

A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data.
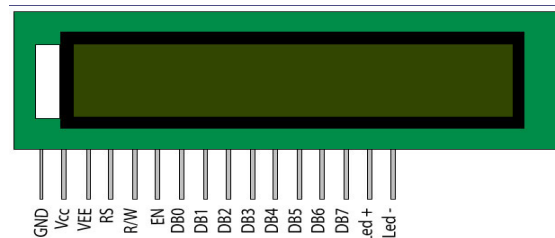
Fig 2.16*2 LCD displayMax232The MAX232 is an integrated circuit first created in 1987 by Maxim Integrated Products that converts signals from a TIA-232(RS-232) serial port to signals suitable for use in TTL-compatible digital logic circuits. The MAX232 is a dual transmitter / dual receiver that typically is used to convert the RX, TX, CTS, RTS signals.

C. Security Alarm

A Security alarm is a system designed to detect intrusion – unauthorized entry – into a building or other area. Security alarms are used in residential, commercial, industrial, and military properties for protection against burglary (theft) or property damage, as well as personal protection against intruders.

D. Keypad

A Matrix keypad is the kind of keypad you see on microwave ovens, gas pumps, and calculators. A matrix keypad you can connect to a breadboard is also great for prototypes and inventions where things like codes, times, or other values have to be entered.

Fig : 3. 'Keypad

E. Arduino

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

Fig : 4 Arduino Uno

III. RESULTS AND DISCUSSION

A . Project overview
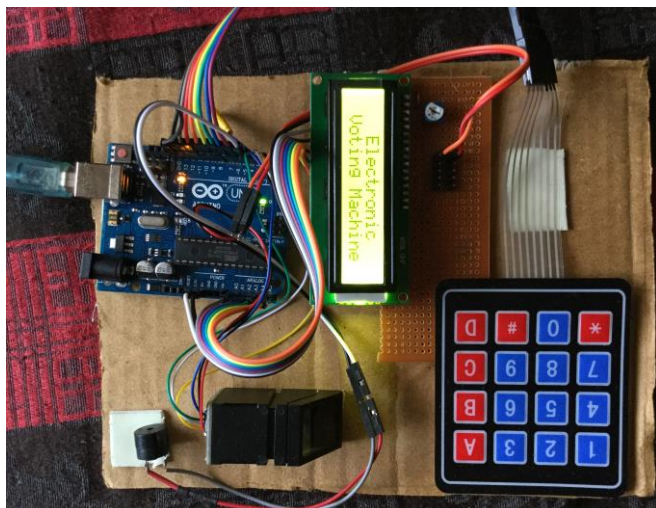
B.Flowchart
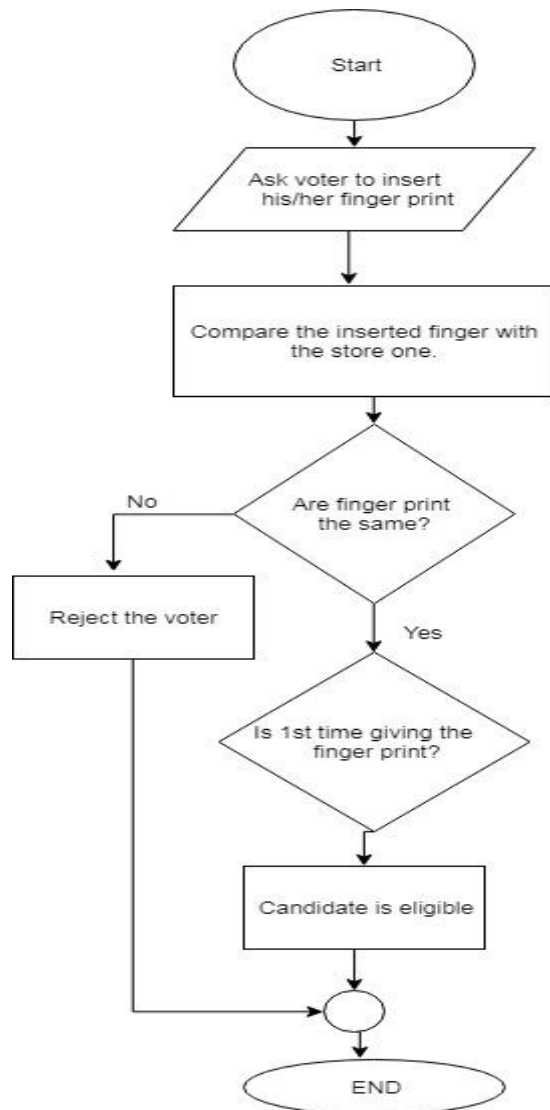
C. Working

step 1 - First of all ask the user to place his/her finger at the biometric module.

Sr no. 1	Storing fingerprint	Adding voter-3 Stored id no- 3

step 2 - Secondly, the sample collected in previous step is taken and compared with one which is already present in the database.

1	Unknown voter detected	Unknown voter detected

2	Vote already stored	Your Vote already stored

step 3 – At this stage, decision is to be taken based upon the above-mentioned comparison. Now if the finger print sample is already available in the database then that particular person is not eligible for the voting or else he/she is eligible.

1	Vote is given	Thank You for voting
2	Result of voting	C1:2 C2:0 C3:0 C1 Wins

IV. CONCLUSION

This review discussed introduction about EVM and its variation, Issues of EVM, Taxonomy, and Biometric based EVM. Our efforts to understand electronic voting systems leave us optimistic, but concerned. This paper suggest that the EVM system has to be further studied and innovated to reach all level of community, so that the voter confidence will increase and election officials will make more involvement in purchasing the innovated EVM's for conduct smooth, secure, tamper- resistant Elections.

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Blood Bank Management System

Prof. Priyanka Halle[1], Smita Pakhare[2], Pratiksha Funde[3]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Help Line is a voluntary and non-governmental organization. It maintains online library of blood donors in India. Sometimes Doctors and Blood bank project have to face the difficulty in finding the blood group Donors at right time. Help Line has attempted to provide the answer by taking upon itself the task of collecting Blood bank project nationwide for the cause and care of people in need. At any point of time the people who are in need can reach the donors through our search facility. By mobilizing people and organization who desire to make a difference in the lives of people in need. On the basis of humanity, everyone is welcome to register as a blood donor. Blood Bank Management System (BBMS) is a browser based system that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank. This project aims at maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a better way. Aim is to provide transparency in this field, make the process of obtaining blood from a blood bank hassle free and corruption free and make the system of blood bank management effective.

Keywords : Hidden web crawler, query optimization, search engines, metadata, document frequency, term eights

I. INTRODUCTION

The BLOOD BANK MANAGEMENT SYSTEM is great project. This project is designed for successful completion of project on blood bank management system. the basic building aim is to provide blood donation service to the city recently. Blood Bank Management System (BBMS) is a browser based system that is designed to store, process, retrieve and analyze information concerned with the administrative and inventory management within a blood bank. This project aims at maintaining all the information pertaining to blood donors, different blood groups available in each blood bank and help them manage in a better way. Aim is to provide transparency in this field, make the process of obtaining blood from a blood bank hassle free and corruption free and make the system of blood bank management effective.

The Blood bank system project report contain information related to blood like
 Blood type Date of Donation of blood
Validity of Blood's Available Blood group.

Need of Blood Bank Management System:

Bank blood donation system in java is planned to collect blood from many donators in short from various sources and distribute that blood to needy people who require blood. To do all this we require

high quality software to manage those jobs. The government spending lot of money to develop high quality "Blood Bank management system project". For do all those kinds of need blood bank management system project in java contain modules which are include the detail of following areas:

 Blood Donor
 Blood Recipient
 Blood collection
 Stock details
 blood bank system project Reports
 Blood issued
 Blood bank system project

One has to download the application. After downloading the application one has to register as a donor if want donate the blood.For registration some basic details like Name, address, contact, date of birth, blood group, email id etc are needed. If already register, then he/she has to login. The user can also request for required blood by giving any small description. This request is submitted to admin who accepts or rejects the request. Accepted request is published by admin.

a) **Admin:** Admin is the person who monitors the information related to donor and acceptor. Administrator can change password, Maintain donor details. Maintain acceptor details, Update donor details, etc.

b) **Donor:** Each new Donor has to register himself. For unique identification of the donor user id and password are provided after registration. Each Donor has to fill all the basic details like name, date of birth, address, gender.

c) **Acceptor:** Acceptor is the person who needs blood for someone related with him. He can make the request for the blood through application and website according to their blood group and requirement.

d) **System Database:** It stores all necessary and important information related to donor, acceptor .There will be an option for updating the information related to users which helps in tracking and managing information.

e) **Blood Donation App:** An android application created for making request for blood by checking the availability of the blood in different blood banks and for donating blood. It is also usedfor searching the nearby banks and hospital.

II. PROPOSED SYSTEM
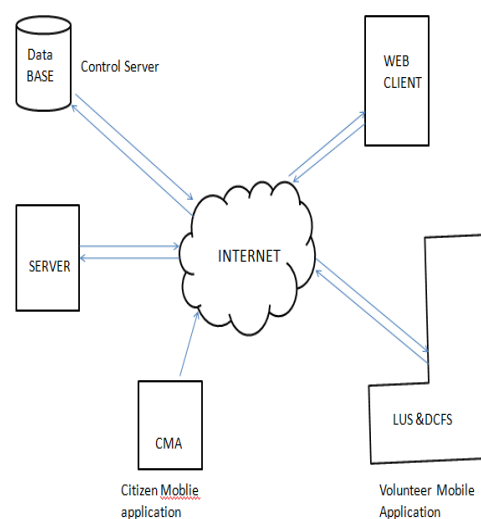
Fig 1. Architecture of blood bank system

III. LITERATURE SURVEY

Sr.No.	Paper	Author's	Technology used	Advantages	Disadvantages
1.	Is to fulfil every blood request in the country with promising android app.	L Bala Senthil Murugan,Anitha Julian.2018[ICCP CT-2018]	Raspberry Pi Kit	The system can be use to view all doner details accordingly select right doner.	Continous power supply needed.

2.	A blood bank database is created by collection of details from various NGO'S ,Hospital,NSS through web interface.	Jamalour Mohanlal,Mudra Kolla Krishna[ISSN NO:2348-4845]	ARM7 LPC2148	The android mobile user will be able make quick decision in selecting adoner.	The android mobile user will not be able to insert or view details if the server goes down.
3.	To reduce the time getting the blood from doner to recipient	J.Aswin Rupsanth,Dr.P.Marikannu ol.3,Issue 1,pp:[January-April 2017.	AURDINO KIT	System has login page which allow only registered user to login thereby preventing unauthorized..	Transportation is needed.

IV. CONCLUSION

We have proposed an efficient and reliable android application for blood bank. When there is urgent need for blood, it may not be possible for people to communicate with the each and every hospital and blood bank. For that the application can fulfill their requirements in short time span so that it can overcome the death rate. Thus the proposed system can help everyone who is need of blood anytime and anywhere. This system not only used for the blood bank automation system but also used for organ donation system. This system is very helpful for the smart city and smart nation purpose.

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Smart City Waste Management System for Swacha Bharat Under Digital India

Prof. Sarang Patil[1], Avinash Autade[2], Rutuja Patil[2], Vishal Waman[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India
[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

With rapid increase in population, the issues related to sanitation with respect to garbage management are degrading immensely. It creates unhygienic conditions for the citizens in the nearby surrounding, leading to the spread of infectious diseases and illness. To avoid this problem, IoT based "Smart Waste Management" is the best and trending solution. In the proposed system, public dustbins will be provided with embedded device which helps in real time monitoring of level of garbage in garbage bins. The data regarding the garbage levels will be used to provide optimized route for garbage collecting truck, which will reduce cost associated with fuel. The load sensors will increase efficiency of data related to garbage level. The analysis of ceaseless data gathered will help municipality and government authorities to improve plans related to smart waste management with the help of various system generated reports. Our system mainly focuses on the time to time cleaning process, reduction of costs for sorting waste.

Keywords : IOT, RFID, Smart Dustbin, Swach Bharat.

I. INTRODUCTION

Worldwide interest in Smart Cities has aggrandized, fostered by the need to find effective remedies to the major challenges foreseen for the next years. As one of the application of Smart City, Waste Management in a city is a formidable challenge faced by the public administrations. Waste is defined as any material in which something valuable is not being used or is not usable and represents no economic value to its owner, the waste generator. Depending on the physical state of the waste, they are categorized as solid waste and wet waste. With the proliferation of population, the scenario of cleanliness with respect to waste management has become crucial. Waste management includes planning, collection, transport, treatment, recycle and disposal of waste together with

monitoring and regulation. The existing waste management system, where the garbage is collected from the streets, houses and other establishments on quotidian basis, is not able to effectively manage the waste generated. Giraud village in Raipur district, the capital of Chhattisgarh have deployed garbage bins at every street to collect the garbage, engaged its laborers and vehicles to clear the trash. The amount of total solid waste generated by the village is 558 kg per day and liquid waste is 108040 liter per day, the garbage is collected daily and dumped into landfills. In case a villager observes illegal dumping of any kind of waste, he/she can complain regarding this to the concerned department. As improper disposal of waste causes serious impact on health, causing the spread of diseases and problems to the surrounding environment, the complete care is taken by the

government for collecting and disposal of waste. In this paper, a model has been proposed for real-time monitoring the garbage level of respective garbage bins and to detect the level when threshold value is reached using combination of Sensors and Controller. This data will be sent to the control unit and updated timely with the help of Wi-Fi- module, depending on which optimized route have to be found for Garbage Collecting Truck (GCT), depriving the fuel consumption, cost, time and labour. Using data mining, qualitative analysis will be carried out to generate reports. The main objective of this system to be implemented is to supersede the tedious existing system which will aid city to become a Smart City.

II. PROBLEM STATEMENT

In recent times, huge amount of money is spent worldwide on waste Management. Bin at public places gets overflowed before next cleaning process. This, leads to various hazards such as bad odour, various diseases, Untidy surroundings, etc. To tackle this problem, we have proposed the Smart dustbins which will notify the main server about the status of the dustbin after precised interval of time.

III. LITERATURE SURVEY

The paper [1] briefed that, waste management from its inception to its disposal is one of the important challenges for the municipal corporations in all over the world. Dust bins placed across cities set at open places are flooding because of increment in the waste each day and making unhygienic condition for the citizens, to maintain a strategic distance from such a circumstance we have proposed wireless solid waste management system for smart cities which allows municipal corporations to monitor status of dustbins remotely over web server and keep cities clean very efficiently by optimizing cost and time required for it. As soon as dustbin has reached its maximum level, waste management department gets alert via web application of dustbin so department can send waste

collector vehicle to respective location to collect garbage. The objective of the project is to enhance practicality of IoT based solid waste collection and management system for smart city.

In paper [2] it was revealed that Emerging Technologies of IoT are transforming slowly with Cities administration. As cities will generate waste at an alarming rate which needs collection of waste in smarter way, this collection of waste must be within time and trip planning should be done in real time, based on the status of waste. Earlier efforts were on collection of waste with smart bins but garbage collection to their places and plan trip in an optimal path is not much considered. In this paper, proposed IoT technologies with management of waste and trip management in cities is done, so that cost and time are reduced with optimized path for waste collection. Thus, proposed effective results for same.

As per paper [3] to make the cities greener, safer, and more efficient, Internet of Things (IoT) can play an important role. Improvement in safety and quality of life can be achieved by connecting devices, vehicles and infrastructure all around in a city. Best technological solutions can be achieved in smart cities by making different stakeholders to work together. System integrators, network operators and technology providers have a role to play in working with governments to enable smart solutions. But, building such solutions on an open, standard based communications platform that can be continuously used is a challenge. We present a waste collection management solution based on providing intelligence to waste bins, using an IoT prototype with sensors. It can read, collect, and transmit huge volume of data over the Internet. Such data, when put into a spatiotemporal context and processed by intelligent and optimized algorithms, can be used to dynamically manage waste collection mechanism. Simulations for several cases are carried out to investigate the benefits of such system over a traditional system. We try to replicate the scenario using Open Data from the city of Pune, India stressing on the opportunities created by this type of initiatives for several parties to

innovate and contribute to the development of Smart waste management solutions.

In paper [4] at present solid waste management is a major concern in the metropolitan cities of the developing and developed countries. As the population is growing, the garbage is also increasing. This huge unmanaged accumulation of garbage is polluting the environment, spoiling the beauty of the area and also leading to the health hazard. In this era of Internet, IOT (Internet of Things) can be used effectively to manage this solid waste. In this paper, we have discussed the definition of Internet of Things and its elements, testing and prototyping tools simulator and finally the study of various literatures available on smart waste management system using IOT.

IV. LITERATURE SURVEY

Sr. No.	Title	Author	Merits	Demerits
1	"IoT based solid waste management system for smart city"	Krishna Nirde	Improved practicality of solid waste management Automatic dustbin status monitoring.	Optimizations power is a challenge only efficient for solid waste.
2	"Iot based waste management: An application to smart city"	Prof B.S.Malapur	GSM/GPRS is used for sending message.	Bin positioning using history from database is not achieved
3	"Smart waste management using internet-of-things(IoT)"	Gopal Krishna Shyam	Level of waste can be measured.	Wet and Dry waste is not separated.
4	"Smart waste management using internet of things: A survey"	Pallavi K .N	Tracks the bin Monitor on stolen/missing bin.	Requires more power Costly.

V. METHODOLOGY

In our system two different slots will be made available using web application or android application in phones. One slot for user and another for driver of garbage collection vehicle. At the public bin the user will scan the RFID tag card of itself to the RFID reader placed on the dustbin. After that only the scanned card user will have access to dispose the garbage, as only after scanning the card the lid of the bin will be opened and closed after a specific interval of time. User will have the choice for the dustbin access for the wet waste and for the dry waste. On scanning card, dry garbage slot will be opened for a certain interval of time and next for the wet garbage for another interval. The data of the system will be stored on the database. Another sensor mechanism will notify the nearby truck driver when the bin will reach up to precised level marked. The directions for collecting the garbage will be given to the driver using GPS(Maps). Also the status of the dustbins, nearby, will be analysed. This will reduce the rounds of the truck driver for collecting garbage and also will save the fuel. The application of the system will be the combination of sensor and the controller.

The controller will be used for the synchronization of the controlling unit and application unit. The power required for the sensors can be supplied using solar panels situated at the bin. Solar panels will save the electricity requirements of the implemented devices.
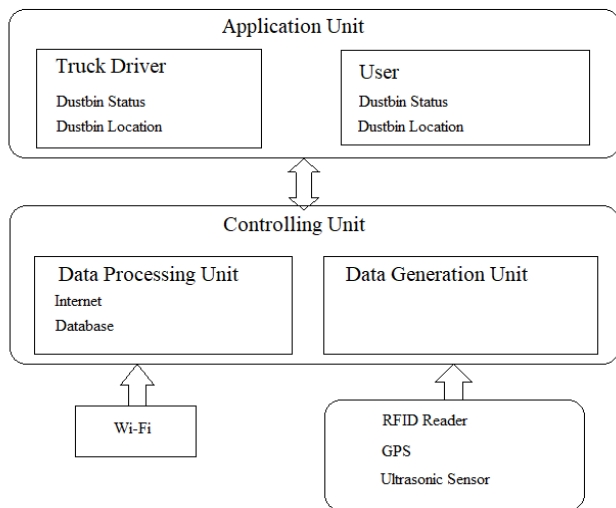
Fig.1: General Block Diagram

VI. FLOW DIAGRAM
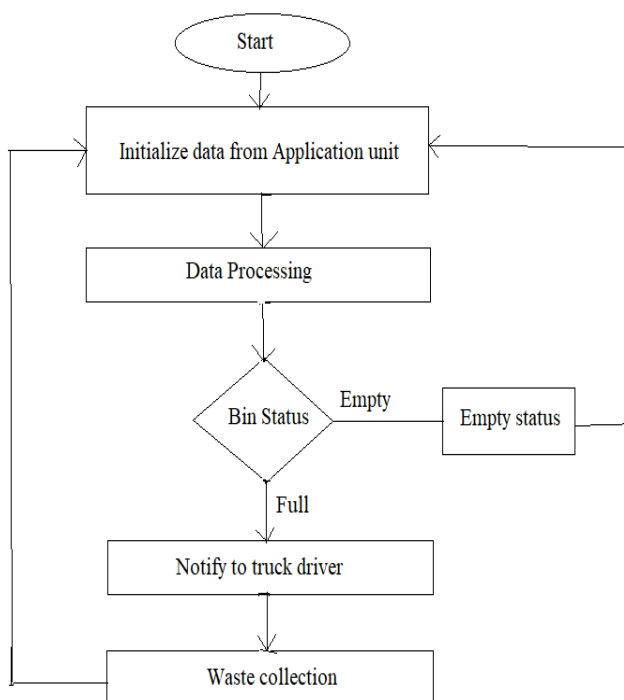
Fig 2. Flow diagram

VII.   CONCLUSION

We are going to implement a garbage management system by using smart dustbins to check the level of smart dustbins whether the dustbin are full or not. In this system when garbage is full the information is send to the authorized server. By implementing this proposed system we can develop the smart city concept and cost will also be reduced. By the effective usage of smart dustbins the resource is optimized. This system reduces the traffic in the smart city, so that environment will be cleaned. The existed system will inform the status of the garbage in each and every dust bin, so that the concerned authority can send the garbage collection truck only when the dustbin is full. Thus, in this paper we approach for increasing the efficiency of the system in managing the waste by scanting the huge amount of the money which is already been spent on the waste management system. The system is been designed considering the ease of access of the public, the driver and also the centralized server system. This system will reduce the spilling garbage and untidiness of the place. Mainly the spread of the diseases will be reduced to its minimum level

VIII.   FUTURE SCOPE

The future version of this proposed system could include the load calculating device, which will be lesser in cost. So that the implementation of the system will get even cheaper. Power can be supplied using solar panels. The early implementation of this system is essential for managing the waste properly as the habit of this could be adapted before the waste management becomes the major issue.

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Pressure Regulated Drip Irrigation System

Prof. D. S. Gaikwad[1], Viraj Bhalerao[2], Shankar Kadam[2]

[1]Assistant Professor, Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India
[2]Department of Electronics and Telecommunication, SKNSITS, Lonavala, Maharashtra, India

ABSTRACT

Water is main resource for Agriculture. Irrigation is one method to supply water but in some cases, there will be lot of water wastage. In the field of agriculture, use of correct methodology of irrigation is vital and it's acknowledge that irrigation by drip is incredibly economical and economical. We have proposed project titled pressure regulated drip irrigation system using IOT. In this flow sensor measures rotation count so that flow measurement is done, output of flow sensor is given to the arduino according to it controller will send the data to control valve so that corresponding valve get ON depending on rotation of count. In addition, based on mobile application the field can be automatically irrigated by ON/OFF of the motor. The sensed parameters and motor status will be displayed on user android app.

Keywords : Internet of things (IoT), Arduino, Flow sensor, demo model drip irrigation set and Pressure gauge.

I. INTRODUCTION

Agriculture is the backbone of Indian Economy. In today's world, as we see rapid growth in global population, agriculture becomes more important to meet the needs of the human race. However, agriculture needs irrigation and with per annum we've additional water consumption than precipitation, it becomes critical for growers to find ways to conserve water while still achieving the highest yield. But in the present era, the farmers have been using irrigation technique through the manual control in which they irrigate the land at the regular interval. According to statistics, agriculture uses 85% of available freshwater resources worldwide, and this percentage will continue to be dominant in water consumption because of population growth and increased food demand. There is associate degree imperative to produce methods supported science and technology for property use of water, including technical, agronomic, managerial and institutional improvements. Agricultural irrigation based on Internet technology is based on crop water requirement rules. By using Internet technology and sensor network technology we can control water wastage and to maximize the scientific technologies in irrigation methods. Hence it can greatly improve the utilization of water and can increase water productivity. The Internet of Things (IoT) is a technology where in a mobile device can be used to monitor the function of a device. The Internet of Things (IoT) is concerned with interconnecting communicating objects that are installed at different locations that are possibly distant from each other. Internet of Things (IoT) is a type of network technology, which senses the information from different sensors and makes anything to join the Internet for exchange of information.

Nowadays water insufficiency may be a massive concern for farming. This project helps the farmers to irrigate the farmland in an efficient manner with drip irrigation system based on IOT. The

proposed system has been designed to overcome the unnecessary water flow into the agricultural lands.

1.2 PROBLEM STATEMENT

60% of agriculture irrigation water is wasted due to conventional system .Less crop production due to lack of rains and water resources, sometimes due to unflat area of agriculture uniform water is not supplied to the crop those are at higher height.

So to remove this drawback we can implement pressure regulated drip irrigation system in which according to the incoming pressure of water we decide the no. of secondary valve to opened which are connected to the distributed line.

II. LITERATURE SURVEY

2.1 INTRODUCTION

The development of irrigation has made major contribution to the growth and sustenance of Indian agriculture in the last five decades. First experimental system of this type was established in 1959 by Blass who partnered later in 1964 with kibbutz to create an irrigation company called as netafim.

Later on by Muhammad et al in 2010 a simple approach to irrigation control problem using artificial network controller. Vidadala et al, (2015) the implementation of agriculture automation system using web and GSM technology. Fan Tongke, (2015) IOT is closely related to cloud computing tools through cloud computing.

TABLE: 2.1 Literature survey

SR. NO.	Title	Author name	Methodology
1	Evaluating the performance of a real time optimization system for furrow irrigation IEEE paper 2014	R.K.Koech, R.J.Smith, M.H.Gillies	Field trials to test the real time optimization system for furrow irrigation were conducted over two consecutive irrigation season at commercial furrow irrigated cotton properties in Queensland , Australia
2	The efficiency of drip irrigation unpack Elsevier Published in 2013	Saskia van derkooij, Hurn Boesveld, maral kuper.	Specially focused on efficiency of drip irrigation
3	Estimating irrigation duration for high performance furrow irrigation on cracking clay soils.	R.J.Smith, M. J. Uddin, M.H.Gillies	Data used in this study were selected from the many individual furrow irrigation evaluations that have been conducted by the NCEA Since 1998
4	Performance of aqua crop model for cotton growth	Shuai Tan, Jihong Jang, Yong Chen, Di –Xu	Film mulched drip irrigation

	simulation under film mulched drip irrigation, IEEE Paper 2018		
5	Water scarcity alleviation through water footprint reduction in agriculture, IEEE Paper 2018	H. Nouri, B. Stokvis, A.Gsilndo, M.Blatchford	Focus on water saving using mulching in subsurface drip irrigation

III. PROPOSED SYTEM

3.1 BLOCK DIAGRAM:
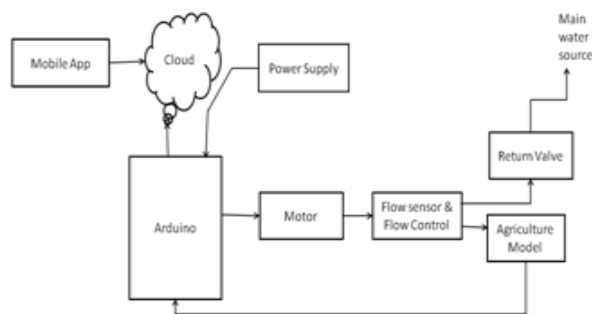
Fig.3.1 block diagram of Pressure Regulated Drip Irrigation System

Drip irrigation could be a variety of micro-irrigation system that has the potential to avoid wasting water and nutrients by permitting water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface. The goal is to put water directly into the basis zone and minimizes evaporation. Drip irrigation systems distribute water through a network of valves, pipes, tubing, and emitters.

3.2 INTRODUCTION OF HARDWARES

Arduino

Arduino is Associate in Nursing open supply physical compute platform supported straightforward input/output board and a development surroundings that implements the process language (www.processing.org).Arduino are often accustomed develop standalone interactive objects or are often connected to code on your pc.

Introduction to Arduino Boards

Arduino Software comes with an IDE that helps writing, debugging and burning program into Arduino. The IDE also comes with a Serial Communication window through which can easily get the serial data from the board.

Fig3.2 of Arduino Uno .

The Uno could be a microcontroller board supported the ATmega328P. It has fourteen digital input/output pins (of that half-dozen are often used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. Each of the fourteen digital pins are often used as Associate in Nursing input or output, victimization pinMode(), digitalWrite(), and digitalRead() functions.

They operate at 5 volts.
Each pin will give or receive twenty mA as suggested in operation condition and has an enclosed pull-up resistance (disconnected by default) of 20-50k ohm.

A most of 40mA is that the worth that has got to not be exceeded on any I/O pin to avoid permanent injury to the microcontroller.

In addition, some pins have specialized functions: Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial knowledge. External Interrupts: 2 and 3.

These pins are often organized to trigger Associate in Nursing interrupt on a coffee worth, a rising or falling edge, or a change in value. PWM: 3, 5, 6, 9, 10, and 11.

Provide 8-bit PWM output with the analogWrite () operate.SPI: ten (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication using the SPI library. LED:13. There is a integral light-emitting diode driven by digital pin thirteen. TWI: A4 or SDA pin and A5 or SCL pin. Support TWI communication using the Wire library.

The Uno has half-dozen analog inputs, labeled A0 through A5, each of which provide 10 bits of resolution (i.e.1024 different values).By default they live from ground to five volts, though is it possible to change the upper end of their range using the AREF pin and the analogReference () function. There area unit a handful of different pins on the board, AREF Reference voltage for the analog inputs. Used with analog Reference Reset. Bring this line LOW to reset the microcontroller.

Typically a accustomed add pushbutton to shields that block the one on the board.

3.3WORKING OF PROPOSED SYTEM

In these fig. 3.1 show the pressure regulated drip irrigation system consist as a mobile app, Arduino , cloud, water pump, flow sensor, pressure gauge & agriculture model. The above figure(fig.3.1) flow sensor measures rotation count so that flow measurement is done, output of flow sensor is given to the arduino according to it controller will send the data to control valve so that corresponding valve get ON depending on rotation of count. In addition, based on mobile application the field can be automatically irrigated by ON/OFF of the motor. The sensed parameters and motor status will be displayed on user android app.

IV. OTHER SPECIFICATIONS

4.1. ADVANTAGES

1. Minimize fungal problem of crop
2. Suitable for any type of lands
3. Target the root of crop so large growth of crop
4. Improvement in water use efficiency.
5. Uniformity of water application
6. Efficient fertilizer and chemical application
7. Better control of root zone environment
8. Crop yield enhancement.

4.2. APPLICATIONS

1. Smart agriculture system.
2. Road side landscaping.
3. Lawns.
4. Vegetable gardens.
5. Subsurface drip irrigation.
6. Vertical gardens.
7. Multi used sports facilities

V. CONCLUSION

Agricultural monitoring is very much needed to reduce much of human labor and at the same time minimize on water usage. We here have developed an Intelligent IoT based Pressure Regulated Drip Irrigation system. The system here receives the input to microcontroller where Water Pump and flow sensor connected. The sensor flow input is calculating

the rotation of count. So accordingly the control signal sent to Arduino back again for watering the pump. The trained data set and agriculture drip model calculation data are stored in Cloud server for farmer's access via their mobile phone. This has resulted in complete automated pressure regulated drip irrigation system employing IoT Technologies where devices communicate watering the field. This proves that the use of water can be diminished and hence water will not be wasted as compared to the present records. It reduces the human resources. This irrigation system was found to be possible and price effective for optimizing water resources for agricultural production. Furthermore, the Internet link allows the supervision through mobile tele- communication devices, such as a Smartphone. Besides the monetary savings in water use & farmers time.

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Auto Dual Converter with Power Factor Improver

Harvinder Singh, Akash Kumar, Pallavi Malagi

E & TC , PCCOE&R, Pune, Maharashtra, India

ABSTRACT

A dual converter consists of two converters, they are connected and configured in series fashion to carry out the conversion of electrical energy at high voltage levels. as rectifier while other reverse converter works as inverter. Now here, in this project using a capacitive load we will be improving the power factor .A proposed approach to improve the power factor of single-phase rectifiers and to vary the output voltage against the change in grid voltage and load is presented. This converter topology is evaluated the basis of performance and its salient features like simplicity, low cost and high performance are discussed to analyse its applicability. The proposed control strategy is bridged, has a transformer and output current sensor-less and consists of only two Bi-directional Insulated Gate Bipolar Junction Transistors and two diodes. The voltage regulation is achieved by a simple voltage divider to communicate to a controller to control the duty cycles of pulse width modulated signal.

Keywords : Auto Dual Converter, Capacitive Bank, Diodes, Microcontroller, Power Factor Improver.

I. INTRODUCTION

The Dual converter- the itself says that there are two converters in it. It is an electrical device nearly found in all the variable speed drivers. The auto dual convertors work in both the directions via the forward convertion and reverse convertion. In the dual converter, two converters are connected with each other back to back.

In this type of circuit one of the bridge works as a rectifier (converts AC to DC),and another bridge works as an inverter (converts DC to AC) circuit and is commonly connected to a DC load. Thus the two conversion processes take place simultaneously one after another, so it is called as a dual converter. The dual converters provide a four quadrant operation . In this proposed model both the conversion AC To DC and DC to AC will take place simultaneously using single H-bridge. In this model capacitor bank has been used to improve the power factor which is degraded due to various losses.

II. BLOCK DIAGRAM AND FLOWCHART
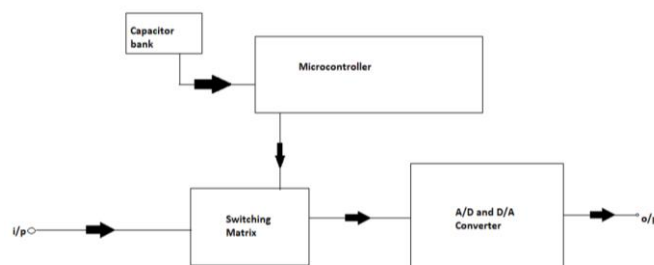
Following is the Block Schematic of the proposed methodology-

It consists of –

✓ Microcontroller – To control all the Switching, sensing and regulation of the power factor.

✓ Switching matrix - To adjust the circuit for operation of AC/DC And DC/AC .

- ✓ A/D and D/A converter – This consists of a single H-bridge which will be switched accordingly by microcontroller for specific conversion.

- ✓ Capacitor Bank - This part is added to improve the power factor of the circuit as we are using capacitive type of load.

In an auto dual converter because their will be an AC to DC conversion will take place and again through inverter DC to AC inversion will occur. Inveter will convert DC output to AC ,this will make the entire circuit as a dual converter by using converter and a reverse converter. The basic problem with these converter is less power factor,so we need to improve power factor. Now for this purpose we will use a capacitor. Microcontroller will be connected to load of converter and inverter accordingly and through its combining output with the help of sensor we will increase power factor of device.Power factor should basically be 1 ,But if it is not so then we must increase it . Because if power factor is not 1 that means output is not in phase..

III. CIRCUIT DIAGRAM & RESULTS
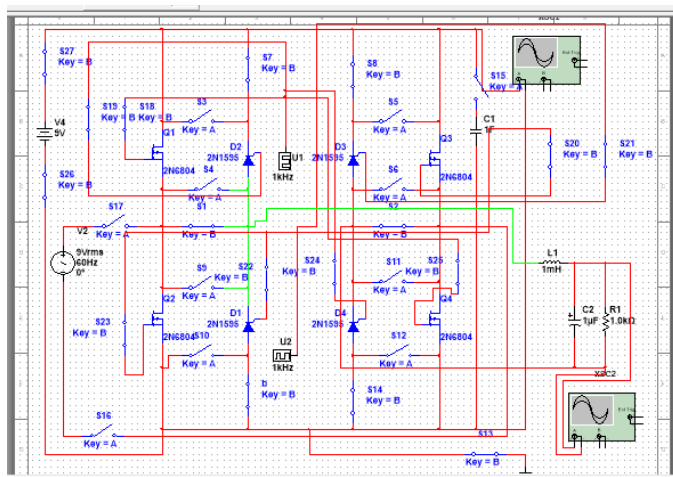
A. Output During Conversion
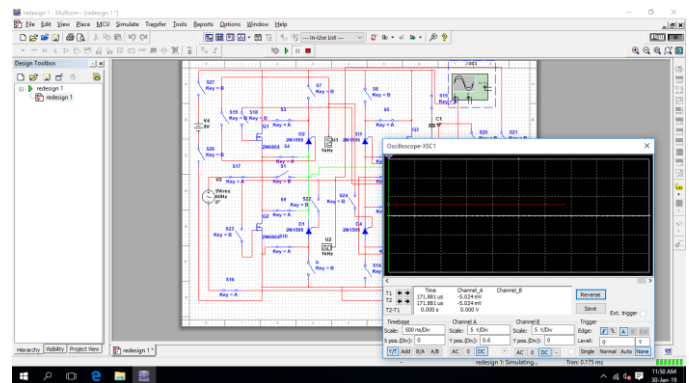
B. Output During Inversion
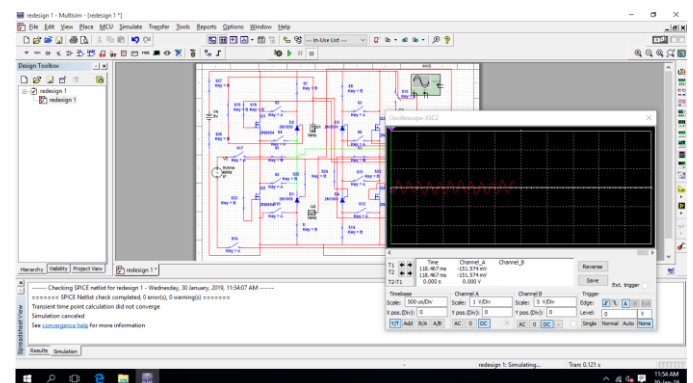
IV. FLOWCHART
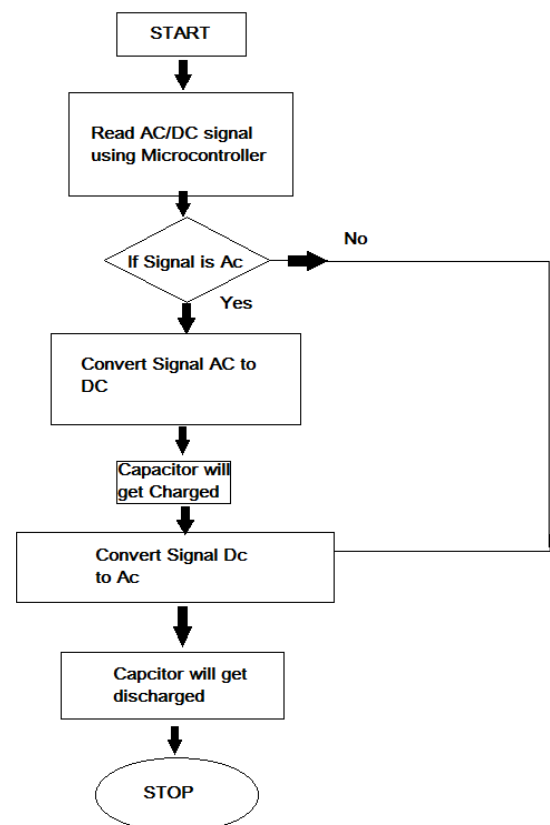
V. CONCLUSION

- Thus, we are implementing an Auto dual converter. Through this project we can improve the power factor of converter automatically.This project can be used in various real time applications such as-
  - o Hybrid vechiles
  - o UPS
  - o Inverter
  - o Speed and rotational direction control of DC motor.

The requirement for Bi-directional converter in industry, commercial and day-to-day life applications has been analyzed initially. Based on it, many research paper were collected, read and den came to know that there is large scope to develop a bi-directional converter with optimized parameters and solutions. For the research work, few parameters like power factor of the AC-DC converter, DC link voltage regulation of rectifier are chosen.

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Fingerprint and RFID Based Two-Wheeler Vehicle Ignition Systems

Shubham R. Kumbhalwar[1*], Avinash B. Gunale [2], Isaq N. Shaikh [3], Prof. Kundankumar R. Saraf [4]
Department of Electronics and Telecommunication, Dr. D Y Patil School of Engineering Lohgaon, Pune, India

ABSTRACT

This project deals with Fingerprint and RFID based two wheeler vehicle ignitions system, it is used for security purpose of two wheeler vehicle. When fingerprint and RFID is authorized only then can start vehicle ignition. When we place our finger on fingerprint module, it cross check the images of fingerprint which are saved in its database and after fingerprint matches RFID Reader is on then signals goes to ATMEGA16 and this signals gives to the relay, relay becomes on then signals from relay gives to ECU system. Then our vehicle ignition starts.

Keywords : Fingerprint Technology, RFID Technology, Relay Technology, Main Unit, Engine Control Unit.

I. INTRODUCTION

Now a day's increased number of theft cases of the two wheelers there is need to increase the security level of the two wheelers. Generally used key locks available in the bikes are well known to the thieves and thus it can be easily unlocked by the professional thieves. By using master key it becomes very easy to unlock the lock of the bikes by the thieves. This creates new demands and provides an additional security level. The different and modern lock must be unique in itself i.e. it must be only unlocked by specific way. Increasing demands on performance, security, quality and cost are the main challenges for today's automotive industry. Coming to the security aspect, let us throw some light upon the statistics of automotive theft.

Fingerprint Sensor module is four pin electronic devices, which are used to apprehend a digitalized image of the fingerprint pattern. The apprehend image is called as a live scan Fingerprint Sensor Module has two sub modules: fingerprint Enrolment/Addition and Fingerprint Recognition. Fingerprint enrolment/addition module adds and

stores the fingerprints of all the users who are authorized to drive the vehicle. This sub-module enables fingerprint of valid user to be enrolled in the database. Fingerprint sensor Module R303A sends the signals to the microcontroller board.

ATtmega16 microcontroller handles user authentication. Once the scanned fingerprint matched with the one stored in the database, the microcontroller sends the desired signal to put the vehicle in motion. This is accomplished by turning on and open the valve attached to the fuel tank. Whenever an unauthorized user tries to run the vehicle, his/her fingerprint mismatches the valve attached to the fuel tank shuts down or closes thus disallowing him/her access.

Generally RFID is automatic identification technology which is use radio frequency electromagnetic fields to identify objects carrying tags when they are come close to a reader. RFID tags generally feature an electronic chip with an antenna in order to pass information onto reader. The assembly is called an inlay and is then packaged in different forms to be able to withstand the

conditions in which it will operate. This product is known as a tag, label. RFID tag information is a unique identifier, once this identifier has been written.

II. METHODS AND MATERIAL

Our thesis work focus on developing methods to implement to start two wheeler vehicle ignitions.

Software
Dip Trace software is EDA/CAD software for creating schematic diagrams and printed circuit boards.
AVR Studio is multipurpose software it is used for coding of our program which is written in embedded c.

Hardware
PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxies. It's used as a type of coating on metal surfaces to prevent corrosion.
ISP or In System Programming is the best way to program AVR microcontrollers as it allows them to be programmed in circuit. This project is easier for development, production and most importantly, for updating the firmware later in the field. The appliance used for this is an AVR ISP.

Block Diagram
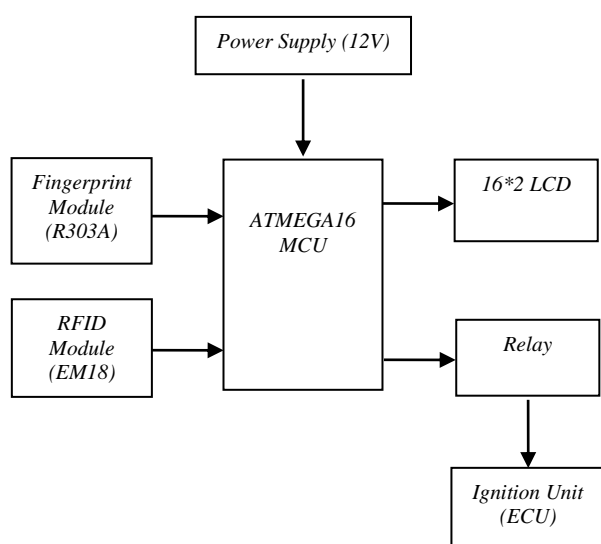
In this block diagram there are two input giving sources i.e. fingerprint module and RFID reader module. They are used to provide digital data to microcontroller. Fingerprint module will sense the fingerprint of any person & automatically sends data to microcontroller. Microcontroller holds data that until second input. Generally RFID is automatic identification technology which is use radio frequency electromagnetic fields to identify objects carrying tags when they are come close to a reader.

RFID tags generally feature of an electronic chip with an antenna in order to pass information on to reader. This reader will send the information to the microcontroller then it will compare the both incoming signal with previous stored data. If all data matched then it will ON the relay, then automatically ignition unit start working it role and LCD will display the authorized person access the vehicle. If data doesn't matches then relay will OFF & microcontroller will denied the access of unauthorized person, so your bike will secured.

Flowchart
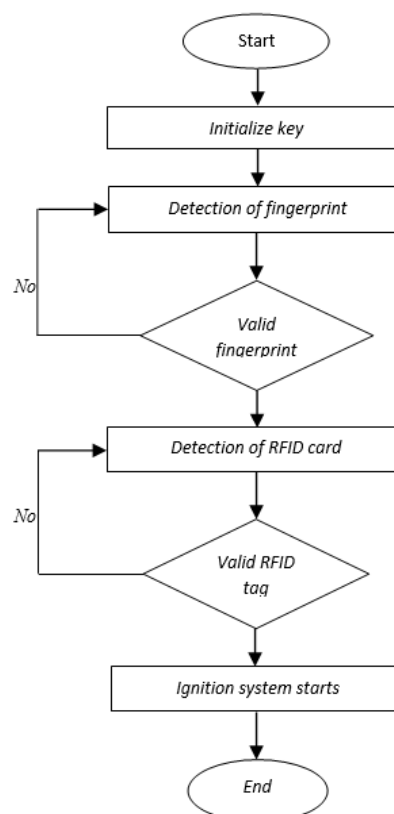
Algorithm

STEP 1.Initialize the serial port communication.

STEP 2.Place owner fingerprint in fingerprint module.

STEP 3.Check the status of fingerprint if valid go to step4, otherwise go to step 2.

STEP 4.Show vehicle RFID tag card.

STEP 5.Check the status of RFID card if valid go to step 6, otherwise go to step 4.

STEP 6.Ignition start.

Advantages

1. The setup is cost friendly and reliable.
2. Increasing demands on performance, security, quality.
3. Keyless vehicles.
4. More security.
5. Easy to access vehicles.
6. Can be easily modified for improving the setup and adding new features.

Application

1. Automotive industries.
2. For every normal human being antitheft vehicles will be provided.
3. This project will be use in Domestic purpose.

Future Scope

1. Eye and voice recognition system for two wheeler ignition vehicles.
2. Pattern recognition in vehicle security.
3. Android based vehicle ignition.
4. By using fingerprint, after tilting the handle of vehicle automatic hand should be locked.

III. RESULTS AND DISCUSSION

The purpose of doing this project is to making every bike fully secured from thief and allowing it only for authentication. Due this it will have high security peak in society. Even though this project having efficient costing & time.

IV. CONCLUSION

In current process of implementing the project we learned that RFID and fingerprint technology has major Scope in improving ignition system, with the help of both this technology we will give new revolution in security area.

There are many improvements or functionalities that could be added on to the current version of this system to make it more efficient in terms of security and portability.

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Biometric Ticketing System

Akshay Tale, Ajay Chaudhary, Sachin Dudhate, Prof. Swati Khawate

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

This paper discusses a possible, automated, modern Biometric System for Metro Railway Ticketing System, Which consists of ingress and exit gate predicated on the biometric apperception. The passengers who peregrinate on Metro Railway, they do not require to carry some tickets, tokens, or astute cards (for multi utilizer). For example different Biometrics: DNA, Face, Auditory perceiver, Facial infrared thermo gram, Dactylogram, Gait, Hand, Finger geometry, Iris, Keystroke, Palm prints, Signature, Voice. Here we take the dactylograms for our biometric system. We proposed a biometric System for ticketing with a centralized, well manageable database which reduces the number of ticket counter as well as metro railway employees. This prototype also consist of a Gsm module which alerts the users by sending messages regarding their transaction and balance remaining in their account.

Keywords - Biometrics, Finger Geometry, Metro.

I. INTRODUCTION

India is the second largest country in terms of population and the Indian Railways or indian travelling systems is the biggest employer in India and also Indian Railways finds spot in top three for longest railway coverage. By looking at this we can say India have a huge amount of people travel by train,metro ,buses.We see a lot of people standing in a line to get a railway.

We are going to design This project with automated, modern Biometric techniques for Ticketing System, Which consists of entrance and exit gate based on the biometric recognition.The passengers who travel on Bus , Metro , Railway, passenger do not require to carry tickets, tokens, or smart cards .Each and every person carries a lot of unique identificationsuch as Aadhar card, driving license , pan card etc . in our Aadhar card Biometrics , Face , Fingerprint, Hand, Finger geometry, Iris, Palm

prints, Signature. Here we take the finger prints for our biometric system.We proposed a biometric System for ticketing with a centralized, well manageable database which reduces the no. of ticket counter as well employees.This prototype also consist of a Gsm module which alerts the users by sending messages regarding their transaction and balance remaining in their account. Many of us people use the public transport these days. Thereare many problems that are being faced by the general public in terms of being managed in the over crowded bus. Another problem that the nation faces will be the paper based ticketing system that is being followed in our nation. There is also a problem of getting the exact change in a bus. There is also a possibility of our tickets being lost and paying a huge fine for the loss of a ticket is also a tedious task. The problem with the current scenario of using the RFID smart cards also has a disadvantage. Thus having considered all the

problems being faced by the passengers, this idea of smart bus ticketing system using fingerprint is being proposed. Thus, this proposed system of smart ticketing using fingerprints instead of the traditional paper ticketing and the current trend of RFID system has a lot of advantages in it.

This product also has an additional smartcard slot for those people working in construction sites and those people who tend to use their hands the most. The smartcard slot can also be used by students and children of age below the age of 15 as the fingerprints of those children tend to change with their age increasing. This product will be of great help to the government and mother nature of reducing the usage of paper in a large extent. This proposed idea will be of great help to the passengers also as they don't have to wait in a crowd to buy a ticket and there is no necessity for the passengers to carry any money or cards with them as the money is automatically deducted from their personal wallets. The government may also be benefitted as the rate of ticketless passengers will come down to a great extent.

In India AADHAR Identification is a unique identification system where our biometrics such as fingerprints and retina scanned data is For every person, a unique identification number is allotted.

II. METHODS AND MATERIAL

Our thesis work focus on developing methods to implement biometric ticketing system for metro railway , central railway,local transport .

Software:-

1.eagle for creating schematic diagrams and printed circuit boards.

2. keil is multipurpose software it is used for coding of our program which is written in embedded c.

3. flash magic software is used to burn program into IC.

Hardware:-

1.PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxides. Its used as a type of coating on metal surfaces to prevent corrosion.

2.flash magic software is used to burn program into IC.

- Block diagram:-

In this block diagram there are two input giving sources i.e. fingerprint module and keypad module. They are used to provide digital data to microcontroller. Fingerprint module will sense the fingerprint of any person & automatically sends data to microcontroller. Microcontroller holds data that until second input. Generally keypad is for setting purpose i.e. for emergency use only.

GSM module is used in system for sending information regarding ticket amount deduction. LCD

16x2 is used for displaying various system related messages.

- flowchart
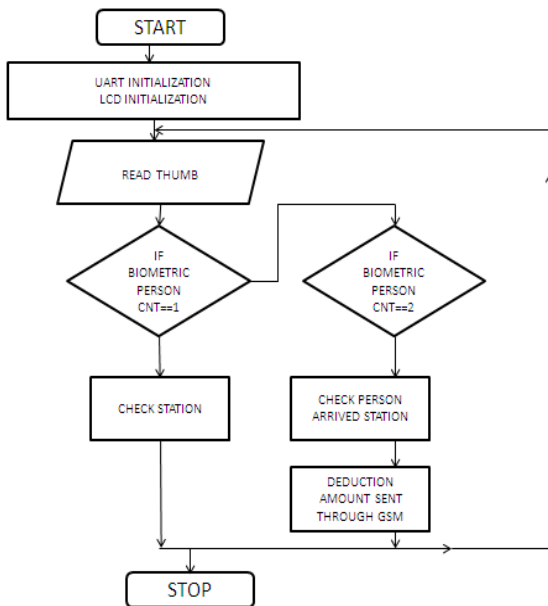
- Algorithm:-

STEP 1:-Initialization LCD ,UART ,GSM.

STEP 2:- Read Thumb ,Person Or Station.

STEP 3:-Check Person Enter Station.

STEP 4:-Read Thumb ,Station Arrived Person.

STEP 5:-Check Person Left Station.

STEP 6:-Check Enter Station And Left Station.

STEP 7:-Send Deduction Amount Using Enter Station And Left Person Station.

- Advantages:-
  1. The setup is cost friendly and reliable.
  2. Increasing demands on performance, security, quality.
  3. More security.
  4. Can be easily modified for improving the setup and adding new features.
  5. This is less time cosuming.
  6. It is paper less system hence we are following "GO GREEN " moto to support digital india
  7. Good quality and low failure rate with long life.
  8. Reliable operation and maintenance.

- Application:-

1. We are using biometric ticketing system in metro station to make journey easier.

2. We are using biometric ticketing system in railway station to make journey easier.

3. We are using biometric system for attendance in offices to less time consuming .

4. Many of us people use the public transport these days. By using biometric ticketing system we are making simpler to travel without crowd and less time consuming.

III. RESULTS AND DISCUSSION

Purpose of making this system is to improving automatic ticketing system .We performed this system procedure many times we got 99% positive result , hence system accuracy rate is approximately 100%.

IV. CONCLUSION

This proposed system is more accurate system than old ticketing system. it has some complexity for storingfinger print and comparing at the time of exit of the passenger. Because it deals with a large number of passengerand the fare charges calculation. The calculation time of fare charge will be less than 1 micro second. If, it will take more time the queue of passengers will be created. But the Advantage of this Biometric ticketing system are it is automated, it reduces the cost of Token and Smart Card, it prevent the terrorist attack and Fast working.

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Human Detection & Rescue System Using IOT

Shardul Bibhishan Kadam*, Rohit Raosaheb Ghatke, Shekhar Prabhakar Giram, Prof. Rahul Bhivare

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

A latest & advance treat for detecting alive human beings in natural and human developed disasters using a specific set of sensors, ATMEGA16 Microcontroller, existing GSM & GPS technology and in various areas of world are getting affected due to sudden natural calamities like earthquakes, floods, wild-fires, storms and human induced disasters industrial and transportation accidents and one of the threatening to humans that is terrorists attacks. We noticed that people dies by getting stucked in these drastic disasters on large scale just because they didn't get help at the instant of time when they required to be rescued. So the proposed alive human being detection system uses a specific set of sensors that includes temperature, pressure, water level, etc. which gives the information about the environmental parameters. GSM technology will give an alerting message to control room of the affected sites to give proper rescue to the affected victims through C programming. There is a microcontroller (ATMEGA16) holds all of these sensors which deals main control systems. By this project it will be a great help in deed to rescuers in detection of the more & more alive human beings at the disaster sites at proper time. This is friendly, economical and efficient device by software programming interfacing for detection.

Keywords : Human Nature, C Programming, Bluetooth Module, Main Unit, Hand Gadget (End Device) & GSM/GPS Technology.

I. INTRODUCTION

Disasters can disrupt economic and social balance of the society. Natural disasters occur frequently now-a-days. Many human beings are victims of such occurrences. Because of high rise buildings and other man-made structures urban and industrial area scan be considered to be more susceptible to disasters. These disasters can be categorized into natural and human induced disasters. Natural disasters include floods, storms, cyclones, bush fires and earthquakes whereas besides natural disasters, the urban environment is prone to human induced disasters such as transportation accidents, industrial accidents and major fires. Meantime such calamities, especially disasters, in order to prevent loss of life and property various essential services (like fire brigades, medical and paramedical personnel, police) are deployed. Unfortunately, Some lose their lives because of not being helpful or treated at time. Internet Of Things (IOT) is the fast growing technology, represents the network of Physical device/ objects that are embedded with electronics, software & sensors. IOT is prevalent in day-to- day life due to their improved use in ubiquity of smart mobile devices such as Smartphone, Tablets, Notebooks, personal digital assistants (PDA), etc. The basic target of the IOT enabled things are "connected anywhere at any time". Thus use of automatic system for all kinds of IOT enabled product application has been increased in the markets which

help to detect the human activities either in an indoor or outdoor organization.

II. HISTORICAL BACKGROUND

In ancient days when natural calamities happens then we detect human being by taking help of trained humans. Who are capable of saving life of trapped humans in disaster with proper treatment on the same location. This process was out dated & sometimes, it is impossible to reach in certain points of the disasters in such calamities hit zones. And the reaching time of trained human at the location was very time consuming. So by implementing such project in society will be tremendous helpful to save precious lives. Everyone wants their life should be secure. In modern era by using such a high technology we can detect & rescue human body in a short time.

III. METHODOLOGY

Our thesis work focuses on developing methods to implement to detect human body.
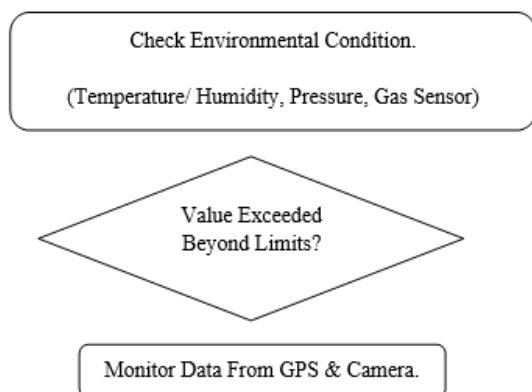
1. Detailed analysis on different health; rehabilitation application developed using sensors, Zigbee, GPS & GSM modules.
2. Angle, joint and movement configuration design the algorithm for movement tracking and implement rule based classification system within the prototype.
3. Development of algorithm using rules specified, mathematical equations and evaluation.

4. An Experimental setup, designed and the following parameters control application. The system evaluated under the following circumstances.
   a. The project model is designed to capture the data at the constant frame rate, to avoid any data loss static posture movement, Deep Squat movements are considered.
   b. Microsoft Kinetic place data fixed height, tilt angle to track the person fully.
   c. Results based on changing the hardware height, a position to evaluate the accuracy of the developed algorithm.
5. Standard verification of the collected data from the hardware.

BLOCK DIAGRAM
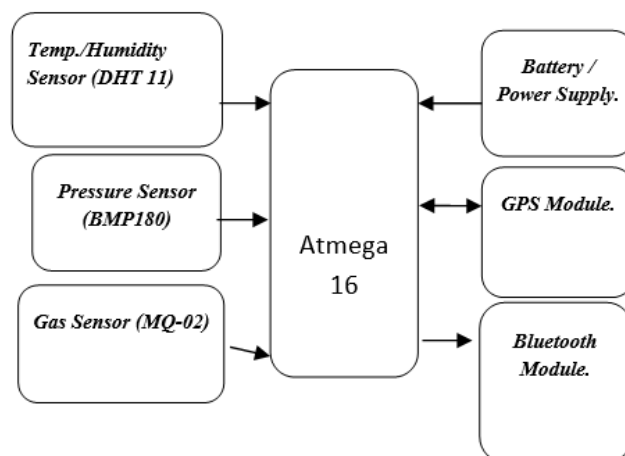
FLOWCHART/ ALGORITHM.
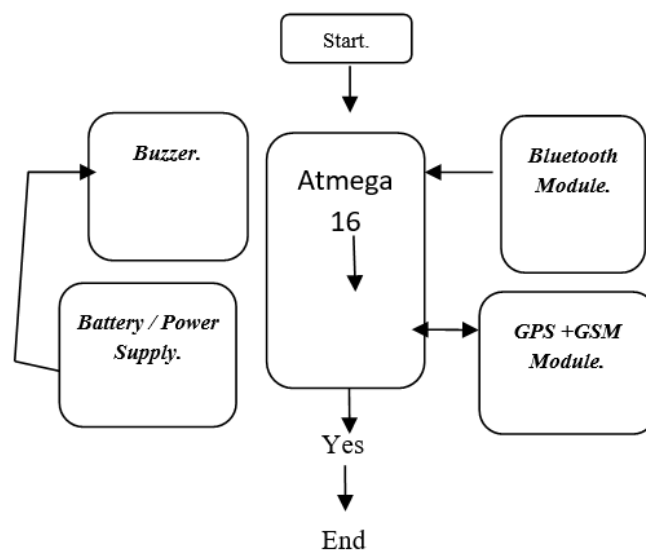
APPLICATION

- ✓ For military applications to detect the presence of soldiers.
- ✓ In rescue operations where human reach is impossible.
- ✓ In disaster management.
- ✓ In crisis management.
- ✓ This equipment can be used at mines, earthquake, floods prone place.

IV. RESULT

As per the result concern this project is one the better model which having advance technique implemented but without using PIR sensor. So that this is quite efficient than any other project model with a long detection range feature.

V. CONCLUSION

From this project it will be a great help actually to rescuers in detection of the human beings at the disaster sites. This is friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection. This proposed model system will be a combination of a stationary and a system especially for the disaster affected chaotic areas.

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[3]. Divya Dangi, Electronics & Communication Engineering Department, Sigma Institute Of Engineering, Gujarat Technological University, Gujarat, India.

[4]. Shanthi G, Dept. Electronics & Communication Engg, SVS college of Engg, Coimbatore, Tamil Nadu, India.

Fruit Recognition Using Image Processing

Krushnakant Joshi, Akshay Patil, Pratik Jadhav, Prof. Kushal Mandge

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

The main intention of this project is to elaborate and simplify how different products manufactured in a factory can be distributed in a random sequence. To upgrade this process, images captured by the webcam can be processed with image processing techniques using software like MATLAB. This image processing technique and color detection techniques are applied for the taken image and the appropriate output is obtained in this project. The goal is to develop a project which will play a vital role in small scale as well as large scale industries for and logging the data, consequently reducing the cost of labor. The system deals with motors, a mechanism to sort the products and a Webcam in proximity of the apparatus. The webcam is mounted in parallel to the assembly line focused on the products on the plate in order to have known the product and its sequence. The apparatus sends image processed readings and measurements over wires to a microcontroller for further processing Code running on the microcontroller in conjunction with a code in MATLAB engenders an output on the opportune pins motors. configured by user by a program, which controls the speed and direction of the flapper motor. In MATLAB image processing toolbox and Arduino has made it possible. This research thus implements an industrial assembly line with methodology in image processing

Keywords : Fruit Classification, Image Classification, Features Extraction

I. INTRODUCTION

In order to improving fruits' quality and production efficiency, reduce labor intensity, it is necessary to research nondestructive automatic detection technology. Fruit nondestructive detection is the process of detecting fruits' inside and outside quality without any damage utilizing some detecting technology to make evaluation according some standard rules. Nowadays, the quality of fruit shape, default, color and size and so on cannot evaluated on line by the traditional methods. With the development of image processing technology and computer software and hardware, it becomes more alluring to detect fruits' quality by utilizing vision detecting technology. At present, most existing fruit quality detecting and grading system have the

disadvantage of low efficiency, low speed of grading, high cost and complexity. So it is significant to develop high speed and low cost fruit size detecting and grading system.

Here two choices are provided for grading either by color and size. In first case we are going to sort circular shaped fruits according color and grading is done according to size. The proposed automated relegation and grading system is designed to amalgamate three processes such as feature extraction, sorting according to color and grading according to size. Software development is highly important in this color classification system and for finding size of a fruit. The entire system is designed over MATLAB software to inspect the color and size of the fruit. Here grading can be categories into two

ways Red small, Red big. Work in this paper considered two different fruits apple or tomato and guava having different features like apple or tomato is red and guava is green and system can sort and grade the fruits according to different attributes such as color and size. It mainly contains four parts: the system overview, fruit size detecting and grading, experiments and results, conclusion.

Our thesis work focus on developing methods to implement biometric ticketing system for metro railway, central railway,local transport .

Software

1. Eagle for creating schematic diagrams and printed circuit boards.
2. MATLAB is multipurpose software it is used for coding of our program which is written in embedded c.
3. Flash magic software is used to burn program into IC.

Hardware

1. PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxides. It's used as a type of coating on metal surfaces to prevent corrosion.
2. Flash magic software is used to burn program into IC.

Block diagram:-
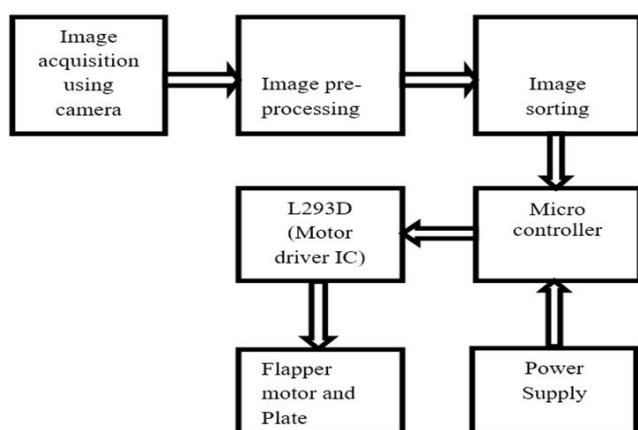
To start with when the object is detected by the camera, image is captured by the camera and is sent to the MATLAB workspace. The input image obtained from the webcam cannot be directly given for processing. Pre-processing is done on the image such as thresholding. Then only object image is converted in binary format. This final threshold image of object is now ready for processing. The objects are sorted on the basis of color and predetermined shape. To identify the color, firstly the image is converted into gray format and then thresholding is done. After thresholding color components are extracted and the image is converted into black and white format which is called as binary format Find region properties & bounding box and the color are identified.

II. METHODS AND MATERIAL

The sorting mechanism consists of a linear actuator, servo motors and a conveyer assembly. After identifying the colour with predetermined size, command will be sent to direct the linear actuator through COM port of the computer via the development board. Conveyor assembly is in OFF state for this period. According to the size and colour the servo motors with help of linear actuator places the objects in their specified place. The ATmega328 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the at mega 328 achieves throughputs approaching 1 MIPS per MHz allowing the system designer to optimize power consumption versus processing speed.

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Flowchart:
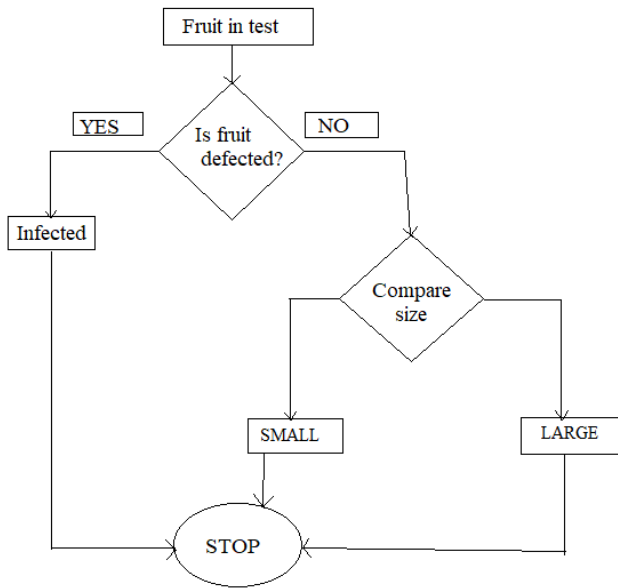
Algorithm:

Step 1: Start.

Step 2: Capturing of Image.

Step 3: Selection of hardware and software (specification).

Step 4: Implementation of hardware.

Step 5: Implementation of software.

Step 6: Testing.

Step 7: Final Result

Advantages

- ✓ High efficiency: the sorting speed can be very high.
- ✓ High precision: the margin of error can be reduced to great extent.
- ✓ This type of sorter can be used for various objects or vegetables of different colours. Also suit to select pears, orange and other fruits of this kind.
- ✓ High degree of intelligence if used with PLC control. The machine with a high degree of intelligent, can control it.
- ✓ Good quality and low failure rate with long life.
- ✓ Reliable operation and maintenance.

Application

- ✓ In food industry to improve the quality of their product and to increase the client.
- ✓ As the quality rate is decreasing day by day so this algorithm can be a major help to the quality control department to determine whether the consumer are getting the right quality of fruits or not.

III. RESULTS AND DISCUSSION

Purpose of making this system is to improving fruit recognition using image processing .We performed this system procedure many times we got 99% positive result , hence system accuracy rate is approximately 100%.

IV. CONCLUSION

The Code is generated using MATLAB image processing in conjunction with Arduino the whole process is documented in the theory sections. There are no more limits but your imagination.

It was a valuable experience in making the project design, implementation, and testing of a system that involved digital components. More time was available for the circuit design and implementation, which was able to go through several designs before an acceptable one was reached. Ultimately the system accomplished its primary goal of motor speed control in a clear way.

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Surface Crack Detection and Location

Dileep Deepak Palande , Kunal Devidas Ingle, Nilesh Piraji Karhale, Nishikant Surwade, Bahubali Shiragapur

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

There are different techniques for detection of crack in metal, for comparison we uses some techniques like magnetic induced eddy current, ultrasonic metal detecting sensors, microwave based sensors, piezoelectric sensor, RFID tag, image processing and camera based etc. There are possibilities to apply them to detection cracks on surface. All methods found in literature survey use different techniques. Out of these techniques, we are using ultrasonic sensor and IR sensor technique proved to be most interesting to detect cracks on surface. GPS module helps to find location of crack using longitude and latitude and sends the information to control room using GSM.

Keywords : cracks, metal surface, crack detection, ultrasonic and IR sensor technique, GPS module, GSM module.

I. INTRODUCTION

Nowadays, safety and reliability are considered in one of the main aspects at all transport and industrial plant, particularly considering continuous surface of any system. There is a view from the experts that present regulatory framework does not clarify effectively and can't deal with accidents in industrial plant, as we see their most of the accidents happens in industry due to crack on surface which leads to huge accident. Over the years, many researchers had tried to build up a system for detection the cracks on continuous surface. The crack in metal or any surface occurs mainly due to earthquakes, salt erosion, rain water, and dry shrinkage and expansion of metal due to heat. Crack detection and measurement plays a vital role in the evaluation of fitness of metal surface. The main causes of crack formation are thermal movement, where it depends on number of factors like temperature variations, dimensions, and properties of materials used and the exposure of walls to direct solar radiation. The presence of crack not only affects the visual appearance, but instead it transforms the matter of safety to be a big challenge. Based on the detected and measured crack further maintenance measures can be undertaken and crack gradually leads to shorter life span of metal and Many metal structures had collapsed due to this.

Crack detection and measurement can be done in many ways and generally as human inspection where it make use of traditional measurement system on manually detected crack, microscopic inspection done by different special tools and machine vision inspection where automatic crack detection and measurement is done. But conventional approaches could not achieve much precise detection However, the time consuming manual approaches need expertise and have computational complexity. Conventional methods that do not use the crack characteristics cannot able to distinguish cracks and sometimes it may results in miss identification.

II. METHODS AND MATERIAL

This block diagrams shows the overview of crack detection in metal, This mainly consists of six blocks namely ultrasonic sensor, IR sensor, GPS module, GSM module, Arduino mega controller, LCD display and motor. In this design, a cost effective autonomous crack detector robot is proposed for continuous flat surface or part in industry or plant. This device can generate a complete solution for the surface crack that starts with crack detection, fault analysis using ultrasonic sensor and Infrared ray's sensor that end up with an SMS alert to the concerned authority by using the global system mobile (GSM) and the global positioning system(GPS) which consists of the location of the crack. Therefore making ease the authority and to prevent accidents in industry and many power plants.
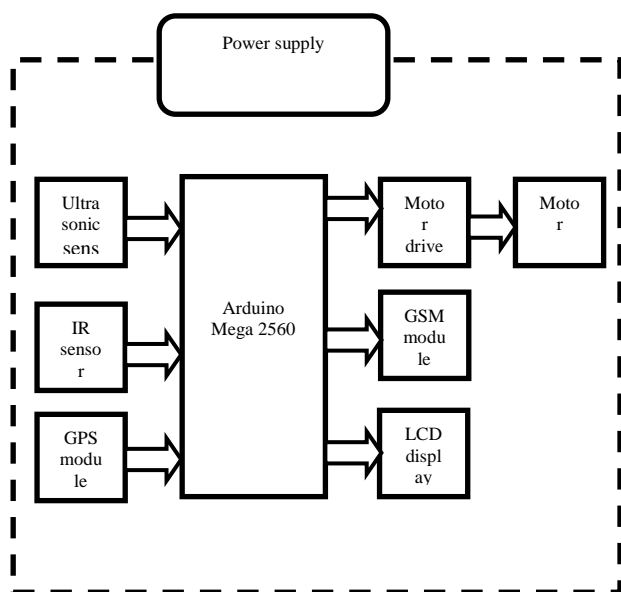
Fig.1.1 block diagram of module

III. RESULTS AND DISCUSSION

This system is works better on every metallic and non-metallic surface. The system also gives good results in most unfavourable environmental condition like humidity and high temperature. Due to high speed operation of system it can gives fast results when it can be mounting on moving vehicle or on special movable platform. System may faces trouble in detection of crack in some cases which are scanning surface is not shiny or any black marks or black strip on it. If system is placed on vibrating surfaces it causes trouble in detection of crack. If distance between system and surfaces changes then it need to configure every time according to distance between them.
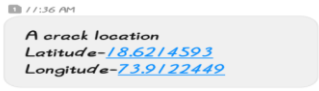
Description	Hardware Result
Status on LCD display, when crack is not detected.	
Status on LCD display, when crack is detected and location is sending to control room.	
Location at control room on mobile phone.	

Table.1.1 results of module

IV. CONCLUSION

This technique is superior over the conventional manual monitoring system due automatic detection of crack on metal surface. This gives benefits as less time consuming as well as minimum requirement of man-power. Further it has some limitation such as it can`t detects internal cracks and it is application specific. This system can be used for detection of crack on railway track, in oil pipe, gas plant, etc.

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IoT Based Water Quality Testing

Bhivraj Abadar*, Shivraj Kadam, Sanket Nirali, Prof. Prajakta Khairnar

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

ABSTRACT

The efficient use of the wireless technology leads to the better implementation in many parts of the World; Water is not safe enough to drink. There are basic quantitative observations that quickly determine, if water is not safe to consume. All the Impurities are not visible to human observer and always not possible to observe total Quality manually. The quality of water resources incorporates a direct impact on the everyday life of human being. However, with the speedy development of national manufacture, the present industrial waste material discharge and improper handling became a lot of serious, particularly for the growing domestic pollution today; it's associate imperative would like for associate economical water quality observation system. With the rapid development of wireless sensor network application technology, people put forward higher requirements for the quality of water environment; wireless sensor network can be used in water environment for real-time monitoring of water quality.

Keywords : WSN, Wireless senor network, MCU, Microcontroller Unit, LCD , Liquid Crystal Display

I. INTRODUCTION

India is one of the emerging, developing countries and second most populated country in the world. There is a significant change in the standard of living. Aside from the considerable achievements made by India, but several serious environmental problems have surfaced which is affecting healthy growth of India. Water pollution has grown drastically in recent decades. Fresh water body like rivers and lakes are the worst polluted, Rivers in India are getting polluted by various sources, such as sewer, industrial, agricultural, and mining waste, figure 1 show the different source of pollution. The pollution of water resources can have brutal and lifelong effects on the human health and environment.

Water pollution has grown drastically in recent decades. Fresh water body like rivers and lakes are the worst polluted, Rivers in India are getting polluted by various sources, such as sewer, industrial, agricultural, and mining waste, the different source of pollution.

The objectives of this paper are to find an efficient way to reduce and improve water quality, to preserve biodiversity. Develop a Wireless Sensor integrated system for water ecosystem monitoring. To carry out comprehensive research to further the identified objectives, and to gain knowledge for implementing similar river cleanup programs in other polluted rivers of India.

II. METHODS AND MATERIAL

System overview A Temperature sensor must be deployed in a water quality and to sense the water temperature of the water tank. The WSN consists of main three modules processing unit, sensor can send the data to transceivers to collect data in the field and transmit it to a remote receiver at processing unit outside the field. Processing unit ATMEGA328p is used as the core controller to release the restriction on the wireless sensor and parameter controlling purpose. The processing unit can be collecting the data with

respect to date and time. It can send the data with some fixed delay to cloud server.

Sensor node Arduino board is used as the node controller and for data acquisition and as a MCU for transceiver module. Use of this board leads to power efficiency, compact and mobile sensor node.

Transceiver module consists of ESP8266 module. We used this module as a gateway to communicate with processing unit. It is a short-range wireless device that's why it is compatible with point-to-point topology which we have proposed. Each module can send the data to the cloud server.

Block Diagram:-
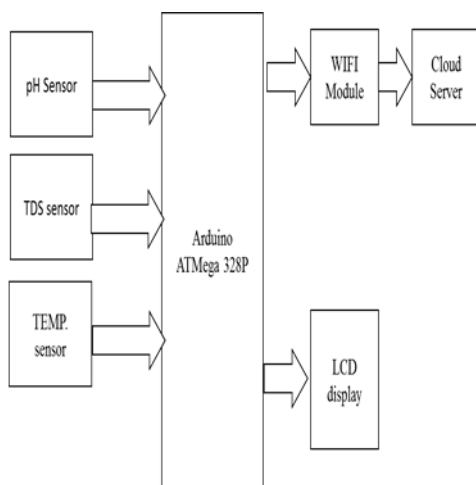
The water quality monitoring system employs sensors such as pH, temperature & turbidity to get the data parameters. These sensors are positioned in the water will analyse the quality of the water resources. The verified content is used to prophesy the quality of water.

The analysed data is processed through the microcontroller in the Arduino module and transferred through the Wi-Fi module using the data communicatio module to the central server. By giving a user id and password to the user they can view the data which is collected, processed, transmitted an analysed. The collected data is displayed in real time.

The microcontroller in the Arduino is based on supporting the embedded trace & emulation through real time. It also supports the high speed flash memory in the embedded system. Hence the size is considered as the main requirement for the point of scaling applications and for controlling the access provided to the consumers it is good to use and it also consumes less power. The Wi-Fi module used is merely low cost with chips in it. The wireless local area network provides service for offloading the other processor applications with Wi-Fi network functions or it also can host the various applications. The applications in this boots up from the external flash directly during hosting. Due to its integrated cache, the memory requirement is minimized and the system performance has been improved. Based on the type of interfaces like the UART interface or the CPU AHB bridge design, the microcontrollers can be accessed with the wireless internet access, it can be done when the Wi-Fi adapter works similar to the Wi-Fi module. To send and receive data in Ethernet buffers, the Wi-Fi module uses the transceiver which is in serial format. In the Wi-Fi module to change and query the configurations of Wi-Fi, serial commands are used. For the communications between a Wi-Fi module and the microcontroller it requires only two wires for the transmission and reception. Making the code very light weighted it allows the microcontroller to perform offload Wi-Fi related tasks on the module. To build an Internet of Things applications very easy, SPI and UART interfaces are addressable over the Wi-Fimodule. To connect the TCP connections which is open and the Wi-Fi network we use the AT commands. The open TCP connections do not need any protocols like TCP/IP stack running in the microcontroller. The factors can be pushed to the internet (server) by the regular connections to the microcontroller

Flow-chart:-
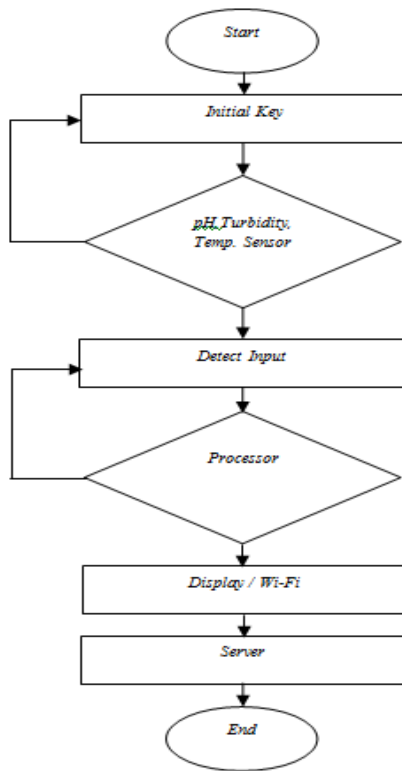
III. RESULT

By logging on the website the official users can access the data. On a web page, the required parameters are shown in real-time.

To determine the quality of water, the pH sensor and EC sensor is put into a container which is filled with tap water and 34 drops of acidic is mixed to it. When the pH of water is still around 3 - 4.5 range then the water is acidic in nature. And the surrounding temperature still between 32 to 34 degrees. The total Dissolved Solids are 0.67*electrical conductivity which is measured from the graph.

IV. CONCLUSION

Hence literature survey on wireless sensor network has done in Water quality and simulated in Proteous software. We have drawn circuit diagram for nodes and base station using different sensors, arduino328p and ESP8266 controller boards. We have figure out tentative cost of project and proposed network topology for wireless sensor network.

ADVANTAGES

- Due to automation it will reduce the time to measure the parameters.
- This is economically affordable for common people.
- Low maintenance.
- Prevention of water diseases.

APPLICATION

- This system is used in commercial and domestic use.
- Mainly helpful for Water Supply Agencies.
- For health department to identify the reason of water diseases.

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Smart Queue Management System

Shrirang Khaparde, Ramdas Kamble, Yuvraj Dhawan, Prof. Rahul Bhivare

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

ABSTRACT

This paper presents a different way to book an appointment for consultation of doctor. In this patient can book appointment by sending an SMS on certain number in a specified format. In response he/she will receive a confirmation message of appointment status and timing for the appointment. In our system there are two units namely calling unit and display unit. Calling unit is basically a GSM module which is used to send and receive messages. The display unit consist of a microcontroller and 16*2 LCD display which displays the name of patient. The communication between these two units takes place via PC. A MATLAB based user interface is used to respond to the incoming SMS by patients. This MATLAB based UI is operated by a human operator and by this UI the operator also can decide the priority of appointments .When time of first appointment comes the operator will press a button which will display the name of first patient on the 16*2 display.

Keywords :- Queue management, Queue management system for OTP, SMS notification, GSM module, 16*2 LCD display.

I. INTRODUCTION

Because of the increasing population and the rise in the infectious as well as chronic diseases, healthcare industry is growing at very fast rate. Healthcare System in India and around the world has witnessed a phenomenal growth during last two decades. The main reason behind raising this industry is the increasing rate of population and their demand for the healthcare service. So, health care systems have been challenged in recent years to deliver services to all the patient and high quality services with limited resources without delay. Patient satisfaction and good care are important factors for the success of any healthcare clinic. In today's hyper-competitive market, customers are faced with many different options when deciding on a specific healthcare provider. Due to the varying options, quality and service stand out as two essential elements that influence the selection process. If the quality is not met, the healthcare clinic have to face various problems such as customer dissatisfaction and loss of reputation. Patient satisfaction has appeared as a very important factor in the judgment of healthcare quality. Waiting time is considered to be an important factor for patient satisfaction. In hospitals when patient wants to visit to a Doctor he/she have to first register their names in clinic and then he/she have to wait for their turn to come. This all procedure is handling by a human being. The present scenario is that at OPD a man sits outside doctor's cabin and sent patient one by one in doctor's cabin for checkup and treatment, and it is expected that he should sent patient on first come first serve basis but because of long waiting time patients will experience frustration and may feel less satisfied with the services. So in order to tackle such situation and to serve patient efficiently we have developed this device for smooth functioning of OPD's with a little intervention of human being.

Our main aim in this project is to design a queue control system which will have a check on the unnecessary rush of the patients and also it will reduce the waiting time of the patients. Instead of standing in long queues, patients can visit the hospital on their time of appointment. The smart queue management system will remove the burden of waiting in a long queue until patient gets attended. Time is a quantity that is non-reversible and a continuous process. Any process that saves time is considered vital in many applications. Time is an important quantity,

Which has to be efficiently and effectively managed. Wastage of time in a queue is always nonnegotiable and it is where the smart queue management system finds its importance.

II. METHODS AND MATERIAL

Our thesis work focus on developing methods to implement a smart queue system for hospitals and OPDs.

2.1 Software:-

1. Eagle is used for creating schematic diagrams and printed circuit boards.
2. Keil is multipurpose software and it is used for coding of our program for microcontroller which is written in embedded c.
3. Flash magic software is used to burn program into microcontroller IC.

2.2 Hardware:-

1. PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxides. It's used as a type of coating on metal surfaces to prevent corrosion.
2. Flash magic software is used to burn program into microcontroller IC.

2.3 Proposed system:-

Our proposed system have two units, first unit is microcontroller and 16*2 LCD circuit board and the second unit is GSM module. Here we are using SIM900A GSM module and PIC18F 458 microcontroller. When a patient needs to book an appointment he/she will simply need to send a message on a certain number in a predefined format. In response they will receive an SMS of their booking status and booking number. A MATLAB based user interface is provided or the ease of operator. This UI also helps the operator at clinic to decide the priority of the appointments to be given. At the time of appointment the name of patient will be displayed on 16*2 LCD display. The proposed system is not made fully automated by purpose because by the intervention of operator, the operator can decide the priority of requested appointments. If there is no certain emergency then the appointment will be given on first come first serve basis. The operator can also send a reminder SMS to patient prior appointment.

Block diagram
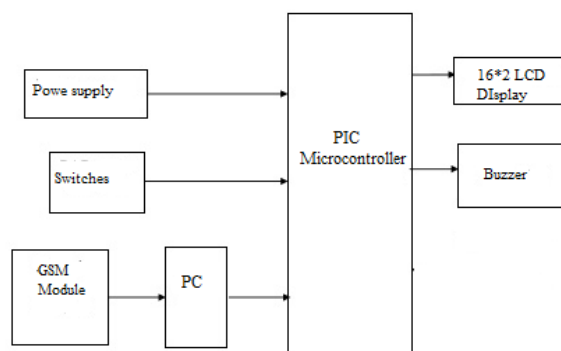
III. Algorithm

Step 1: Start.
Step 2: Store customer information after receiving an SMS from customer on given number.
Step 3: Add the customer in the queue and send the information about estimated time for appointment as well as token number via SMS to customer.
Step 4: Contact customer prior the appointment.

Step 5: Contact customer using customer information and display his or her token number on 16*2 display.
Step 6: Change the status of queue after customer arrival.
Step 7: If appointment is complete, delete customer information.
Step 8: End.

IV. Advantages

1. The setup is cost friendly and reliable.
2. More patient satisfaction.
3. Can be easily modified for improving the setup and adding new features.
4. It is paper less system hence we are following "GO GREEN " moto to support digital india
5. Reduces patient waiting time and reduces long queues of patients.
6. Reliable operation and easy to use.

V. Application

1. We are using smart queue management system for the purpose of booking appointment at doctor's clinic.
2. We can also use this system for queue control and for reducing customer waiting time in banks, hotels and similar crowded places by making some minor changes in MATLAB program and in microcontroller program.

VI. RESULT

Purpose of making this system is to improve queue management and to reduce waiting time of patients. We performed this system procedure many times and we got 99% positive result, hence system accuracy rate is approximately 100%.

VII. CONCLUSION

This proposed system is more accurate system than old queue management system. The project GSM based Smart Queue Management Device for OPD discussed here is successfully designed developed and tested. This device is designed by considering a hospital queue and to improve quality and services to patient. This device can be used where queue management is required. With some minor changes this device can be used where queue management is required. This project is a small step towards easing out the life. The whole head ache of waiting for ones turn to come for visiting a doctor in a long queue could be easily overcome by this system.

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IOT Based Industrial Fire Detection Robot

Suraj G Sutar, Suraj B khetmalas, Mukkanwar Kedar, Prof. Yogesh Shinde

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

Internet of things is an interconnection of physical contrivances embedded with electronics, software; sensor which is capable of amassing data from the circumventing and sending data over internet is called IOT. The fire detection accumulates all of the techniques and processes that contribute to early detection of a fire. We identify three main categories: Smoke detection, Flame detection and Temperature detection. Automatic fire alarm system provides authentic-time surveillance, monitoring and automatic alarm. To provide early extinguishing of a fire disaster, sizably voluminous numbers of detectors which periodically measure smoke concentration or temperature are deployed in buildings. In this paper will we present the different techniques we had been already used to detect fire.

Keywords : IOT System, WI-FI Module, Smoke Sensor, LPG Sensor, Temperature Sensor.

I. INTRODUCTION

In order to improving quality and production efficiency, reduce labor intensity, it is necessary to research nondestructive automatic detection technology. A robot is an automatically guided machine, able to do tasks on its own. This project, which is our endeavor to design a Fire Fighting Robot, comprises of a machine which not only has the basic features of a robot, but also has the ability to detect fire and extinguish it. This robot processes information from its various sensors and key hardware elements through microcontroller.

Once the flame is detected, the robot sounds the alarm with the help of buzzer provided to it, the robot actuates an electronic valve releasing sprinkles of water on the flame Software development is highly important in this project classification system and for finding fire detection . It mainly contains four parts: the system overview, fire detecting and grading, experiments and results conclusion.

II. METHODS AND MATERIAL

Our thesis work focus on developing methods to implement fire detecting system for Smoke detection, Flame detection and Temperature detection. Automatic fire alarm system provides authentic-time surveillance, monitoring and automatic alarm.

Software:-

1. eagle for creating schematic diagrams and printed circuit boards.
2. keil is multipurpose software it is used for coding of our program which is written in embedded c.
3. flash magic software is used to burn program into IC.

Hardware:-

1. PCB design implement using epoxy glass, epoxy glass is a transparent, hard and brittle substance that is derived from the polymerization of epoxies. It's used as a type of coating on metal surfaces to prevent corrosion.

2.flash magic software is used to burn program into IC.

Step 10:Send emergency signal to cloud

Step 11:Stop robot for fire time

Step 12: Final Result.

Block diagram
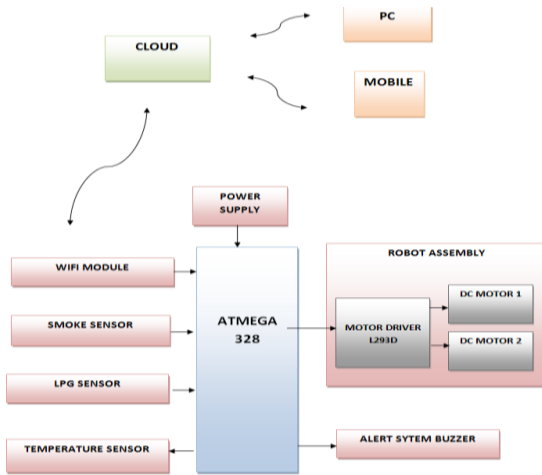
Fig. Block diagram Fire Detection Robot

To interface the Wi-Fi Module, Somke Sensor, LPG Sensor, Temperature Sensor we are using Arduino. In which the Robot Assemble dc motor drive to run dc motor and the buzzer used to beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke. The code generated is stored in the Arduino. A Wireless Sensor Networks consist of huge number of sensor nodes and is a set of hundreds or thousands of micro sensor nodes that have capabilities of sensing, establishing wireless communication between each other and doing computational and processing operations. power supply is used in the system for providing operational power to various modules in system.

Algorithm

Step 1: Start.

Step 2: Initialize all module

Step 3: M1&M2 move forward

Step 4: Read temp. sensor

Step 5: Read LPG. sensor

Step 6: Read Smoke. sensor

Step 7: Send sensor data to cloud via Wi-Fi module

Step 8:IF(temp > th-temp) OR (somke > th_somke)

Step 9:Alert Surrounding by alarm

Flowchart
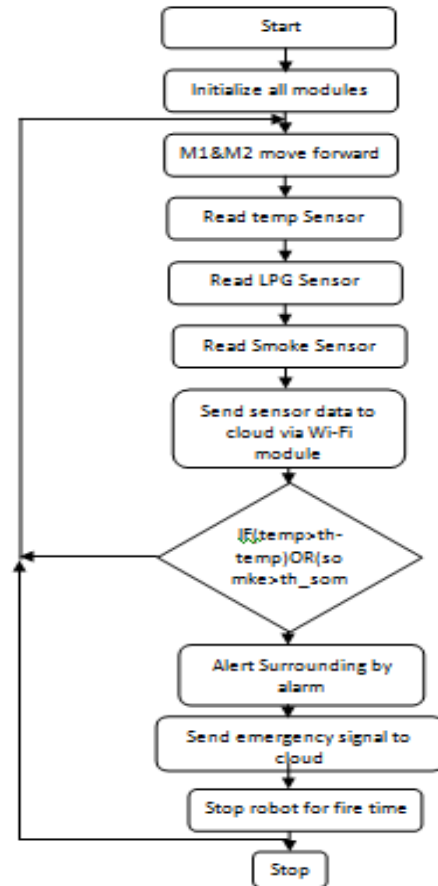
Fig 1. Flow chart Fire Detection Robot

Application

Industrial Application

- Low Latency.
- Management at a Distance.
- Indirect remote control management system.
- Pre arranged sensors.
- Middleware and Monitoring Software.
- Multi-hop routing protocol based on link quality
- Indicator (LQI)

Advantages

- Good quality High efficiency: the sorting speed can be very high.
- High precision: the margin of error can be reduced to great extent.
- This type of sorter can be used for various objects or vegetables of different colors. Also suit to select pears, Orange and other fruits of this kind.
- High degree of intelligence if used with PLC control. The machine with a high degree of intelligent, can control
- Low failure rate with long life.
- Reliable operation and maintenance.

III. RESULTS AND DISCUSSION

Purpose of making this system is to detect and extinguishes the fire before the fire starts and inform.

Condition	Result		Command
	Fire Area	Safe Area	
Temp>=50 SENSOR 1	Zone:1	Zone:2,3	Start Alarm1,Power Supply 1 cutoff and water pump1
Temp>=50 SENSOR 2	Zone:2	Zone:1,3	Start Alarm2,Power Supply 1 cutoff and water pump2
Temp>=50 SENSOR 3	Zone:3	Zone:1,2	Start Alarm3,Power Supply 1 cutoff and water pump3
Temp>=50 SENSOR 2,3	Zone:2,3	Zone:1	Start Alarm2,3 and Power Supply 2,3 cutoff and water pump2,3
Temp>=50 SENSOR 1,3	Zone:1,3	Zone:2	Start Alarm1,3 and Power Supply 1,3 cutoff and water pump1,3
Temp>=50 SENSOR 1,2	Zone:1,2	Zone:3	Start Alarm1,2 and Power Supply 1,2 cutoff and water pump1,2

IV. CONCLUSION

Here we successfully developed Fire Detection Robot. Robot detects the temperature, smoke at the site where srobot exist.Robot helpful for the area where natural calamity, the bomb explosion, and fire occurred.If the fire is detect with help of sensor, operate water pump with help of the relay circuit.

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All Purpose Biometric Punch in System

Ruturaj Yadav, Rahul Tiwari, Shubham Yadav, Prof. K. B. Wane

Department of Electronics and Telecommunication Engineering, PCCOE&R, Pune, Maharashtra, India

ABSTRACT

This paper represents biometric punch in system, which is used to record and authenticate individual's punch in.This punch in system uses Atmega 328 p ,since the recorded data is stored in the EEPROM. This punch in system makes use of biometric scanner which authenticates each and every user ,since it's hard to replicate fingerprints, this system offers more security over the conventional attendance system.The stored data is categorized with respect to the users in date and time format .This biometric punch in system allows organizations and institutions to manage and authenticate punch in records at low cost.

Keywords : ATMEGA328P, LCD, ArduinoIDE, Biometric Scanner.

I. INTRODUCTION

Here, In today's modern times where Automation saying it more appropriately, has replaced most of the time-consuming jobs and has led to a proper utilization of human power in other useful areas. The dominance of automation may be seen from the fields ranging from textile industry to military applications. This project is about to study on biometric technologies and develop a hybrid student attendance system that based on fingerprint recognition of student in order to verify their attendance. In this system, mobile-based attendance system will be developed for student to scan their fingerprint with provided hardware for a purpose to verify their attendance in all classes. At the same time, sheets attendance system will be developed for admin/lecturer to view and analyze student attendance by generate the attendance report.

The main purpose to develop this project is to replace the current traditional attendance system by provide faster, accurate, and efficient system. With this new fingerprint recognition attendance system, it can eliminate some problems such as buddy signing, loss of attendance sheet, and control student skip class rate.

In developing this project, evolutionary prototyping had been applied as methodology that guides the direction of whole project development. Besides that, few fact-finding methods are used to collect the data for analysis such as survey questionnaire methods, review journals method, and observation method. Conventional attendance system followed in an educational system where the teacher call out the name of each and every student and mark the attendance causes time wastage during lecture time.

This becomes more and more severe especially in the current scenario where number of students in a class is very large. Managing the attendance data of such a large group is also very difficult. Another disadvantage of present system is the chance for the student to mark fake attendance. Fingerprint based devices are being used in corporate environments. These devices use computer to store and verify fingerprints. It can be ported to academic environment with modifications. Our attendance system consist of Atmega 328P, fingerprint sensor R305 fingerprint module, LCD 16*2.

Atmega 328p is cheap and high performance microcontroller. R305 sensor has the highest precision and it is also cost efficient.

II. BLOCK DIAGRAM.

A. Overall Block Diagram

The block Diagram consist of components like Atmega 328P, switches button, LCD 16*2, USB interface, RTC Module and power source.
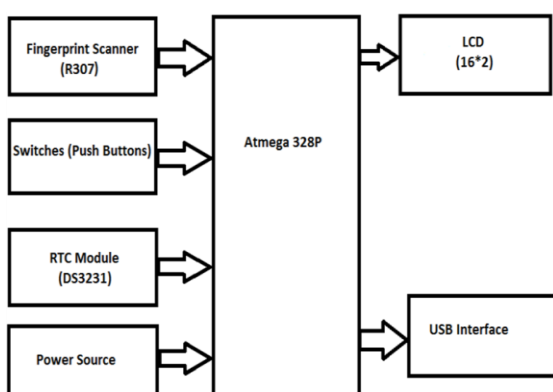
Figure 1: Block Diagram of Proposed System.

The Block Diagram of the given system is as shown in the figure above. Fingerprint scanner scans the fingerprint of the users and stores it in the EEPROM of Atmega 328P. The RTC module maintains real time date and time. The LCD is used to display the punch-records of the users in date and time format.

B. Flow chart of the given system.
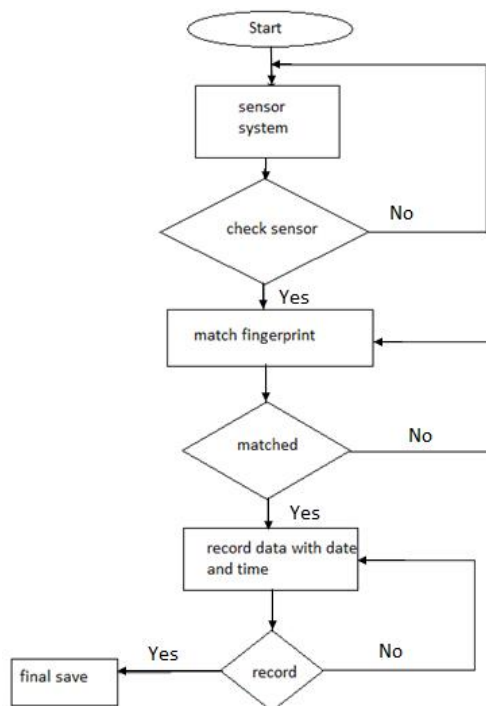
Figure 2 : flow chart of all purpose biometric punch in system.

The flow chart of the given proposed system is as shown in the figure above. The general understanding of the all-purpose biometric punch-in system can be understood by referring to the flowchart.

The flow chart consists of several data blocks and decision blocks ,the process starts with initialization of the sensor ,if the sensor is initialized properly then the fingerprint is matched of the fingerprint is matched properly, then the record is stored in the format of date and time. After the records of the users is obtained it is then stored in the EEPROM of the Atmega 328P.

III. CIRCUIT DIAGRAM
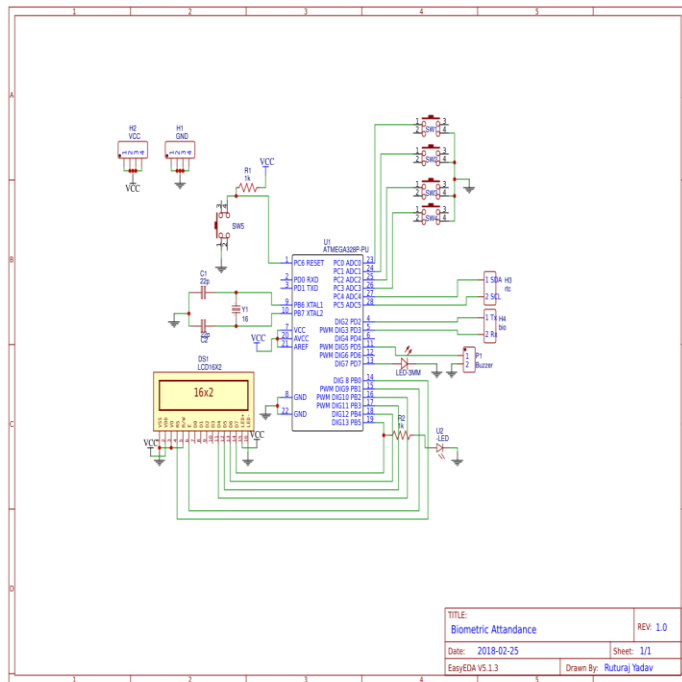
Figure 3 : Circuit Diagram of ATMEGA 328P Development Board

The circuit diagram of the proposed system can be explained as follows, Pin no.1 is connected to VCC. Pin no.9&10 are connected to crystal oscillator. Pin no. 14-19 are connected to LCD. Pin no. 4&5 are connected to R307. Pin no. 27&28 are connected to RTC.

A. PCB Layout.
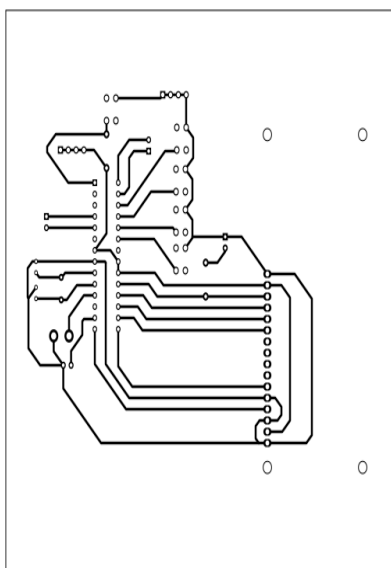
Figure 4 : pcb layout of the proposed system

IV. METHODOLOGIES.

PREVIOUS METHODOLOGY

Fingerprint identification is based on two factors:
Persistence: the basic characteristics and features do not change with This paper discusses the design, implementation and evaluation of a biometric system for recording students' attendance using both fingerprint and iris readers (e-attendance system). The system allows students to record their attendance when entering a classroom. This information is then made available to the instructors through a web-based interface application. The major impact of the e-attendance system is the noticed drop in the students' absenteeism rate. In addition, the system provides a reliable solution to prevent any student impersonation, where a student claims to be another one either to fake attendance or to take an exam for him/her. This work demonstrates the need for an attendance tracking system that is based on multiple biometrics technologies, especially in a multi-ethnic academic environment with a large student population. Finally, additional security measures, mainly Firewalls and Intrusion Detection/Prevention Systems (IDS/IPS) are shown to be required to achieve the needed level of protection for an efficient and reliable implementation. This is the case since biometrics readers can be vulnerable to common attacks, mainly denial of service attacks, and can be targeted by malicious student the time.

Individuality: fingerprint of every person in this world is Unique
To store the data of student present in the Attendance machine we have to build software which can store the data and schedule the data as per the student record. The data is feed to the software with the help of cable MAX 232.
By the help of software the staff member can enroll the stu-dent class-test marks, attendance updates ,as per student record.

The Aim of the Project is to inform the Parent about the student Attendance and to aware them about the marks of Class-test or any Student Related Information. To Assure this Aim we have to Design an Website Which will give the Information to Parent of the Student Marks and there Attendance records.

Therefore Each student will be allotted an REG.NO Through which the student will be verified. Then all the In-formation Related to the student will be ported to the REG.NO. Such as Class-test marks, Attendance Updates. Each Parent will be Allotted a USER ID. And PASSWORD of the particular Student REG.NO .So that the parent can check the data of attendance as well as Class-Test Marks.

If the Staff Member has to give any Important Information directly to the Parent's they can Mail them on their USER ID So That The Parent's will be Aware of Student Updates in College.

V. PROPOSED METHODOLOGY

We did some changes here in our system. Like "eSSL" our system is not bulky , Portable ,Low cost, Can be transferred in class during lecture so that attendance time will get reduced.

1. Recommended fingers.
 The index finger, middle finger or the ring finger; the thumb and little finger are not recommended (because they are usually clumsy on the fingerprint collection screen).

2. Proper finger placmement.
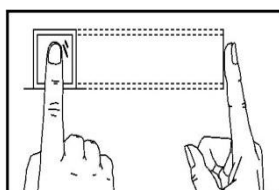
All paragraphs must be indented. All paragraphs must be justified, i.e. both left-justified and right-justified.

A. Text Font of Entire Document

The entire document should be in Times New Roman or Times font. Type 3 fonts must not be used. Other font types may be used if needed for special purposes. Recommended font sizes are shown in Table 1.

VI. CONCLUSION

Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions. Authors are strongly encouraged not to call out multiple figures or tables in the conclusion—these should be referenced in the body of the paper.

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IOT Based Smart Parking System

Amruta Nikam, Aarti Madre, Harsha Gadhave, Manisha Bhore

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

This paper introduces a novel algorithm that uses Internet-of-Things technology which increases the efficiency of the current cloud-based smart-parking system and develops network architecture. This paper proposed a system that helps users automatically find a free parking space by using the webpage that defines the availability of parking slots to the user. Hence the time requirement and fuel consumption is reduced. The simulation results help to reduce fuel consumption improve the probability of successful parking and minimizes the user waiting time. We can also successfully implement the proposed system in the real world.

Keywords : Atmega328 Microcontroller, Internet of things (IOT), GPS module, GSM, Smart phone.

I. INTRODUCTION

In recent times the concept of smart city has achieved grate popularity. The productivity and reliability of urban areas is maximized due to huge efforts been made in the field of IOT. IOT noticed problems such as, traffic congestion, limited car parking areas and road safety. In this paper, we present an IOT based cloud integrated smart rotary parking system that reduces requirement of parking space. The proposed Smart Parking system consists of RFID for security purpose. RFID monitors and signalize the state of availability of each single parking space. A webpage allows an end user to check the availability of parking space in the given location. Such a system increases driver comfort and reduce efforts in parking space operation by allowing drivers to easily decide on where to park. The significant research that is made recently focuses on smart cities and how to use resources efficiently. Parking space is scarce in most Metropolitan areas and intelligent systems are required to coordinate and supervise parking. This paper presents a wireless system for locating parking spots remotely via a smartphone or computer or laptops. At long ranges the system is highly efficient and has high accuracy.

IOT is a global network of things i.e. physical and virtual devices having independent identity each one, which can be connected via a vast network to share information and process it into meaningful data. IOT refers to devices like Mobile phones, Bluetooth connected headsets, thermostats, and utility meters temperature readers, sensors, actuators which can sense some parameters.

The parking system goes through many problems in the parking environment. The smart parking system has been developed to solve those problems. An RFID device provides the service to find the vehicle parking location. Here, the drivers have to receive an RFID tag on the entrance of parking lot. The RFID tag is given at the entrance, the vehicle location is provided to the driver through RFID tag parking space. Along with security using RFID, the availability of the parking slot will be updated on the webpage. This webpage can be accessed on the server or mobile phones.

Hence, the problem faced for searching the parking slot is reduced and parking is used conveniently.

A webpage is accessible through the internet or other network using an internet browser, it is a document commonly written hypertext mark-up language (HTML). A webpage can be used by entering a URL address and may contain text, graphics and hyperlinks to other webpages and files.

Parking system implemented nowadays is automated multilevel car parking system which requires building large floors to park. Consumption of large area is the disadvantage of multilevel parking which is successfully eliminated by rotary car parking system. Maximum space utilization is a main advantage of rotary parking system. The rotary car parking system is totally automated with the user being given a RFID tag corresponding to the trolley being allocated to the user. System is easy to install and maintain as compared to existing system. Current parking issues have got a solution of rotary parking system.

II. PROBLEM STATEMENT

With increase in the population no. of vehicles increased and due to unmanaged parking is leading to many problems. In centre cities, people faces difficulties as increasing no. of vehicles creates congestion, wastage of space, wastage of time, traffic problem, car napping, car vandalism and many other difficulties.

III. OBJECTIVE OF PROJECT

Our aim is to create a system that:
- Increase the security with simplifying parking system.
- Smart system that parks no. of vehicles with the least space possible.
- To design the garage energy efficient by using efficient management.

- Providing simple web application for parking vehicles.
- High security.

IV. METHODOLOGY.

Following is the methodology of the project:

- User will either book the parking slot through the webpage or he can direct access the slot by entering the parking area.
- The user receives the RFID tag at the entrance of the parking or at the parking gate.
- Then at the allotted slot the user parks the car.
- As it is the rotating parking system, the slot will move in rotary motion and the empty slot will come at the base.
- During exit from the parking, the user has to read the RFID tag to the RFID reader. Then the respective vehicle will come at base position and user can remove the car from the parking.
- The entrance and exit time of the car is recorded in the server.
- The same data is also updated on the webpage.
- The RFID tag is been submitted at the gate of parking space.

V. SYSTEM ARCHITECTURE

The block diagram of the proposed project is shown below. The block wise description is stated.

Fig1. Shows block diagram of smart parking system. The basic requirements of the controller (ATmega32) are 5V power supply and manual reset. It has internal RC oscillator with frequency of 8MHz. If higher speed of operation is required then external clock is to be connected. This combining forms 16MHz crystal oscillator that generates pulses, this is completely optional.
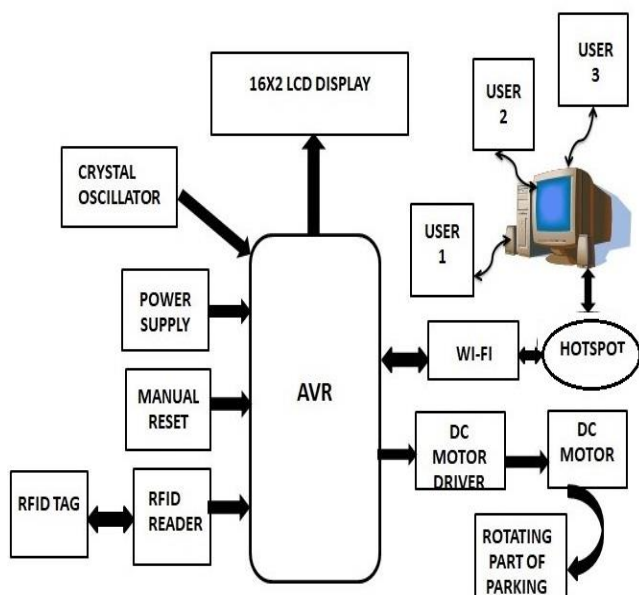
Figure 1 : BLOCK DIAGRAM

The input given to the controller is the signal through RFID Reader (EM18). We shall have „n" number of RFID tags connected through the RF communication with the reader. The frequency in which RFID operates is of 125 KHz. We use the passive tag in this project. The operating range of passive tag is 6-10cms. To activate the stepper motor 12V/400mA is required. The controller provides (5v/25mA) which is not sufficient to drive the motor so we use DC Motor driver (L293D) which is connected to moving part of parking system. The Dc Motor Driver generates the current of 600mA which is sufficient to drive the stepper motor.

The empty trolley nos. in given slot of parking system will be displayed on 16X2 LCD. The same data will be stored on the server.

The **ESP8266** with 1 MB of built-in flash allowing for single-chip devices capable of connecting to Wi-Fi.

- *AVR(AT-mega 32):*

It is a low power CMOS 8-bit microcontroller based on the AVR enhanced RISC (Reduced Instruction Set Computer) architecture. Along with running powerful instructions in a single clock cycle, the ATmega32 achieves throughputs of 1 MIPS per MHz allowing the system to improve efficiency of retrieval or processing power consumption versus processing speed.
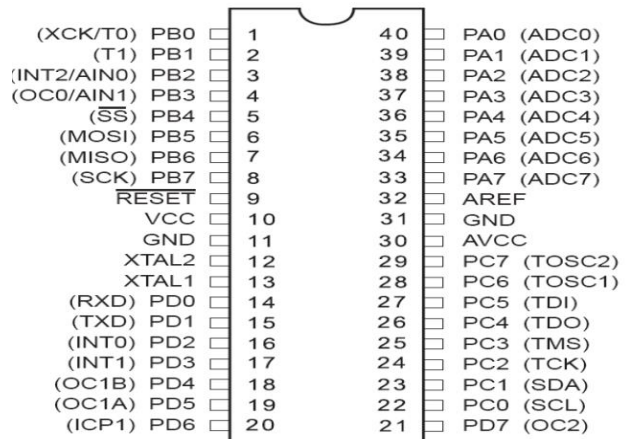
Figure 2: PIN DIAGRAM

- *RFID Tag:*

RFID tagging is a **system** that uses small **radio frequency identification devices** for recognizing and tracking purposes. An RFID tagging system includes a host system application for data collection, processing, and transmission, the tag and a read/write device.

Figure 3: RFID TAG

- *RFID Reader:*

A radio frequency identification reader (RFID reader) gathers information from an RFID tag, which is used to identify individual objects. Through Radio waves

data is transferred from the tag to a reader. RFID is a technology similar to bar codes. However, the RFID tag does not require to be scanned directly, nor it requires line-of-sight with a reader. The RFID tag must be within the range of an RFID reader ranges from 3 to 300 feet. RFID technology allows many items to be quickly scanned and permits fast identification of a particular product, even though it is surrounded by several other items.

Figure 5 : WI –FI MODULE

Figure 4: RFID READER

- *Wi-Fi Module:*

The ESP8266 with 1 MB of built in flash allowing for single chip devices capable of connecting to Wi-Fi. ESP8266 module can operate in the low power connectivity models for instance it is operates in DTM10 it only consumes 1.2mW while maintaining a WI-FI connection. The ESP8266 Wi-Fi Module is a self-contained system on chip (SOC) with integrated Transmission control protocol and internet protocol (TCP/IP) stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is able of either hosting an application or offloading all Wi-Fi networking functions.

- *LCD:*

LCD (liquid crystal display) is the technology used for display in electronic circuits. LCDs allow displays to be much thin than cathode ray tube (CRT) technology like light-emitting diode (LED) and gas-plasma technologies. The pixels are controlled in completely different ways in LCD screens.

Figure 6: LCD

- *Stepper Motor and Motor Driver:*

Stepper motors enable accurate positioning with ease. They are used in many types of apparatus for accurate rotation angle and stepwise speed control using pulse signals. Stepper motors are ideal for quick acceleration and response also generate high torque with a compact body. Due to their mechanical design, stepper motors also hold their position at stop. Stepper motor solutions consist of a driver (takes pulse signals in and converts them to stepwise motor motion) and a stepper motor.
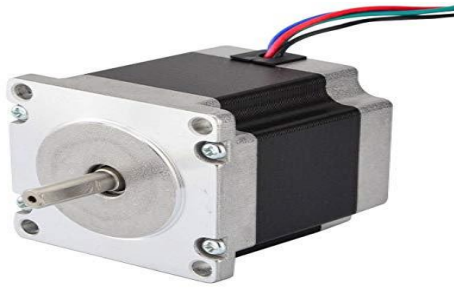
Figure 7: STEPPER MOTOR

The ULN2003 is known for its high-voltage, high-current capacity. The drivers can be used in parallel for even high current output. Electrically and physically stacking one chip on top of another has been done. The motor requires high ratings which cannot be provided by other interfacing devices so it can also be used for interfacing with a stepper motor.
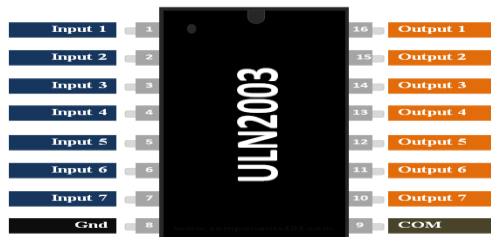
Figure 8: ULN
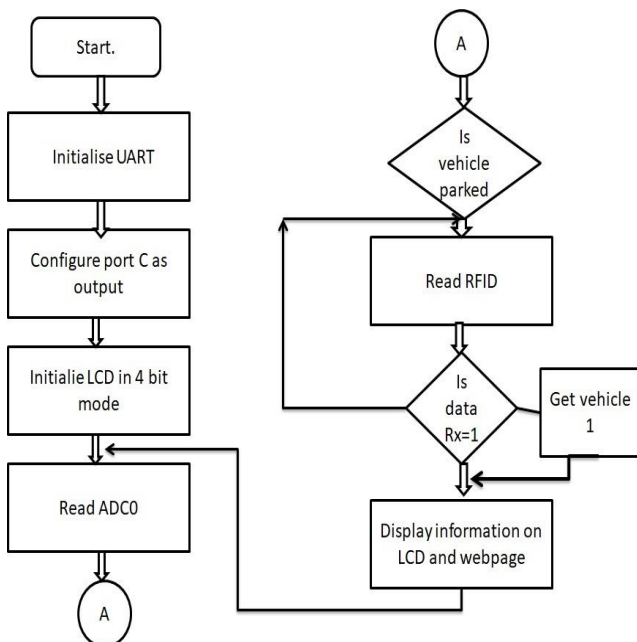
Figure 9 : FLOW CHART

- As the communication takes place through UART with the RFID so the initialization of UART is done.
- Here Port C is used as the output port so as to drive the motor.
- The data updated will be displayed on the LCD, as the parking is been used or vacant.
- The vacant slots of parking are been checked later.
- RFID is read so as to allocate the slot to the respective user.
- The updated data is displayed on the LCD as well as the webpage.
- The same process repeats for the next vehicle.

VI. PROPOSED SYSTEM ADVANTAGES

- Highly secured system.
- Reduces the requirement of man power.
- Traffic flow decreases as fewer cars are required to drive around in search of an open parking space.
- An optimal parking solution will remarkably decrease driving time, hence lowering the amount of daily vehicle emissions and ultimately reducing the global environmental pollution.
- System reduces the area required for the parking.
- Real-Time Data is generated and processed.
- Optimized parking: – Users find the best parking spot available, reduces time, resources and effort. The parking slot fills up efficiently and space can be utilized properly by corporate and commercial entities.

VII.   APPLICATIONS

The methodology can be adopted by various governments and private organization's so as to reduce the parking space such as:

- Shopping malls.
- Theaters.
- Auditoriums.
- Colleges.
- Companies.
- Society.

VIII.   CONCLUSION

The system benefits of smart paring go well beyond avoiding the needless circling of city blocks. It also allows cities to develop fully integrated multimodal and intelligent transportation systems. Developing smart parking solutions within a city requires mobile phone integration, hardware and software innovation and data standardization and management,. Due to smart parking systems within a city solves the vandalism and pollution problem.

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Women Safety Band Using Internet of Things

Shewta Suryawanshi, Arti Sherkhane, Archana Sutar, Pranjali Gaidhani

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

In today's world, women's are less secure and having many issues regarding their purpose. They have to many undergo among various difficult situations and have to prove themselves every time in all critical conditions. The paper suggest a new perspective to use for technology for women safety. "Women are Harassed, Raped, Killed Every Day!!" That's a way beyond HUGE number! We proposed an idea we changes the way everyone things of women safety band. We proposed to have to device which is the integration of multiple devices, hardware comprises of a wearable "Women Security and Safety Smart Band" Which Continuously communicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes by using various sensors like temperature sensors, heartbeat sensors and Human behaviour and reactions to different situations like anger, fear.

Keywords : Atmega328 Microcontroller, Internet of things (IOT), GPS module, GSM, Smart phone.

I. INTRODUCTION

The Smart Band Integrated with smart phone has an advantages so as reduce the cost of the device and also reduce the size. The AVR microcontroller in which contacts four(4) People and message "HELP" stored in memory is sent to destination through Global system for mobile communication (GSM). In panic, women is not able to shout out, this device can easily indicate about dangerous situation to people surrounding by it. For self-defence this device includes shock generators which can be women used again an attacker in case emergency. This shock is intense enough to scare the attacker away. It could be accessed by wireless technologies like GPS, GSM and Wi-Fi modem and monitored by the nearby device. We also have to use Global positioning system (GPS) which will help to detect location of the device. Global System for Mobile Communication (GSM) used in the model is used to send alert message to guardian, friends, relatives and police station. We have to use Internet of

things (IOT) based device which will help to monitor values of different sensors and Global positioning system (GPS) used in device.

GSM attached to microcontroller will send message to contact stored in SIM. GPS attached to microcontroller will track the position of the device. To develop a system for using IOT by android users for keeping track through several applications. This applications users GPS for identifying the location of the person in trouble and the system can be divided into two module.

II. PROBLEM STATEMENT.

As we seen from many years, the many problem arises for the women who works at late night. And the crimes are increases day by day. So to reduce this crimes ratio we have to take some action. Government gives so many rights for the girls and takes acts against the harassment on the women then also the crimes are

happens. Hence we proposed this system to reduce the crimes and for women to freely surrounded at late night on street also.

III. OBJECT OF PROJECT

The aim of this project is to develop a self defense system especially for women to protect themselves from present day physical harassments. It has wide range of features and functionality like providing instant location of distress victim to the predefined number as soon as the emergency switch is pressed or if someone else tries to remove it forcefully. This would help to reduce the crime against women.

IV. PROPOSED WORK

The proposed work explains about explorative idea for women security which has become mandatory now-a-days. This system is capable of monitoring the state of user's body using heartbeat sensor and temperature sensor. It is also used full for physically weak user because we use emergency shock system. It is affordable since make use of our Smartphone which has inbuilt GPS and we are using Wi-Fi Module by taking Hotspot. By using concept of IOT reliability of sensors to real time system be increased.

V. METHODOLOGY

The design is implemented using an embedded microcontroller, in a modular form to be adaptable to different types of location tracking. Based on the total design of the system, the hardware and software of the system is a real-time monitoring of the women's body condition and location details in order to provide immediate help. The lady can protect herself by pressing the switch thereby it produces the electric shock and helps to deter the person harassing her. The software is developed in embedded C language to demonstrate the system capability in providing real-time response. Using the location information

supplied by this system, the location is traceable using GPS through Google Maps.

If switch 1 is pressed it obtains location information from the GPS and prepares a text SMS containing the present location information and sends SMS through GSM modem to the pre-programmed mobile number. Once the message is sent to the pre-defined number it displays "sent" instruction in the LCD, and if it's not send then it displays "error" instruction in the LCD. Similarly if switch 2 is found to be pressed, it activates the buzzer to make loud shouting sound to catch the attention of the nearby people for help. It also prepares the high voltage electric shock circuit to be ready to give a non-lethal shock to the attacker. On the other case if any of the parameter values are abnormal or any variation is detected, then also it obtains location information from the GPS and prepares a text SMS containing the present location information and sends it to the predefined number or pre-programmed mobile number.
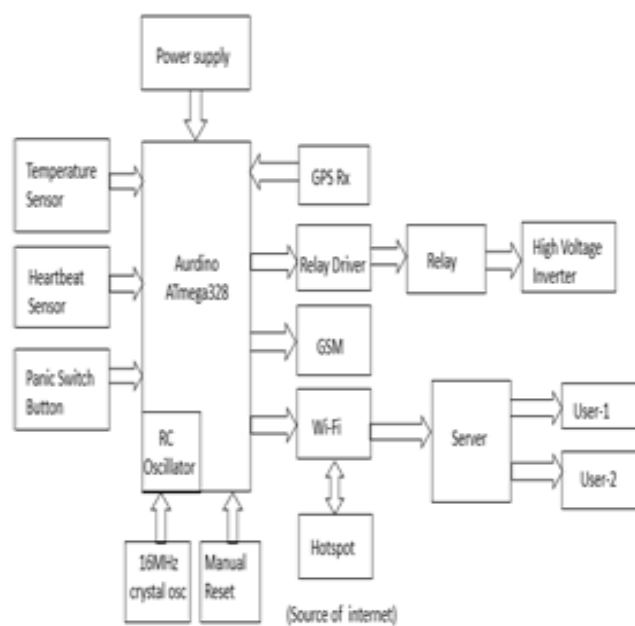
Figure 1: BLOCK DIAGRAM

VI. SYSTEM ARCHITECTURE

A. Arduino Uno:

The Arduino Uno is a microcontroller board. It has 14 digital input/output pins ,6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It consists of everything that is needed to support the microcontroller. We simply need to connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Uno board differs from all preceding boards. Instead of using the FTDI USB-to-serial driver chip, it features the Atmega8U2 programmed as a USB-to-serial convert .
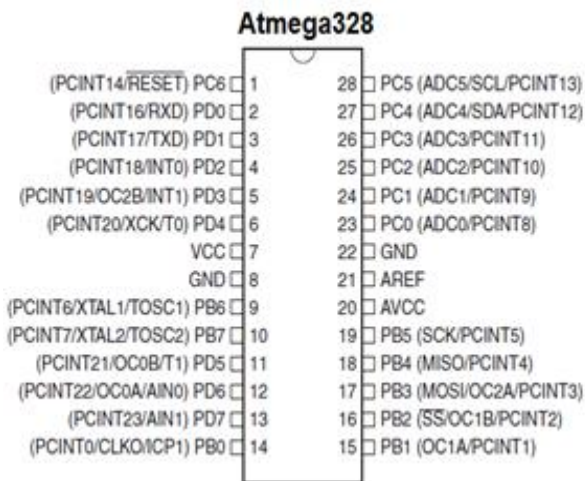
Figure 2 : Atmega328 (PIN DIAGRAM)

B. Sensing Units:

The women safety device senses the emergency situation with the help of sensing unit that consists of three elements:

1) Heartbeat Sensor – Working on the principle of IR reflection by blood, this sensor keeps a count of woman's heartbeat. Fig. 1 shows the heartbeat sensor.

2) Temperature Sensor – This sensor keeps a track of woman's body temperature and sends the generated analog data to controller.

3) Push Button – It's a simple Dual Port Double Throw (DPDT) switch that the woman presses when she is in an emergency situation and needs help.

Figure 3 : HEARTBEAT SENSOR

C. GPS :

Current location of woman is fetched by this unit with the help of GPS module. GPS Module comes with a POT (Patch on Top) ceramic antenna which makes it a small and complete solution for enabling GPS navigation to various embedded devices. Module comes with a standard 2mm DIP pin headers which provides easy interface to your device and is shown in Fig. 4.

Figure 4 : GPS (LOCATION TRACKING)

D. GSM:

Global System for Mobile is a standard for digital cellular communication. Global system for mobile communication (GSM) is operated at 900MHz frequency.

The GPS has a satellite which continuously monitoring the earth. These satellites are having atomic clocks, transmit radio signals that contain their exact location, time, and other information. This radio signals are monitored by satellite.

Figure 5 : GSM

E. WI-FI Module:

ESP8266 is Wi-Fi enabled system on chip (SoC) module developed by Espressif system.ESP8266 Serial Esp-01 Wi-Fi wireless is a complete and self-contained Wi-Fi network solutions. It consumes less than the current 12uA, and is connected, it consumes less power to 1.0mW (DTIM = 3) or 0.5mW (DTIM = 10).
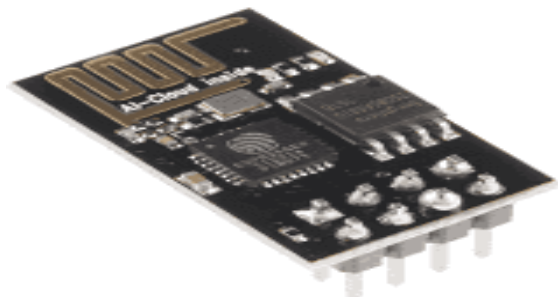
Figure 6 : WI-FI MODULE

F. Relay:

It is an electromagnetic device which is used to drive the load connected across the relay and the o/p of relay can be connected to controller or load for further processing.
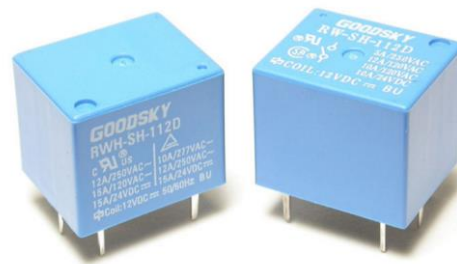
Figure 7 : RELAY

- FLOW CHART

Figure 8 : FLOW CHART

VII. PROPOSED SYSTEM ADVANTAGES

- Can be used for the safety of women.
- Can be used for the safety of children.
- Can be used for the safety of elderly aged people.
- Can be used for the safety of physically challenged people.
- Can be used as a legal evidence of crime with exact location information for prosecution.

VIII. APPLICATIONS

- Compact in size.
- Wireless connectivity.
- Easy and fast to install.
- Low cost with high performance.
- Works round the clock.

IX. RESULT
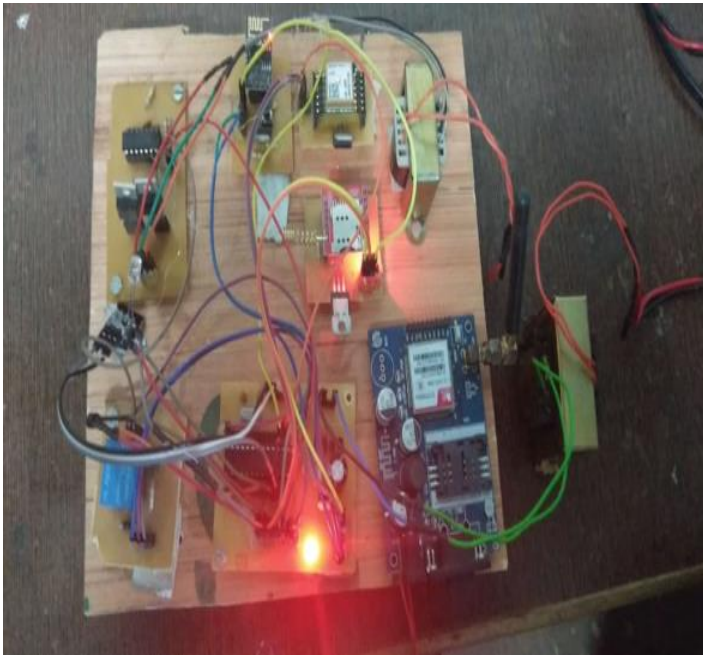
Figure 9 : OUTPUT

X. CONCLUSION

In our system we developed women self-security smart band which contain temperature sensor, heartbeat sensor and panic button. In this systems, sensors are continuously communicate with smart phone by using GSM and GPS modem. It send emergency message automatically to the relatives, friends and nearby police station. Our system is more efficient than other systems.

XI. FUTURE SCOPE

- This device can be compatible with mobile phones.
- Voice messages can be sent during need.
- Voice recorder and camera can also be added to the system.

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Agriculture Monitoring and Controlling Using Wireless Sensor Network

Ankush Kokane*, Sumit Moon, Satyajeet Taklikar, Riyaj Kazi

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

The efficient use of the wireless technology leads to the better implementation of security and data management in any domain of sector, implementing wireless technologies in agriculture to maintain crops and feedback efficiently through wireless sensor devices. The objectives of this work is to reduce cost and improve power efficiency and to seamlessly integrate it in maintaining crops in different localities of the selected region and also provide better user interface. Temperature, humidity and soil moisture are the most important factors for t1he productivity, growth, and quality of plants in agriculture. Sensors are deployed to gather the temperature and humidity values. The sensor node has to transmit the gathered information through the wireless communication network to the base station. At the base station raspberry pi zero w development board is used for controlling purpose. Collected data plays important role at irrigation management and necessary precautions against uncongenial weather conditions by user.

Keywords: Wireless senor network, Microcontroller Unit, Real time clock, Liquid Crystal Display.

I. INTRODUCTION

In our country today's agriculture is based on traditional methods, these methods follows principle of more effort and less profit. It is necessary to improve methods and help agriculture sector to sustain with the help of technology.

Wireless sensor network (WSN) refers to a group of spatially dispersed and dedicated sensors for monitoring and recording the physical conditions of the environment and organizing the collected data at a central location through wireless sensor node. WSNs measure environmental conditions like temperature, sound, pollution levels, humidity, wind, and so on. Mainly there are two types of sensor nodes, static sensor nodes Mobile wireless sensor network which are generally battery operated.

Raspberry pi and Arduino has currently become more popular than MCU in multi-sensor data acquisition in irrigation environment. At the same time, each sensor has its own requirements for readout and different users have their own applications that require different types of sensors. It leads to the necessity of writing complex and sensor driver code and data collection procedures for every sensor newly connected to interface device. Along with those MCU we are using nrf24l01 transceiver as wireless gate way to interact with remote sensor nodes. Nrf24l01 module uses ISM frequency which is free to use for local connectivity, as this band is cost free it will reduce cost of overall unit

The main challenge developers are facing in WSN is power backup for sensor nodes which are implanted

on field. It is very difficult to reach to each every node to change batteries and eternal battery technology is not exist till today , but time span between two maintains can be increased. In this paper power management system has been proposed to make the power efficient sensor nodes. To achieve that goal high energy density lithium ion batteries, low power low data rate transceiver and MCU board ARDUINO NANO are suggested.

II. LITERATURE SURVEY

WSN technique has been used by researchers for different applications. Work done by different researchers in WSN domain has been studied Carlo N. Cabaccan et.al have proposed WSN for Agricultural Environment using Raspberry Pi based Sensor Nodes. This paper also included interfacing of different sensors like light sensor, temperature sensor, moisture sensor. The graphical user interface has been developed. The wireless sensor network is composed of three sensor nodes connected in star topology. Each sensor node is equipped with light, temperature and humidity sensors for the data acquisition of the environment status. A real-time clock (RTC) was also installed to keeps track of the current date and time [1].Chidambaranathan C.M et.al have discussed the process to legitimately fine tune IEEE 802.15.4 details and the examining recurrence of conveyed sensor hubs. Challenges and issues in IEEE 802.15.4 MAC protocol have been included. Author have introduced limitations of wireless sensor network in agriculture like, Data security, Data maintenance, Size of the data and processing techniques, Handling Interruptions in data transfers[2]. Jyotshna Kumariet.al have developed system using sensors to monitor crop-field and automate irrigation system is studied and overviewed. This system gives an idea about the wireless transmission of sensor data from fields to coordinator, storing it in a database, and controlling required field parameters from mobile application. In this system, low cost soil moisture sensors, humidity and temperature sensors are used which continuously

monitors the field and send it to the web server using NRF24LO1 transceiver[3].Daler Kauret.al have proposed a mobile wireless sensor network which is a set of physically distributed sensor nodes. This paper focuses on the challenges of the Mobile Sensor Deployment (MSD) problem and investigates how to deploy mobile sensors with minimum movement and energy consumption to form a WSN that provides both target coverage and network connectivity [4].Waleed Al Shehri et.al This journal surveys different security approaches for WSNs, examining various types of attacks and corresponding techniques for tackling these. The strengths and weaknesses for each technique are also discussed at the conclusion of this journal. Many security approaches have been introduced in this journal as solutions for different types of attacks and threats affecting WSN [5].

III. SYSTEM ARCHITECTUR

A. A Sensor node

B. Basically sensor node can be introduced, it is a group of different elements included different sensors, battery transceiver to provide data to base station wirelessly. To monitor different agricultural parameters at nodes number of sensors is used for data acquisition. Nrf24l01 Transceiver module has been used as a gate way to communicate with base station [3]. This module works on ISM band which is license free that's why it will reduce overall cost of system. There are two variations according coverage range and power. Nrfl24l01 transceiver can operate on low power and that will lead to improved power efficiency. The characteristics of wireless sensor nodes are ease of use, scalability to the large scale of deployment, the mobility of nodes and resilience. Since these networks are interested in information regarding the physical phenomenon instead of information from a single sensor.

DHT11 Temperature & Humidity Sensor features a temperature & humidity sensor complex with a

calibrated digital signal output. By using the exclusive digital-signal-acquisition technique and temperature & humidity sensing technology, it ensures high reliability and excellent long-term stability. DHT11 consumes Very low standby current ie. 60au [8]. Remaining all sensors Like HC-SR501 PIR SENSOR, Soil moisture sensor (LM393), MQ2 gas sensor provide digital output.
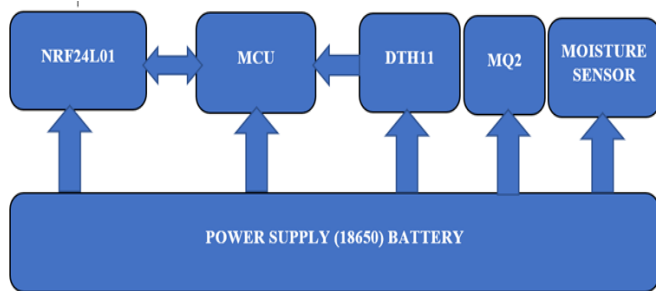
Fig.1: Block diagram of Sensor node.

B. Base station

In WSN purpose of base station is to release the restriction on the wireless sensor nodes and parameter controlling purpose. At base station Raspberry pi zero is used as the core controller. Nrf24l01 has been used as a transceiver. Raspberry pi is used because it has very high processing power and it supports better graphical user interface [1]. At base station data is collected from sensor nodes and saved in external memory as well as displayed on LCD. This data used for analysis therefore, the farmers can potentially identify the various fertilizers, irrigation, and other requirements. This project is concentrated on irrigation system control.
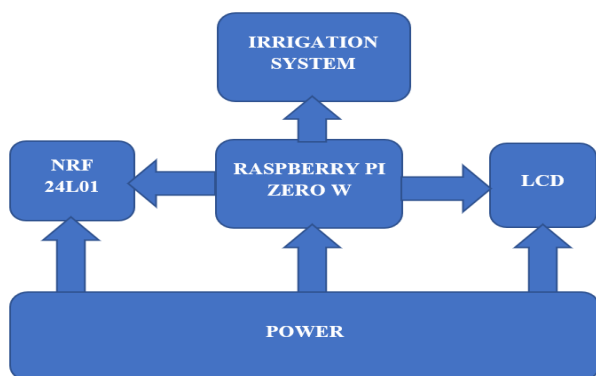
Fig.2: Block diagram of base station

IV. METHODOLOGY

A. System overview

An Agriculture sensor node has to be deployed in a farm field and to sense the environment of the farm field. The WSN consists of main three modules processing unit, sensor node and low power radio transceivers to collect data in the field and transmit it to a remote receiver at processing unit outside the field.

B. Processing unit

Raspberry pi zero is used as the core controller to release the restriction on the wireless sensor nodes and parameter controlling purpose. Embedded python language is used for interfacing of different I/O blocks with Raspberry pi zero. Low noise relay module is used to control irrigation system. External memory card is used to store data.

C. Sensor node

Arduino Nano board is used as the node controller and for data acquisition and as a MCU for transceiver module. Use of this board leads to power efficiency, compact and mobile sensor node.

D. Transceiver module

It consists of nrf24l01 R.F module. This module is used as a gateway to communicate with processing unit. It is a short range wireless device that's why it is compatible with new hybrid topology. This module can receive data from up to 6 transmitters hence it is best choice for WSN

E. Proposed Topology

Nrf24l01 transceiver module is used to establish wireless connection between base station and sensor nodes. These module comes with two variations on the basis of operating power has ranges 100 m and 1 km. Star topology would be better choice. A high power module with range up to 1km at hub can

communicate directly with base station and another module with range up to 100m at sensor node can communicate with hub. In following diagram element 0 is base station, elements 01,02 are hub and remaining are sensor nodes [7].
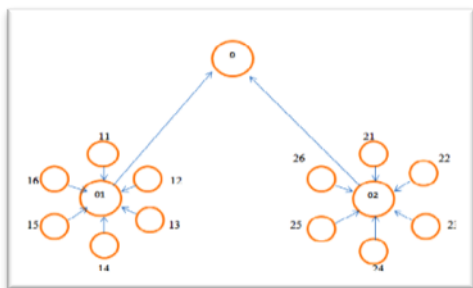
Fig.3: Proposed network topology.

V. CONCLUSION

An WSN-based Agricultural monitoring and controlling system has developed to control and analyze different agricultural parameters. The performance based on various metrics was analyzed. The prototype model on WSN has been developed with the help of Python and c languages. The ISM radio frequency band has been used to establish communication between sensor node and base station. It can help the farmer to take more production than conventional methods and enrich their lives. This work shall be further enhanced by making system more user friendly by developing better graphical user interface.

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Environmental Parameters Monitoring Using WSN

Pratik Sonawane, Manali Gurav, Prof. Riyaj Kazi

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

Traditionally, environmental monitoring is achieved by a small number of expensive and high precision sensing unities. The implementation of a wireless sensor network provides an alternative solution by deploying a larger number of disposable sensor nodes. Nodes are equipped with sensors with less precision. However, the network as a whole provides better spatial resolution of the area and the users can have access to the data immediately. The proposed system presents an automated wireless based weather station for real time measurements on an embedded system that continuously monitors several weather factors such as temperature, humidity, barometric pressure, wind speed, wind direction, and rainfall all these parameters are useful in weather forecasting. System can be placed in remote areas around the cities and villages which will give the idea about upcoming weather conditions.

Keywords: Wireless Sensor Network , Zigbee ,GSM Module, Sensors.

I. INTRODUCTION

The environmental care has become the biggest concern for almost every country from last few years. The system mainly gathers some atmosphere parameters such as barometric pressure sensor, temperature sensor, gas sensor, humidity sensor ,anemometer sensor and rainfall sensor.With the development of human society, environmental issue has become an important manifestation of civilization and life quality. Environmental monitoring always has been the way human understanding and foreseeing natural. There are some restrictions for human using traditional methods to monitor some environmental parameters in several inaccessible places, such as desert, mountain and jungle and so on. Nowadays Wireless sensor networks provide new solutions for these issues. WSN based on environmental monitoring change alternate traditions between human and nature, expands human's ability of understanding world.

Wireless Sensor Network (WSN)

Electronics have bought vision of WSN into reality which has increased the growth of low cost, low power, multifunctional sensor. Recent climate change related damage has illustrated how significant a detailed understanding of our environment and its progression is for human being .For the researcher to improve their comprehension, the capacity of current data collection techniques which are based on expensive stations. WSN is the only way out, well fitted to these problems with the ability of immediately transmitting gathered data to distant server. WSN is currently an active research area due to their wide range applications including military, medical, environmental monitoring, safety, and civilian. This node is called a sink since it acts as such with regards to the data stream coming from the

network. Although sensor networks have many applications, environmental monitoring is a domain in which they may have a huge impact. WSN refers to a combination of distributed sensors for monitor and records the surrounding conditions of the environment and organize the stored data at server's database. WSNs figure out environmental conditions like earth quake, rain falls, light intensity, smoke, fire, wind, and so on. There are a massive amount of applications for WSN. The majority of monitoring applications rely on WSNs, motivated by the indisputable advantages they bring: lower costs due to the replacement of cables, variable network topologies, scalability, and lower maintenance. Wireless sensor the implementation of solutions belonging to various fields, including environmental monitoring, natural disaster prevention, current consumption monitoring in large buildings, monitoring systems for the dosimeter of radiology operators in healthcare applications, location tracking of people, assets or hazardous gases, gear condition surveillance and process control in industrial environments, also road traffic management in smart cities. Recent technologies in wireless communications and electronics have brought the vision of Wireless Sensor Network (WSN) into reality which has increased the growth of low cost, low power and multifunctional sensors that are small in size and can communicate in short range. In establishment of WSN, the nodes are in parallel operated at out-of-the-way places. Therefore, the minimizing of power consumption is one of the key in issues. Therefore, precise and low power nodes are required for development of wireless sensor network. In facts, the nodes can be designed with microcontrollers .Each node has a processing unit, memory, RF transceiver, power source and array of sensors as well. The node communicates wirelessly and self-organizes after being deployed in an ad hoc network. Each node consists of microcontrollers, memory and transceiver. These battery powered nodes are used to monitor and control the physical environment from remote locations. In past few years

the application of Wireless Sensor Network have been widely used and applied in medical, military, industrial, agricultural and environmental monitoring. For the past few years, Wireless Sensor Network has been applied in various fields and mostly in environment monitoring applications. Environmental monitoring is the main autonomy which may contribute large effects. The unstable climate conditions recently verified how important a deep understanding of our surroundings and its development is for human being.

II. LITREATURE SURVEY

The survey has firstly done on standard technologies to establish a standard sensor network. Study went on choosing the suitable standard sensors. It should be suitable in all aspects like economic and technological. The primary concern we have to make while choosing the communication method is range of communication. Here we have chosen Zigbee 802.15.4 Module. The further study has done on selecting microcontroller. The system implementation is contained with a hidden goal of achieving low power consumable solution. The microcontroller should be also low power consuming alongside all the remaining sensors also low power consuming. We have chosen ATMEGA328, which is low power microcontroller and which works on 1.8v to 5.5v.The next study went for output data of sensors using GSM. The data collected from the sensors is mostly in the form of digital values representing the values of environmental parameters .The sensor sense the environmental parameters where the output is in digital format by using GSM method we can send this information to the host or user in the format of SMS on mobile or electronic device.

III. SYSTEM ARCHITECTURE

The implemented system consist of microcontroller (AT MEGA328) as a main processing unit for the entire system and all the sensors and devices can be connected with the microcontroller
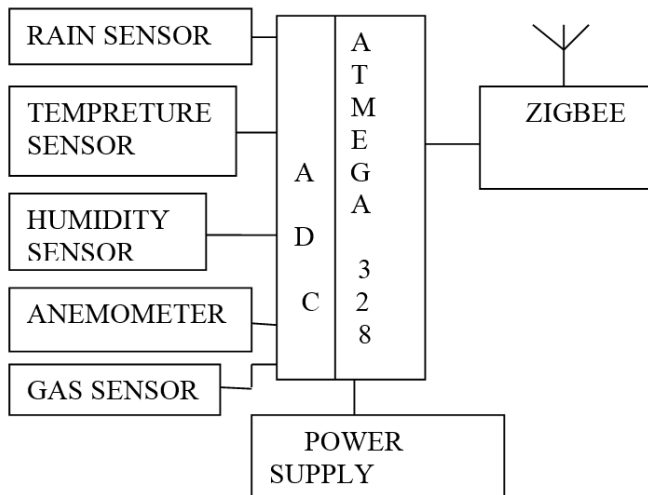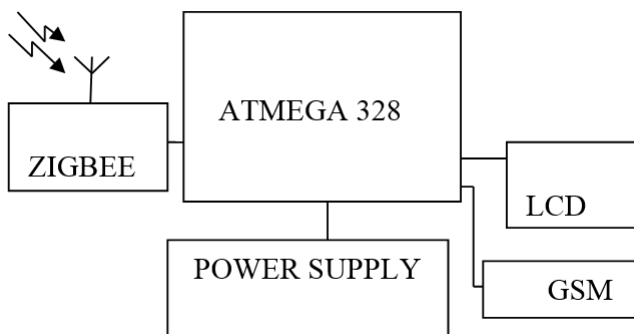
Fig a. Transmitting Antenna

Fig b. Receiving Antenna

A. ATMEGA 328

AT mega 328 is a development board the another name of ATmega328 is Arduino Uno board .It has total 28 pins in which fourteen digital I/O pins, six analog inputs, one quartz crystal clock, one universal serial bus connection one power jack ATmega328 has 32 KB flash RAM and 2 KB of SRAM and 1KB of EEPROM .It has register 3 flexible timers/counters with computer modes , internal and external interrupts, serial programmable USART, a byte oriented 2 wire serial interface, SPI port, 6 channel 10- bit A/D convertor(8 channels in TQFP and QFN/MLF packages),programmable watch dog timer with internal oscillator, and 5 software selectable power saving modes.ATMEGA328 is commonly used in many projects and autonomous systems where a simple, low-powered, low cost microcontroller is needed perhaps the most common implementation of this chip is on the popular aurdino development platform, namely the aurdino Uno and aurdino Nano Models.

B. Zigbee Module

Zigbee is an IEEE 802.15.4-based specification for a suite of high-level communication protocols used to create personal area networks with small, low-power digital radios, such as for home automation, medical device data collection, and other low-power low-bandwidth needs, designed for small scale projects which need wireless connection. Hence, Zigbee is a low-power, low data rate, and close proximity (i.e., personal area) wireless ad hoc network.

The technology defined by the Zigbee specification is intended to be simpler and less expensive than other wireless personal area networks (WPANs), such as Bluetooth or more general wireless networking such as Wi-Fi. Applications include wireless light switches, home energy monitors, traffic management systems, and other consumer and industrial equipment that require short-range low-rate wireless data transfer.

Its low power consumption limits transmission distances to 10–100 meters line-of-sight, depending on power output and environmental characteristics.[1]Zigbee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones. Zigbee is typically used in low data rate applications that require long battery life and secure networking (Zigbee networks are secured by 128 bit encryption keys.) Zigbee has a defined rate of 250 kbit/s, best suited for intermittent data transmissions from a sensor or input device.

C. Sensors

Sensors are electronic devices that measure a physical quality such as light or temperature and convert it to a voltage. This process of changing one form of energy into another is called transduction. Often, sensors are

also referred to as transducers. Sensors can be broadly classified in two categories: digital sensors and analog sensors. A digital sensor's output can only be in one of two possible states. It is either ON (1) often +5V, or OFF (0), 0V. Most digital sensors work with a threshold. Is the incoming measurement below the threshold, the sensor will output one state, is it above the threshold, the sensor will output the other state. In contrast to a digital sensor, an analog sensor's output can assume any possible value in a given range. Very often the output of an analog sensor is a variable resistance that can be used to control a voltage. Rather than only being able to toggle between two states and the analog sensor can output an almost infinite range of values. When a switch is open, no current flows. In contrast, when a switch is closed, current flows (i.e. closed = ON). A switch that stays in the position it was put is called a latching switch. Switches can be spring loaded (e.g. micro switches/snap action switches), in this case they are called momentary. A simple switch can be Normally Open (NO) or Normally Closed (NC).separate for more convenience, power indicator LED and an adjustable sensitivity though a potentiometer. The analog output is used in detection of drops in the amount of rainfall. Connected to 5V power supply, the LED will turn on when induction board has no rain drop, and output is high. When dropping a little amount water, output is low, the switch indicator will turn on. Brush off the water droplets, and when restored to the initial state, outputs high level.

1.**Rain Sensor:** The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. The module features, a rain board and the control board that is separate for more convenience, power indicator LED and an adjustable sensitivity though a potentiometer.

The analog output is used in detection of drops in the amount of rainfall. Connected to 5V power supply, the LED will turn on when induction board has no rain drop, and output is high. When dropping a little

amount water, output is low, the switch indicator will turn on. Brush off the water droplets, and when restored to the initial state, outputs high level.

2. **Humidity Sensor:** Based on a unique capacitive cell, these relative humidity sensors are designed for high volume, cost sensitive applications such as office automation, automotive cabin air control, home appliances, and industrial process control systems. They are also useful in all applications where humidity compensation is needed.

3.**Anemometer:** The sensor used for wind speed measurement is the IMD make three-cup anemometer. The sensor is basically chops IR beam using chopper tooth. System uses an optocoupler for this purpose. No. of chopped electric pulses per min is proportional to the Wind speed. A Digital to Analog convertor IC used in the Anemometer to give directly 0 to 4Volts DC for 0 to 100Knots Wind Speed.

4. **Temperature Sensor:** The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly proportional to the Centigrade temperature. The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling. The LM35 device does not require any external calibration or trimming to provide typical accuracies of ±¼°C at room temperature and ±¾°C over a full –55°C to 150°C temperature range. Lower cost is assured by trimming and calibration at the wafer level. The low-output impedance, linear output, and precise inherent calibration of the LM35 device makes interfacing to readout or control circuitry especially easy. The device is used with single power supplies, or with plus and minus supplies.

5. **Gas Sensor:** The MQ135 Gas Sensor are used in air quality control equipments and are suitable for detecting or measuring of NH3 ,NOx, smoke, CO2. The MQ135 sensor module comes with a digital pin

which makes this sensor to operate even without a microcontroller and that comes in handy when you are only trying to detecting particular gas.

IV. SYSTEM FUNCTIONALITY
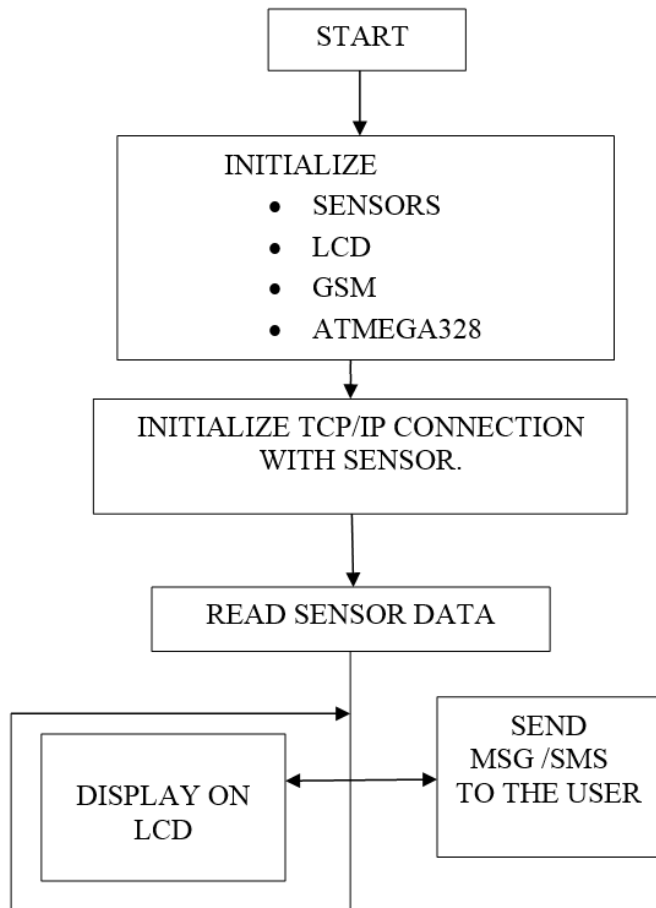
The system functionality includes the working process of the entire system after integrating all the peripherals along with software. The system works in three phases, one is initializing the data from the sensors, and the another one is to read the data and finally one is sending the data to the GSM Module.

V. WORK DONE

When looking for other environmental monitoring works, we realize that there are some applications in either software or hardware that can monitor effectively the environmental conditions of a specific place. The Oversees application (Network Monitoring Software) monitors the environmental status of the

room where a server is located, i.e the user can monitor temperature and humidity of a data center. Alerts are sent to the user via e-mail to the mobile phone if the upper or lower limits of these parameters have been reached.
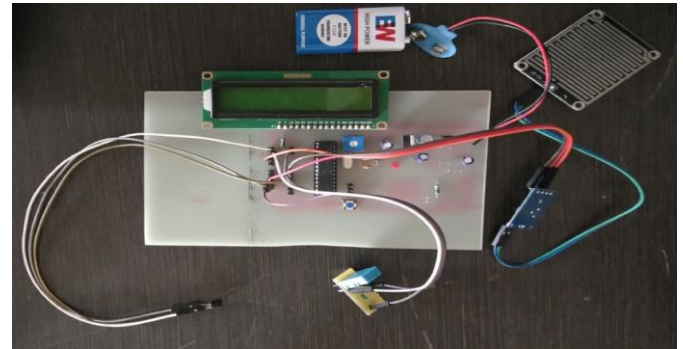
Figure 4: experimental design of project kit

IV. RESULT
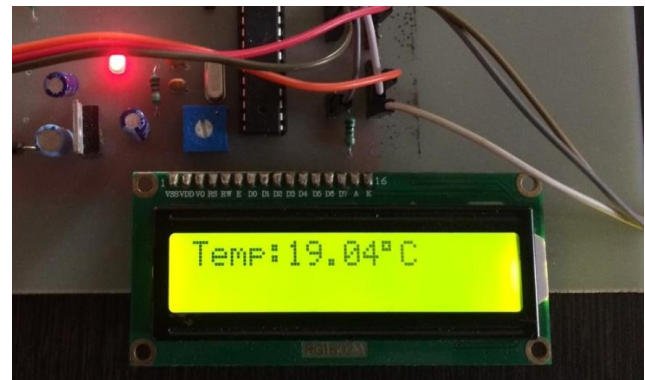
Figure 5: Output.

V. CONCLUSION

Wireless sensor networks have been a big promise during the last few years, but a lack of real applications makes difficult the establishment of this technology. This paper reviews the wireless sensor network applications which focus mainly on the environmental monitoring system. These systems have low power consumption, low cost and are a

convenient way to control real-time monitoring. Moreover, it can also be applied to indoor living monitoring, as well as in many other applications. These approaches have been proved to be an alternative way to replace the conventional method that use men force to monitor the environment and improves the performance, robustness, and provides efficiency in the monitoring system.

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Machine Monitoring Wireless Node

Sandhya Shinde, Gaurav Shete, Pooja Yedage, Rameshwar Bedade

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

This paper aims to develop a node, which can monitor machines at industries and store all the data and parameters to increase operational excellence. With the help of esp32 an arduino based microcontroller, which has built in Wi-Fi and Bluetooth. Node is interfaced to the sensors which are installed in machine, this sensors collect all the required parameters about the machine. Node can be installed on individual machine or can monitor multiple machines at a time. All the data is sent on servers in the form of log which shows all the information in detail with time. Node communicates directly with maintenance and supply stations to ensure quick service and save time.

Keywords: ESP32, WSN, Wi-Fi, Data Acquisition, IOT.

I. INTRODUCTION

Machine monitoring wireless node is a system which works in the form of array. Where in many nodes are installed on machines in assembly line or array of machines. This nodes send all the real time information about the machine to the server which further sorts it out for user understanding. This system can monitor voltage ,current , vibration, rpm, oil pressure etc, of a machine which helps in maintaining them understanding the current state of machine and also the rate of production.

This node has Wi-Fi connectivity by which it communicates with the central system. In order to control and programme nodes comes with display on it, this display is touch sensitive hence no external buttons are used. It contains the easy user interface so it becomes easy to setup and can be operated by anyone. As entire system is automated manual reporting of anything by the operator is not necessary.

Problem Statement

Nowadays there is need of improvement in the production sector to fulfil the constant demand. Any problem in production line may result in major loss, sometimes there is no specific reason for the interruption hence there is less room for improvement of current production. Further the manual reporting of all the problems by the operator also leads to the loss of vital information about the system. In order to make this process more reliable less hectic and perfect this system helps to collect all the necessary information so the actions can be taken to improve overall operation.

Objectives

This project helps to develop the system which is directly installed on field which further sends all the data to addressed server and prevent the loss of the vital data about the machine. This will help in recognising the problem quickly and take necessary actions to prevent loss and also help in continuity of

the process without interruption.it also helps to improve the entire process and increase production.

Proposed Work

Proposed work ensures to develop system which contains all the required features to ensure every task is done seamlessly. All the interfaced sensors collect the required data and send it to the central system where it can be analysed to improve current state of system. It consumes less power and puts no additional load on the machine power line. Display with easy user interface makes things easy for non-skilled workers.

II. METHODS AND MATERIAL

This node has esp32 microcontroller which has Wi-fi and two core processor which will help to provide enough processing power. It also has 38 pins which are enough for interfacing of all the peripheral devices.

One of the most important task of the system is to create log which contains start and stop time of the machine. The process starts with the setting up of the node for the day. When there is any change in values of sensors it is been analysed and if the change is drastic the corresponding message is sent to the addressed station.

For example, if there is no material present at any machine for further production the error code for the same will be displayed. Worker can send this message to supply department for requirement of the material, this message is processed and after successful provision of material this error is marked as solved and entire process is stored in the central system. Same happens for if the machine requires any maintenance. Hence everything can be monitored from one place and also help in knowing actual reasons for production decrease. System is better than any current on board Units because it is based on IOT.

Hence it helps to increase the overall operational excellence.

Display on the node is of 7 inches Nextion display which can be programmed any user interface with the help of Nextion editor. This ensures the flexibility of the system as every machine will require different user interface for its operation. With the help of the display we can also setup some simple thing such as connecting to a network, date and time setting also UI design can be changed for better experience.

System Architecture

Flow chart:
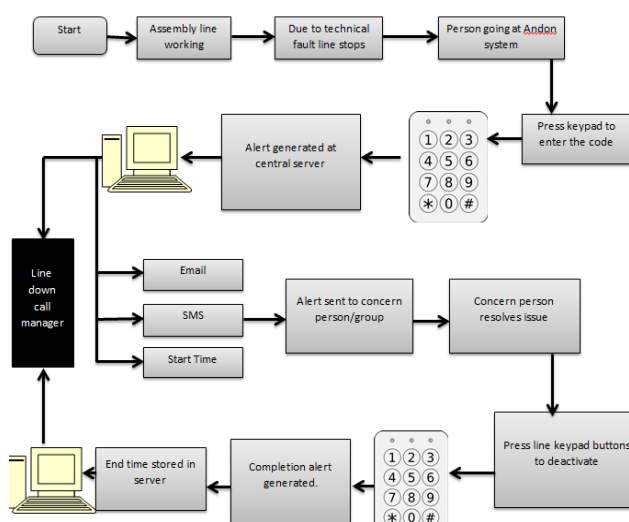
Block Diagram
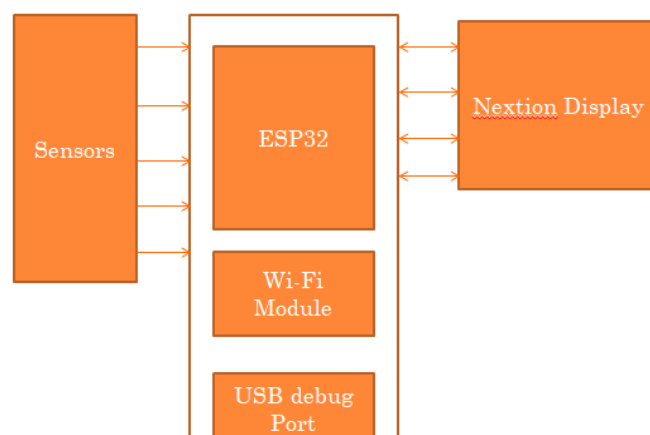
Esp32

The main processing unit used in this system is esp32 Microcontroller. ESP32 is a 2.4 GHZ single core Wi-Fi and Bluetooth combo chip with 40nm technology. It has 38 GPIO pins.
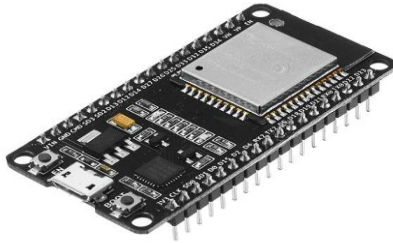
Rpm sensor

Used to detect the current speed of the motor on the machine .with the help of laser diode.

Voltage sensor

This is to measure the voltage changes consumed by the machine to report any change.

DHT11 Temperature sensor

To sense the current temperature of the machine for major changes.

Vibration sensor

In order to detect malfunctioning in machine the increased vibrations can be detected by vibration sensor.

Nextion display

Nextion is a seamless Human Machine Interface (HMI) solution that provides a control and visualization interface between a human and a process, machine, application or appliance. Nextion is mainly applied to Internet of thing (IoT) or consumer electronics field.
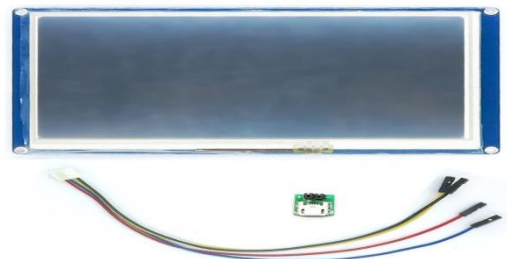
Advantages

i.Communication compatibility is very good as it is an IOT base system

ii. Less error occurrence hence it is reliable.

iii. Accuracy and reliability is better than current on board systems

iv. It has easy user interface.

v. it can be used on any system hence it is flexible.

Disadvantages

i. Cost of the node will increase the overall cost of machine.

ii. As various sensors are involved installation is not easy and different for every machine.

Application

i. It is used to monitor an entire array of machines at and collect the data.

ii. It can be installed on any system which needs monitoring for eg. parking system, traffic signals, survellence system, etc

III. CONCLUSION

Improving production of any machine and also making process easy for the workers is fulfilled by this system.

It also ensures operational excellence as everything has the proper reason mentioned in the form of log. system also provides an easy user interface which makes it accessible to workers with no computational skills.

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IoT Based Garbage Monitoring System

M. H. Thigale*, Harshada Ithape, Shubhngi Lachyan, Ankita Mehare

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

ABSTRACT

With increase in population, has led to tremendous degradation in the state of affairs of hygiene with respect to waste management system. Spillover of waste in civic areas generates the polluted condition in the neighbouring areas. This may aggravate numerous severe diseases for the nearby people. It will humiliate the appraisal of the affected area. For eliminating or mitigating the garbage's and maintains the cleanness, it requires 'smartness based waste management system. So this paper is proposed to IOT based smart waste clean management system which checks the waste level over the dustbins by using Sensor systems. For this system Microcontroller is interfaced with ultrasonic sensor, moisture sensor system. To monitor and integrate the level of garbage webpage is developed For getting the desired information which is related to the various level of waste in different locations. This will ensure the greenish environment and support for swachh bharat for cleanness.

Keywords: Atmega328 Microcontroller, Internet of things (IOT), Ultrasonic Sensor, Webpage.

I. INTRODUCTION

In recent times the concept of smart garbage collection has achieved with grate popularity. Productivity and reliability of urban areas is maximized due to huge efforts been made in the field of IOT. IOT noticed problems such as, improper garbage collection, wastage of fuel. In this paper, we present an IOT based cloud integrated smart garbage monitoring system that reduces the requirement of large number of manpower. The proposed Smart garbage monitoring system consists of moisture sensor for dry and wet garbage separation purpose. A webpage allows an end user to check the level of garbage in the respective dustbins at different location. Such a system increases municipal corporations comfort and reduce efforts of checking all dustbins for garbage collection operation by allowing drivers to easily decide on where to go to collect garbage.

The significant research that is made recently, focus on smart cities and how to use resources efficiently. Garbage is scarce in most Metropolitan areas and intelligent systems are required to remotely access the information via a smartphone or computer or laptops. At long ranges the system is highly efficient and has high accuracy.

IOT is a global network of things i.e. physical and virtual devices having independent identity each one, which can be connected via a vast network to share information and process it into meaningful data. IOT refers to devices like Mobile phones, Bluetooth connected headsets, thermostats, utility meters temperature readers, sensors, actuators which can sense some parameters.

The IOT based Garbage monitoring system is a very innovative system which will help to keep the cities clean. Basically this system monitors the level of garbage collected in the garbage bins and send the

information to the user via a web page. Also it indicates the status of garbage i.e. whether it is Dry or Wet on LCD. For this, the system uses ultrasonic sensor the sensor was placed on the top of the bin to detect the garbage level and compare it with the level of the garbage bins depth. A threshold level was set as 4m. This system makes use of Advanced Virtual Reduced (AVR) Instruction Set microcontroller. LCD screen is used to display the status of the garbage collected in the bins, and web page is built to show number of user monitoring it. The web page gives a level of the garbage bins. The display shows the condition of the trash stage. Thus this scheme helps to maintain the city sparkling by informing about the trash levels of the bins by providing Level representation of the bins via a web page.

A webpage is accessible through the internet or other network using an internet browser, it is a document commonly written hypertext mark-up language (HTML). A webpage can be used by entering a URL address and may contain text, graphics and hyperlinks to other webpages and files.

II. METHODS

Following is the methodology of the project:

- User will check the level of garbage in the bins through webpage.
- The system includes transformer, rectifier, regulators, wi-fi Modem, AVR microcontroller and Ultrasonic sensors, LCD, DC motor, Dry/wet sensor. The Ultrasonic sensors are placed over the garbage bins to detect the level of collected garbage in the bins and are interfaced with the ATmega 328p.
- The ultrasonic sensor sense the level of garbage upto 4m, but in this we kept this as a10cm.
- The wi-fi modem also interfaced with the microcontroller.
- The supply (230V 50 Hz ac) is given to the step down transformer it step downs 230V into 12V ac

and its output is given to the rectifier.
- Moisture sensor is used to sense whether the garbage is dry or wet.
- DC motor is used to flip the platform

III. SYSTEM ARCHITECTURE & MATERIAL

The block diagram of the proposed project is shown below. The block wise description is stated.

Fig1. Shows block diagram of smart garbage monitoring system. The basic requirements of the controller (ATmega32) are 5V power supply and manual reset. It has internal RC oscillator with frequency of 8MHz. If higher speed of operation is required then external clock is to be connected. This combine forms 16MHz crystal oscillator that generates pulses.
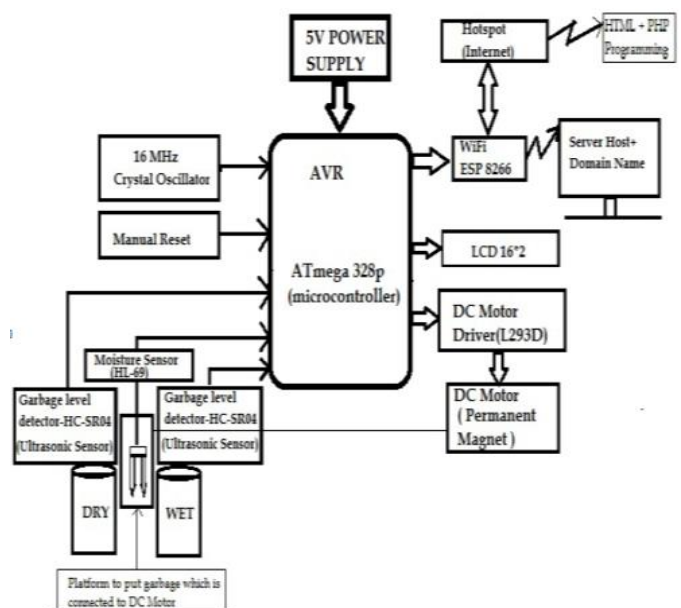
Figure 1 : BLOCK DIAGRAM

To activate the stepper motor 12V/400mA is required. The controller provides (5v/25mA) which is not sufficient to drive the motor so we use DC Motor driver (L293D) which is connected to moving part of platform system. The Dc Motor Driver generates the current of 600mA which is sufficient to drive the DC motor.

The status of garbage will be displayed on 16X2 LCD. The same data will be stored on the server.

The **ESP8266** with 1 MB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi.

AVR(ATmega 32):

It is a low power CMOS 8-bit microcontroller based on the AVR enhanced RISC (Reduced Instruction Set Computer) architecture. Along with running powerful instructions in a single clock cycle, the ATmega32 achieves throughputs of 1 MIPS per MHz allowing the system to improve efficiency of retrieval or processing power consumption versus processing speed.
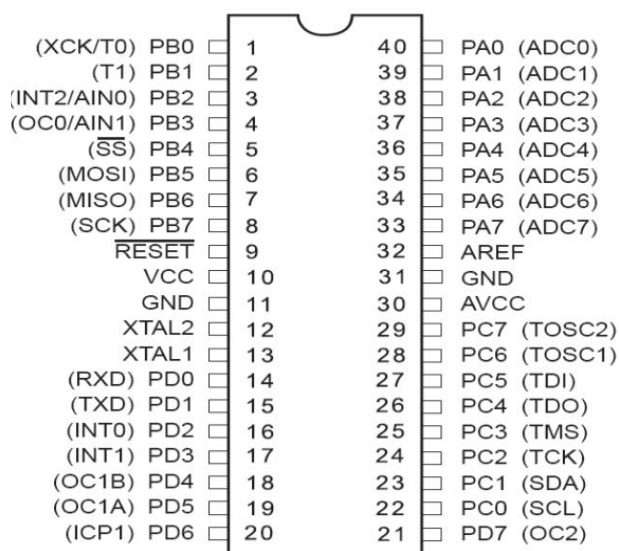
Figure 2: Pin Diagram

Webpage :

A webpage is a document suitable for www and web browser. It can be created or written by using HTML, PHP or any comparable mark-up language. Number of users or server can access this webpage using a network for web browser from a remote web server with the help of its URL address.
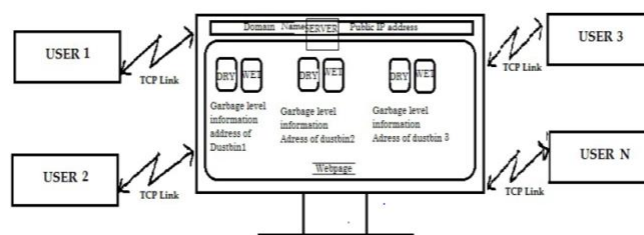
Figure 3 : Webpage

Moisture sensor:

A moisture sensor is used to detect the state of object whether it is dry or wet. When the moisture is present in the object the resistance of the moisture sensor will vary and thus accordingly the change in voltage gives the output as the low or high voltage with the reference of threshold voltage. If the voltage is high then the object is detected as the wet and if the voltage decreases then the object is detected as dry object.

Figure 4 : Moisture Sensor:

The ESP8266 with 1 MB of built in flash allowing for single chip devices capable of connecting to Wi-Fi. ESP8266 module can operate in the low power connectivity models for instance it is operates in DTM10 it only consumes 1.2mW while maintaining a WI-FI connection. The ESP8266 Wi-Fi Module is a self-contained system on chip (SOC) with integrated Transmission control protocol and internet protocol (TCP/IP) stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is able of either hosting an application or offloading all Wi-Fi networking functions.
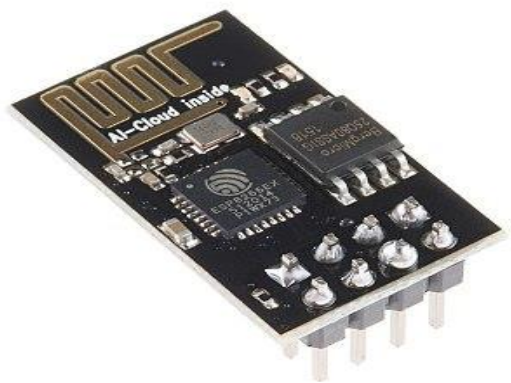
Figure 5 : Wi-fi module

LCD:

LCD (liquid crystal display) is the technology used for display in electronic circuits. LCDs allow displays to be much thin than cathode ray tube (CRT) technology like light-emitting diode (LED) and gas-plasma technologies. The pixels are controlled in completely different ways in LCD screens.

Figure 6 : LCD

DC Motor and DC Driver:

A DC motor is a type of electric motor which convert electrical energy into the mechanical energy. Its speed can be varied over a wide range using variable supply voltage or variable strength of applied current.

SPECIFICATIONS:

1. 12V operating voltage
2. 150mA operating current
3. 4KgCm Torque.

Figure 7: DC MOTOR

The L293D is a DC driver IC which is quadruple high-current half-H drivers. It can provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V. It can drive inductive loads such as relays, solenoids, as well as other high-current/high-voltage loads.

Specifications:

1. 4.5 V to 36 V-Wide supply voltage range.
2. Thermal Shutdown.
3. High-Noise-Immunity Inputs.
4. 600 mA Per Channel-Output Current.
5. 1.2 A Per Channel- Peak Output Current.
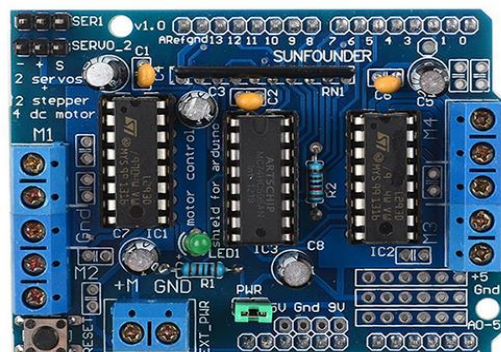
Figure 8: DC Motor Driver

Ultrasonic sensor:

Ultrasonic sensor is a sensor used to detect the distance of the object with high accuracy within a range of 2cm to 4m. It emits the ultrasonic rays through its transmitter when on reflected by any object receives the ultrasonic sensor through its receiver. It calculates the distance using the formula:

Distance = Time * Speed of sound/2

Figure 8: Ultrasonic Sensor
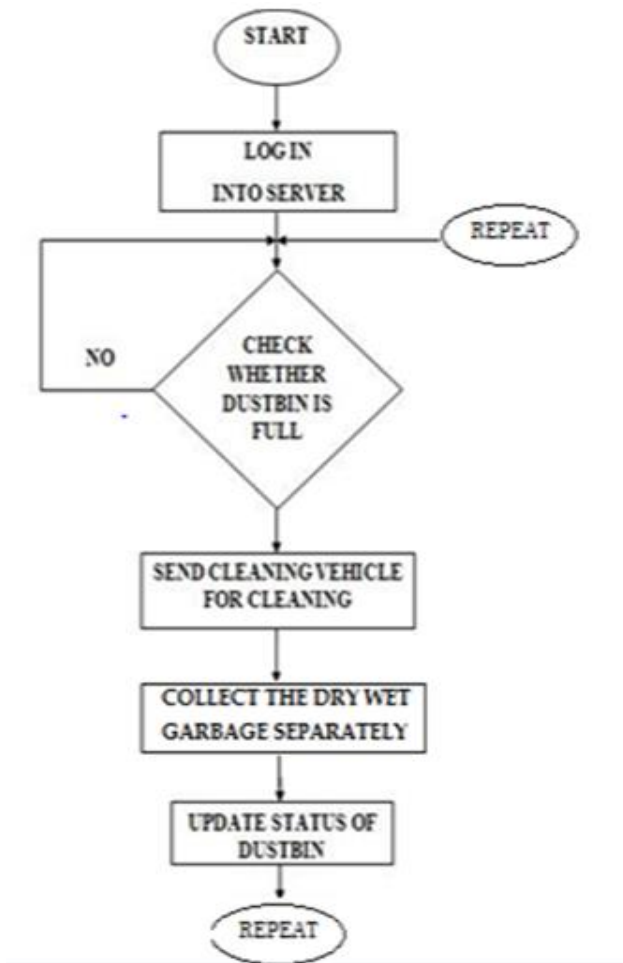
Figure 10: Flow Chart

IV. CONCLUSION

This system is beneficial for smart garbage monitoring system. It also allows cities to develop fully integrated multimodal and intelligent garbage monitoring systems. The targeted waste collection saves times, money, and fuel and also reduce exhaust gas emission. Even garbage truck tours can be reduced by 30%.

Hence this project will helpful collection of garbage to make the premises clean.

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Biometric Wireless Pen Drive

Shubham S. Mahakal, Akash A. Dhanbhar, Harshal N. Dhussa

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

The data transfer through USB protocol mostly takes place through wired connectivity. It is not always efficient and easy to access these wired connectivity modules, so to overcome this problem, we are designing a hardware, which can allow wireless transfer of data. With the help of this project, we not only transfer the data wirelessly but also, secure the data. In this proposed technique, a finger print scanner connected with the USB devise, which will all wireless transfer of data only after biometric authentication. This station connected to a PC over USB, and using our application-layer software on PC, we allow the user to read and store data on the device.

Keywords: Fingerprint, Biometric sensor, Pen drive, Wi-Fi, Security.

I. INTRODUCTION

We are using different peripherals like- USB cables, pen drives, etc. for transmission of the data. These are more efficient wired data transfer techniques but data can also be transfer wirelessly, and this will help us to reduce the hardware requirement that will reduce the complexity of the circuit. There is another major concern i.e. to secure the personal data stored in the device.

Our main objective is to construct a fingerprint authenticated wireless pen drive. In which only authorized person can be able to access the stored data in the pen drive. To use the pen drive, a user simply authenticates by placing his/her finger on the fingerprint sensor, which causes fingerprint access and fingerprint matching. LCD is interface with Arduino to display the data present in the device. Arduino provides an interface between the input devices and Wi-Fi module. On the receiver side, the PC/laptop connected to the Wi-Fi module and thus data received and displayed.

II. LITERATURE SURVEY

Vanaparthy Upendhar et.al [1] describes that in present days, computers and laptops have become an inseparable part of our busy lives. One of the commonly used devices for data transfers is Universal Serial Bus (USB) flash drives. Data transfer using portable devices is the most important factor in today's scenario. Data transfer between two pen drives is generally done using laptops or desktops, but it is not always possible to carry such a large size device to the particular location so, to overcome this problem, we are designing a hardware which is more compact to carry anywhere[1]. Mary Lourde R et.al [2] describe that perhaps the most important application of accurate personal identification is securing limited access systems from malicious attacks. Among all the presently employed biometric techniques, fingerprint identification systems have received the most attention due to the long history of fingerprints and their extensive use in forensics. This paper deals with the issue of selection of an optimal algorithm for fingerprint matching in order to design a system that matches required specifications in performance and

accuracy [2]. Rohan Kulashresta et.al [3] describes that the USB flash drive is one of the commonly used memory storage device by all the people. The main reason for this is because, its compatibility and user-friendly memory storage device. It can able to store data of any kind. With diversification of systems and their operating environment, sometimes it becomes difficult to transfer data from one system to another. Due to this limitation, the need felt of transferring data wirelessly between the two systems not having proper channel for communications is done by using a Wireless USB device [3].

III. PROPOSED TECHNIQUE

In this technique, we used Arduino module, fingerprint scanner, SD card and LCD. By interfacing them with each other, we assembled a device, which will help us to secure the confidential or personal data in the storage device by providing fingerprint authentication, and reliable data transmission. Transmitter
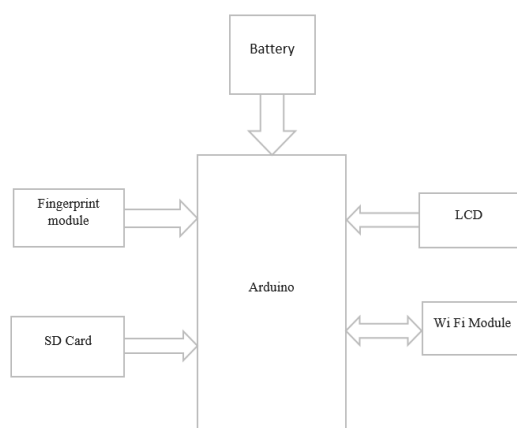
Figure 1. Transmitter Block diagram.

Here, we are going to interface the Fingerprint module, SD Card, LCD and Wi-Fi Module with Arduino. In which the fingerprint scanner scans the fingerprint placed by an authorized person. The scanned fingerprint is processed and the generated code based on the features extracted from the fingerprint, which are different for different individuals. The code generated is stored in the Arduino. Every time the user accesses the SD card, the

fingerprint authentication is required, and the permission to access the SD card which given only when the scanned fingerprint matches with the authenticated fingerprint code. As the fingerprint match with the authenticated fingerprint then Data will be transfer from SD card to PC/Laptop via Wi-Fi module.

IV. RESULT AND DISCUSSION

Nowadays, almost every individual uses storage devices for their personal data. Since many users faces problem like data conspiracy, data stealing etc. For which we have assembled a devise with the help of biometric scanner, which helps to secure the confidential data in the devise so that to prevent misuse of data. In this project, we have focused on creating a pen drive, which is completely secure, reliable and is able to send data wirelessly via Wi-Fi. The name Biometric Wireless Pen drive itself says the concept behind the proposal, which describes how to send and receive data from a Pen drive to PC or laptop without using the USB, ports of PC. The user can access the data in Pen drive by placing it at some distance from the PC or laptop.

V. CONCLUSION

"Security of data in a storage device is very critical issue. Unauthorized access of the data in storage device like pen drive, hard disk, etc., can lead to misuse of private data. Few existing devices provide security by means of password but they are not full proof. Hence, we propose a wireless biometric pen drive for secure and reliable data communication and easily portable".

VI. FUTURE SCOPE

Along with the specified features, the additional features that maybe added may include multiple user access, providing security to the Wi-Fi network, mainly GPS tracking system and Iris scanner.

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A Review on Fast Radio Bursts

Prathamesh P. Kulkarni, Aman R. Singh

Electronics and Telecommunication Department, Sinhgad Institute of Technology and Science, Pune, India

ABSTRACT

Fast Radio Bursts (FRB's) were first detected in 2001 and discovered in 2007 .Since then it has been a mystery for scientist regarding the sources of these FRB's .Also over past 11 years the method of detection of these FRB's have improved due to technology and resulting in advance radio telescopes like CHIME, ASKAP, etc. which provide us with a better understanding of these mysterious fast radio burst. This facilitates us more number of detections every year since they were first discovered. Our letter explains some major sources responsible for the occurrence of FRB's .

Keywords : Fast Radio Bursts, CHIME, ASKAP

I. INTRODUCTION

A Fast Radio Burst (FRB) is a transient radio pulse of length ranging from a fraction of a millisecond to a few milliseconds, caused by some high-energy astrophysical process not yet identified. The first FRB was discovered by Duncan Lorimer and his student David Narkevic in 2007 when they were looking through archival pulsar survey data, and it is therefore commonly referred to as the Lorimer Burst. The exact origin and cause is uncertain, they are emitted from a source contained within an extremely powerful magnetic field. Proposals for their origin range from crust formation around strange stars, black hole, binary neutron star system, pulsars, magnetars, magnetic giant flares, extra-terrestrial intelligence.

DETECTION

The First Detection of FRB was done at Parkes Observatory. And Currently is captured by many telescopes but mainly two major radio telescopes, CHIME telescope (Canadian Hydrogen Intensity Mapping Experiment) and ASKAP telescope (Australian Square Kilometre Array Pathfinder) specifically for detection of FRB's.
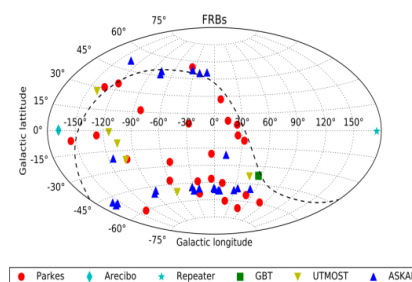
Figure 1-Observed Bursts
(Source- https://arxiv.org/pdf/1811.11146.pdf)

Figure 1: -An Aitoff projected map of current FRBs in the Galactic coordinates, in which the black dashed line denotes the celestial equator. The detections are from these telescopes: Parkes radio telescope (red circles), Arecibo radio telescope (cyan thin diamond), Green Bank Telescope (green square), UTMOST (yellow down-pointing triangles), ASKAP (blue up-pointing triangles). In particular, the repeater (FRB 121102) is marked by cyan star.

Figure 2: - CHIME telescope (Canadian Hydrogen Intensity Mapping Experiment)
(Source- https://chime-experiment.ca/)

Figure 2: -CHIME scans 1024 separate points or "beams" on the sky. Each beam is sampled at 16,000 different frequencies and at a rate of 1000 times per second, corresponding to 130 billion bits of data per second to be sifted through in real time. The data is packaged and shipped to a 40 foot shipping container under the CHIME telescope. The 128 compute nodes will search eight individual beams for FRB's. These FRB's are then processed combining information from all 1024 beams to determine location, distance and characteristics of the burst. Once FRB event is detected an alert is sent to the CHIME team.

Figure 3 :- ASKAP Telescope (Australian Square Kilometer Array Pathfinder)
(Source- https://www.atnf.csiro.au/)

Table 1 : Specifications of ASKAP Telescope

Parameter	Values
Area	4000 square metres
Antennas	36
Diameter	12m
System Temperature	Less than 50K
Frequency range	700 MHz to 1.8 GHz
Instantaneous Bandwidth	300 MHz
Independent beams	36

Figure 3: -ASKAP's extremely large field of view is what makes it a uniquely powerful survey instrument. The telescope uses new technology developed by CSIRO - a kind of "radio camera", known as a phased array feed (PAF) that sits at the focus of each of its antennas.

II. POSSIBLE EXPLANATION ON SOURCES OF FRB'S

1)A NEUTRON STAR–WHITE DWARF BINARY MODEL FOR REPEATING FAST RADIO BURST

A compact binary model for the fast radio burst (FRB) repeaters, where the system consists of a magnetic white dwarf (WD) and a neutron star (NS) with strong bipolar magnetic fields. Mass transfer will occur from the WD to the NS through the inner Lagrange point, when the WD fills its Roche lobe. The electrons can be accelerated to an ultra-relativistic speed because of the accreted magnetized materials may trigger magnetic reconnection when they approach the NS surface. The characteristic frequency and the timescale of an FRB are shown by the curvature radiation of the electrons moving along the NS magnetic field lines. Owing to the conservation of angular momentum, the WD may be kicked away after a burst, and the next burst may appear when the system becomes semi-detached again through the gravitational radiation.

a)

b)
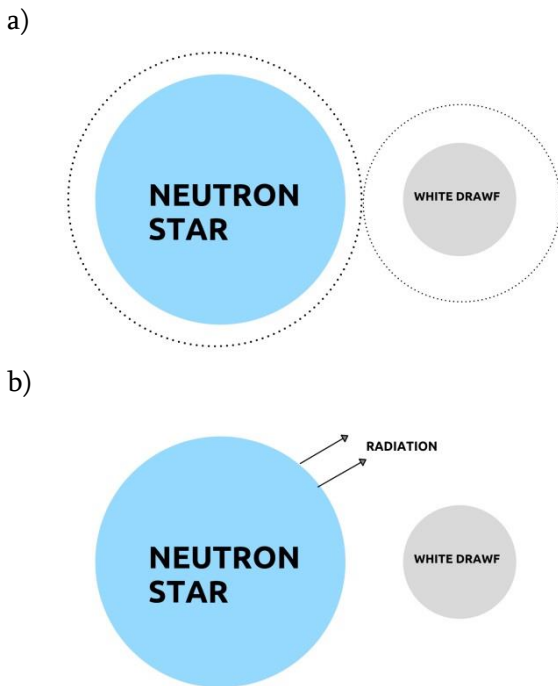
Figure 4: - A Neutron Star–White Dwarf Binary Model
(Source-
https://iopscience.iop.org/article/10.3847/2041-8205/823/2/L28)

Figure 4: -Illustration of the intermittent Roche-lobe overflow in an NS–WD binary system: (a) the WD fills its Roche lobe and mass transfer occurs through the inner Lagrange point; (b) the WD is kicked away after the mass transfer, and the accreted materials trigger magnetic reconnection and strong electromagnetic radiation.

2)Fast Radio Bursts from Binary Neutron Star Mergers

Binary neutron star (NS-NS) mergers can be a possible origin of FRBs. The FRB rate is within the plausible range of NS-NS merger rate and its cosmological evolution; while a large fraction of NS-NS mergers must produce observable FRBs. Magnetic fields of neutron stars are synchronized to binary rotation at the time of coalescence due to magnetic braking resulting in coherent radio emission like radio pulsar. If the conversion efficiency from magnetic braking energy loss to radio emission is similar to that of

isolated radio pulsars it can explain magnetic fields of the standard strength ($\sim 10^{12-13}$ G) of the observed FRB fluxes. Since FRBs tell us the exact time of mergers, a correlated search would significantly improve the effective sensitivity of gravitational wave detectors.

3) COLLISIONS BETWEEN NEUTRON STARS AND ASTEROIDS/COMETS

The collisions between neutron stars and asteroids/comets can be a promising mechanism for FRBs. During the impact process, after the material of the small body penetrates into the neutron star surface,a hot plasma fireball will form. The ionized matter inside the fireball will then expand along the magnetic field lines. Coherent radiation from the thin shell at the top of the fireball will account for the observed FRBs. This scenario can reasonably explain the main features of FRBs, such as their durations, luminosities, and the event rate. But for a single neutron star, the probability of occurance of FRB's due such impacts is low.
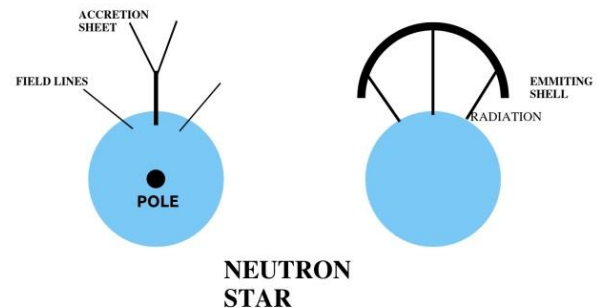
Figure 5 :- Impact Between Neutron Stars and A Comets (Source- arxiv:1502.05171v2)

Figure 5: -Schematic illustration of the impact between a NS and an asteroid/comet. The left panel shows the elongated body is accreted onto the NS as a sheet.

The right panel shows the hot plasma fan generated shortly after the collision. Coherent curvature radiation is generated in the region of emitting shell.

4) Fast radio bursts as giant pulses from young rapidly rotating pulsars

Fast radio bursts (FRBs) can be related to supergiant pulses emitted by young pulsars (ages ~ tens to hundreds of years) born with regular magnetic field but very short – few milliseconds – spin periods. FRBs are events originating at a distances d≤100 Mpc. The material in the freshly ejected supernova remnant (SNR) shell can account for most of the dispersion measure (DM); for a given burst the DM should decrease with time. FRBs are not likely to be seen below ~ 300 MHz due to free-free absorption in the expanding ejecta. A supernova might have been detected years before the burst; FRBs are mostly related with star forming galaxies.

5) Fast radio bursts due to Flaring Magnetar for FRB121102

It is believed that FRB 121102 is powered by a young flaring magnetar, embedded within a decades-old supernova remnant. Using a time-dependent one-zone model, the model suggest some outburst can create a single expanding magnetized electron-ion nebula that can be responsible for the fast radio burst ,which can explain all of the basic properties of the persistent source like size, flux, self-absorption constraints and the large but decreasing rotation measure (RM) of the bursts. Relativistic thermal electrons heated at the termination shock of the magnetar wind which powers these persistent emissions, while the RM originates from non-relativistic electrons injected earlier in the nebula's evolution and cooled through expansion and radiative losses. The radio flux and RM contribution of an expanding magnetized electron–ion nebula, inflated behind the supernova ejecta by a flaring young magnetar, are consistent with the observed properties of the repeating burster FRB 121102 for source ages tage ~ 10–40 yr consistent with a variety of other observational constraints
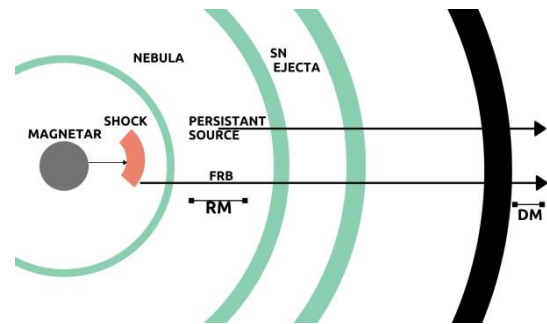
Figure 7: -Flaring Magnetar
(Source-
https://iopscience.iop.org/article/10.3847/2041-8213/aaedad/pdf)

Figure 7: -Schematic picture of the concordance model. Energetic magnetar flares episodically eject magnetized baryon-loaded outflows. The outflows terminate at the base of a nebula inflated by previous magnetar flares and/or rotationally powered winds, injecting particles and magnetic energy, into the nebula. Energetic electrons gyrating within this magnetized nebula emit synchrotron radiation, observed as the "persistent" radio source associated with FRB 121102, while lower Lorentz factor electrons within the same nebula Faraday rotate FRB pulses (originating interior to the nebula) producing the large observed RM. Both signals propagate through the supernova ejecta, which at current epochs must be free–free transparent and contribute negligibly to the DM that is accumulated on larger scales.

6) Clumpy jets from black hole-massive star binaries as engines of Fast Radio Bursts

A model of Fast Radio Bursts (FRBs) based on stellar mass black hole massive star binaries. The inhomogeneity of the circumstellar materials or/and the time varying wind activities of the stellar companion will cause the black hole to accrete at a transient super-Eddington rate. The collision among the clumpy ejecta in the resulted jet could trigger plasma instability. As a result, the plasma in the jet will emit coherent curvature radiation. When the jet cone aims toward the observer, the apparent

luminosity can be 10^{41}–10^{42} ergs^{-1} . The duration of the resulted flare is ∼ millisecond. The high event rate of the observed non-repeating FRBs can be explained.
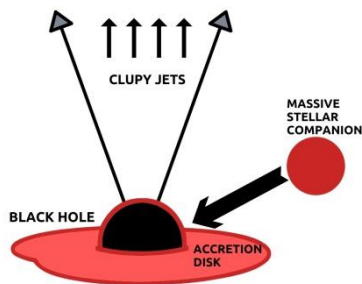
Figure 8: - Magnetic Field Lines In Clumpy Jet.
(Source- arXiv:1811.11146v1)

Figure 8:-The two big arrows arrows represent the magnetic field lines in the jet. The small area represents clumpy jets.

It is possible for a neutron star to accrete from its massive companion at a super-Eddington rate, as were found in the Ultra-luminous X-ray pulsars. However, since a neutron star is high magnetized, the accretion flow is truncated at the Alfv´en radius where the magnetic pressure of the neutron star balances the ram pressure of the infalling materials. The typical Alfv´en radius is ∼ 10^8 cm, which is many orders of magnitudes larger than the radius of a neutron star. As a result, the conditions of millisecond duration of the model cannot be satisfied with a neutron star companion.

7) FAST RADIO BURSTS FROM THE COLLAPSE OF STRANGE STAR CRUSTS

The collapse of strange star crusts can be a possible origin for FRBs. Strange stars, which are composed of almost equal numbers of u, d, and s quarks, may be encapsulated by a thin crust of normal hadronic matter. The crust becomes heavier and heavier when a strange star accretes matter from its environment. It may finally collapse, leading to the release of a large amount of magnetic energy and plenty of electron/positron pairs on a very short timescale. Electron/positron pairs in the polar cap region of the strange star can be accelerated to relativistic velocities,

streaming along the magnetic field lines to form a thin shell.FRBs are produced by coherent emission from these electrons when the shell is expanding.
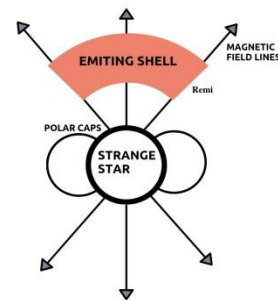
Figure 9: - FRB Is Generated After The Collapse Of The Strange Star Crust
(Source- arxiv:1805.04448)

Figure 9:-A schematic illustration of how an FRB is generated after the collapse of the strange star crust. Electrons are accelerated to relativistic velocities and expand along the magnetic field lines to form a shell. Coherent emission at radio wavelength is produced when the shell radius reaches remi.

III. EXTRA TERRESTRIAL INTELLIGENCE

8) FAST RADIO BURSTS FROM EXTRAGALACTIC LIGHT SAILS

This theory suggests a possibility that Fast Radio Bursts (FRBs) originate from the activity of extragalactic civilizations.The analysis shows that beams used for powering large light sails could yield parameters that are consistent with FRBs. The characteristic diameter of the beam emitter is estimated through a combination of energetic and engineering constraints, and both approaches intriguingly yield a similar result which is on the scale of a large rocky planet.

Moreover, the optimal frequency for powering the light sail is shown to be similar to the detected FRB frequencies. These 'coincidences' lend some credence to the possibility that FRBs might be artificial in origin.

IV. BURST OBSERVED

2001: -FRB 010621, FRB 010724, FRB 011025.

The first FRB detected was FRB 010724("Lorimer Burst"). Discovered in 2007.

2009: - FRB 090625.

2011: - FRB 110220, FRB 110523, FRB 110627, FRB 110703.

2012: - FRB 120127, FRB 121002, FRB 121102

FRB 121102 detected by Arecibo radio telescope was the first Repeating Burst.

In March 2016, researchers announced they'd found 10 other bursts from the same location in archival data. Then in December 2016, 6 bursts were detected from FRB 121102; then 15 more in August 2017.

This allowed researchers to locate the source of these signals - a star-forming region in a dwarf galaxy more than 3 billion light-years from Earth.

FRB 121102 has proved to be exceptional till 2019 as it was the only repeating FRB.

2013: - FRB 130626, FRB 130628, FRB 130729, FRB 131104.

2014: -FRB 140514.

2015: -FRB 150215, FRB 150418, FRB 150610, FRB 150807, FRB 151206, FRB 151230.

2016: -FRB 160102, FRB 160317, FRB 160410, FRB 160608.

2017: -FRB 170107, FRB 170827, FRB 170922, FRB 171020, FRB 171209.

2018: -FRB 180301, FRB 180309, FRB 180311, FRB 180725A, FRB 180814.

FRB 180814 On 9 January 2019, astronomers announced the discovery of a second repeating FRB source, named FRB 180814, by CHIME.

V. SUMMARY

In this letter we have discussed the possible explaination for the occurance of Fast Radio Burst (FRB).For repeating and non-repeating FRB's.

Over this time, many important properties of FRBs have been discovered, including the polarization of radio emission, repeating bursts, the identification of the host galaxy for the repeating FRB, etc. However, the FRB statistics grow quite slowly, and the origin of FRBs remains obscure.

The three main categories for explanation come from Neutron Star, Crust formation around strange stars, and extra-terrestrial intelligence.

There are two main types of FRB's ,repeating and non-repeating.We suggest based on the above study that the non-repeating FRB's can be caused by a catastrophic events like merging of binary neutron star system, neutron –white dwarf system, etc. And the Repeating FRB's point towards Flaring Magnetars or Extra-terrestrial intelligence.

The use of modern technologies like machine learning and artificial intelligence will help us detect and understand more about this fast radio burst in future.

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Automatic Drink Mixer and Dispenser Machine

Prof. Prajakta Jadhav, Yash Thakur, Kaustubh Thakur, Aman Dev

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

In today's fast-moving, competitive industrial world, a company must be flexible, cost effective for its survival. In the manufacturing industries there is great demand for industrial automation systems. The industrial automation is necessary in order to streamline operations in terms of acceleration, reliability and system output. In today's economical world, automation plays gradually important role. This paper aims to develop a system, which can connect the machine to phone with android application using the Bluetooth module. Through this device, we can make different composition of drinks using the liquids in the container. In the available version, the machine is costly and not customizable. The system proposed in this paper is a solution for mixing of drinks in desired composition where recipes for each drink is fed in the application , all one has to do is to select the name of the drink. The technology behind this automation and IOT. The system deals with the connection of phone and the machine.Each dispensing tube has a connected motor (Pump) which is driven by relay. The mixed drink is finally collected in the container at the base. The command from the graphic based android application is sent to the microcontroller of the machine and the device functions accordingly.

Keywords : Raspberry pi 3, Android, Relay, IOT.

I. INTRODUCTION

The brain of Barbot is a configurable Twitchy microcontroller board. The Twitchy, in turn, is based on the Raspberrianjessie platform, a collection of development tools based on open-source hardware designs and software. Pi-based devices interact with the world through attached sensors, controllers, motors, and other actuators. Pi-3 is an ideal robot development environment. Bot has its heart as a Raspberry-pi chip running the python coding environment and optimized to drive actuators and sensors. The control panel is anandroid-basedapplication. A peristaltic pump uses bearings that, when they turn, put revolving pressure on a tube and force liquids onward, the way you would force toothpaste out of a tube. Peristaltic pumps are commonly used in dialysis machines to transfer blood, because the parts that squeeze the tube never touch the liquid, thus keeping it from being contaminated. To initiate drink making, you need to select it from the menu of the graphical user interface based application. The phone is connected to the device with the help of Bluetooth technology.

II. METHODS AND MATERIAL

The project is to create a machine which sucks liquid from the stock and makes a drink. The drink is made as per the user's choice. We can have this machine in home, office, parties, schools, etc.The device is connected to phone with the help of Bluetooth and the graphical user interface based application is used to control the device. To make this possible we use Raspberry pi-3 as a brain for the bot with its fast Bluetooth technology we can communicate with the device.The motors or pumps

suck the liquid and using pipes dispensed in the container accordingly.

III. RESULTS AND DISCUSSION

Proposed system has been in different aspects of development in previous various projects.Suction of liquids and mixing using the servo has proven excellent results. The system mentioned in this paper has different approach for sucking and mixing of liquids for the making of a singledrink.The Pi works well with the relays and sensors are compatible with the micro-controller. The LCD is also connected to display the outputs of the machine while the drink is being prepared.

PROPOSED SYSTEM ADVANTAGES:

- Automatic mixing of the liquid to be dispensed .
- Preset menu options .
- Liquid heating at some specific temp .
- Liquid stirring with stirrer .
- Cleaning mechanism for the device .

Dispensed volume for each cycle with different control strategies, desired volume and reagent
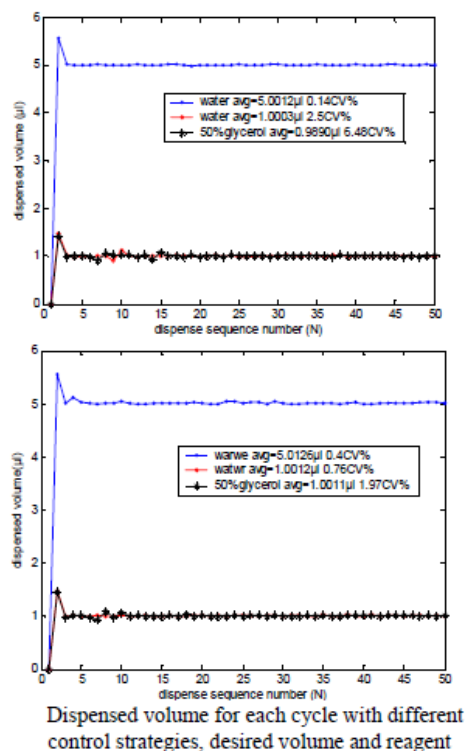
Figure 1

OBJECTIVE OF PROJECT

We aim to create a system that :

1. Automatically dispense the selected drink
2. Smart system that has preset menu options
3. To Stir the drink automatically
4. Providing cleaning functionality
5. Liquid heating facility
6. Adequate mixing
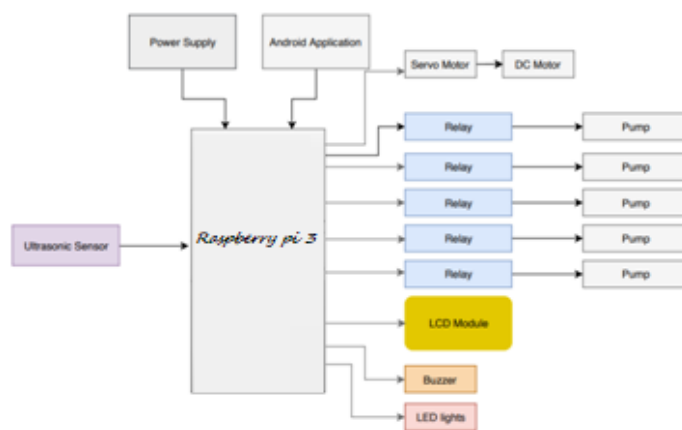
Figure 2

Figure 2 : Shows block diagram of Automatic liquid dispenser and mixer. The basic requirements of the controller (Raspberry pi-3) are 5V , 2Amp power supply and an android application for driving it remotely or wirelessly. It has internal voltage regulators and GPIO pins for different outputs and inputs. The input given to the controller is the signal through Android application Bluetooth Terminal. We shall have 'n' number of inputs through the application. The communication with the Raspberry is via Bluetooth protocol. The frequency in which Bluetooth works is 2.4Ghz using a HC-05 Module. To activate the dc motor 5vV/500mA is required. The controller provides (5v/2A) which is sufficient to drive the motor. The dc motor is basically a peristaltic pump which intend suck liquid from the containers kept inside the machine, for making different combinations we drive more than one motor in a single call .Every operation is of time. The amount

dispensed will be on the time period fixed in the program itself.The empty containers will give a notification that certain container is empty needs to be refilled.The Bluetooth module enhances the feature of having the drinks ready without touching the module, if possible in the range of Bluetooth can be accessed remotely.
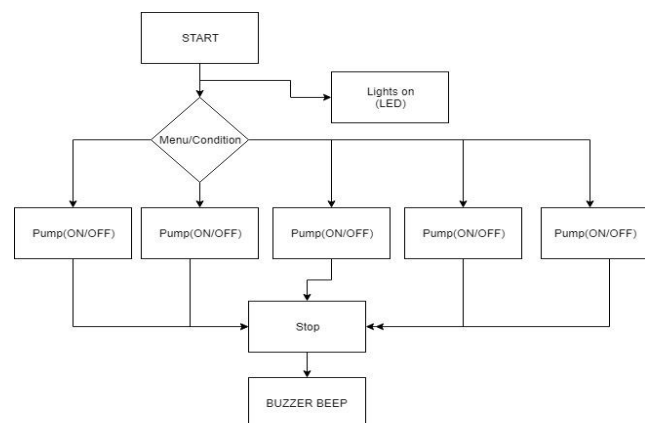
Figure 3 : Flow Chart

Advantages

1.Obtain the best mixture proportion , hence taste is retained

2.Cleaning of tubes after each drink, no persisting aftertaste.

3.Personalized service, as custom drinks can be made using the custom menu.

4. Low power consumption.

Implementation

IV. SYSTEM ARCHITECTURE

The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote teaching of basic computer science in schools and in developing countries. The original model became far more popular than anticipated, elling outside its target market for uses such as robotics. All models feature a Broadcom system on a chip (SoC) with an integrated ARM-compatible central processing unit (CPU) and on-chip graphics processing unit (GPU).Processor speed ranges from 700 MHz to 1.4 GHz for the Pi 3 Model B+ on-board memory ranges from 256 MB to 1 GB RAM. Secure Digital (SD) cards are used to store the operating system and program memory in either SDHC (early Raspberry Pi's) or Micro-SDHC (Later Raspberry Pi's) sizes.
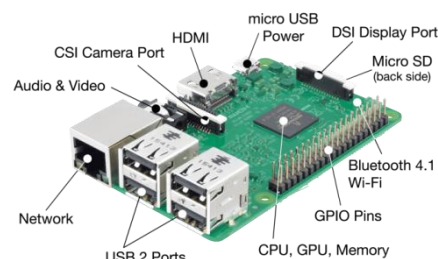
Peristaltic Pumps

A peristaltic pump is a type of positive displacement pump used for pumping a variety of fluids, they are also commonly known as roller pumps. The fluid is contained within a flexible tube fitted inside a circular pump casing (though linear peristaltic pumps have been made). A rotor with a number of "rollers", "shoes", "wipers", or "lobes" attached to the external circumference of the rotor compresses the flexible tube. As the rotor turns, the part of the tube under compression is pinched closed (or "occludes") thus forcing the fluid to be pumped to move through the tube. Additionally, as the tube opens to its natural state after the passing of the cam ("restitution" or "resilience") fluid flow is induced to the pump. This

process is called peristalsis and is used in many biological systems such as the gastrointestinal tract. Typically, there will be two or more rollers, or wipers, occluding the tube, trapping between them a body of fluid. The body of fluid is then transported, at ambient pressure, toward the pump outlet. Peristaltic pumps may run continuously, or they may be indexed through partial revolutions to deliver smaller amounts of fluid.
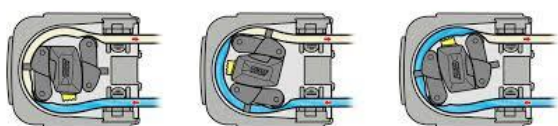
Relay

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

LCD

A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals. Liquid crystals do not emit light directly, instead using a backlight or reflector to produce images in color or monochrome.[1] LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and seven-segment displays, as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on.16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

V. CONCLUSION

The proposed system will be able suck liquid from containers at the base .The drinks will be made according to the menu in the application. No error is generated while connecting the device with the phone using Bluetooth technology. This makes easy to make drink, dispense and stir without any manual operation just have to enjoy your drink.

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Automatic Self Parking Chair

Tanuja Kanth, Tarique Anwar, Samad Khan, Dr. Mithra.V

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

This project describes a system or a product which will reduce the human efforts and save time through the use of image processing technology that provides advantages over other magnetic sensor technologies. It is a system equipped with an camera (web cam) for navigation and a combination of ultrasonic for obstacle detection and avoidance during navigation. To increase the accuracy of the system we have to go with high precision camera which will help it to navigate itself and correctly calculate its co-ordinate and identifying direction towards the destination. There are different methods to complete this product but this proposed method is very much efficient as it wireless and can be installed in prevailing system by the use of cctv cameras and upgrading the chair.

Keywords : camera, matlab, image acquisition, image processing, RF module, motor driver IC, high torque DC motor, At mega16

I. INTRODUCTION

Nowadays we observe in the main buildings like offices, labs and many facilities after completing the meeting people does not arrange their chair to the respected places, so an employee has to arrange each and every chair to their respected places which consumes more time and human effort is also wasted, to overcome this problem or we can say to reduce the human effort and save time we will develop a chair which will work on the basis of self parking or we can say intelligent parking. This self parking chair will be the unique solution to the problem of arranging the chair again and again.

It will locate it's respected place by its self and will reach to it by responding to the signal given to it.

II. LITERATURE SURVEY

The "Intelligent Parking Chair" is a unique chair that automatically moves to a set position. The chair includes a roller to automatically move 360 degrees paired with a system that indicates the target position.

Four cameras placed on the room's ceiling generate a bird's-eye view to wirelessly transmit the chair's position and its route to destination.
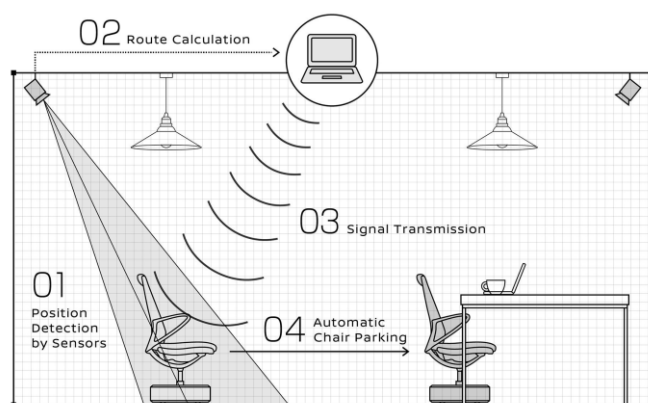
Fig 1. Bird eye view of system

With this innovation in office technology, Japanese businessmen are now freed from the troublesome task of arranging chairs, using this new technology already adopted in the X-Trail Hybrid and other Nissan vehicles.

Self-parking chairs at conference tables show Nissan's auto push 15 February 2016, by Nancy Owano. The "Intelligent Parking Chair" is inspired by Nissan's "Intelligent Park Assist" technology.

Ghosn) announced the first "Intelligent Parking Chair", a concept inspired by its intelligent park assist technology that allows drivers to easily park their vehicles using automatic steering.

TOKYO, Feb. 15, 2016 /PRNewswire/ -- Nissan Motor Co Ltd (Headquarters: Yokohama, Japan, CEO: Carlos

Reference Paper	Author	Date /year of Publish	Subjects used
Self-parking chairs at conference tables show Nissan's auto push by Nancy Owano Self-parking chairs at conference tables show Nissan's auto push	https://techxplore.com/news/2016-02-selfparking-chairs-conferencetables-nissan.html	(2016, February 15) retrieved 23 February 2018	Idea and Overview of the whole system working
Nissan's self-parking office chair is here to make your Monday better	-Cooperative behaviors in multi-robot systems through implicit communication·, ·Robotics and autonomous systems, Vo1.29, Issue: 1, (2007), pp.65-77	2007	Image acquisition through cameras.
Automatic Parking Vehicle System	Ms. Hong Hong		Localization of the object (vehicle/chair)
Home in the range An ultrasonic ranging system	S. Ciarcia	NOV-1980	Wireless transmissions. (RF transmission)
"A multielement ultrasonic ranging array", Robotics Age, pp. 13-20	H. R. Everett	July 1985	Movement of the object thought motors using matlab.
Cooperative behaviors in multi-robot systems through implicit communication·, ·Robotics and autonomous systems, Vo1.29, Issue: 1, pp.65-77	Enrico Pagello, Antonio D Angelo, Federico Montesello, Francesco Garelli, and Carlo Ferrari	2007	Movement of the object thought motors using matlab.

III. PROPOSED METHODOLOGY

BLOCK DIAGRAM

BLOCK DIAGRAM DESCRIPTION

1. CAMERA

Four cameras placed on the room's ceiling generate a bird's-eye view to wirelessly transmit the chair's position and its route to destination.
The camera can be web cameras or CCTV cameras.
Camera is interfaced with PC for image acquisition.

Specification:

Image sensor: CMOS
Maximum dynamic pixel: 5.0M pixels (352x288, 640x480, 1280x1024, 1600x1200, 2048x1536, 2560x1920) (with software boost/ up scaling)
Maximum static pixel: 50.0M pixels (2560x1920, 2848x2800, 3648x2736, 4000x3000, 6000x8000) (with software boost/ up scaling)
The focal length: 8cm-infinity
Frame rate: 30fps S/N ratio: Above 48dB
Size: 63mm*55mm*50mm

Fig 2. Camera

2. MATLAB

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. Typical **uses** include: Application development, including Graphical User Interface building.

Matlab is used for image processing. Path can be easily determined by user on working area image by GUI application.

CAMERA CALIBRATION

Geometric camera calibration also referred to as *camera re-sectioning*, estimates the parameters of a lens and image sensor of an image or video camera. You can use these parameters to correct for lens distortion, measure the size of an object in world units, or determine the location of the camera in the scene. These tasks are used in applications such as machine vision to detect and measure objects. They are also used in robotics, for navigation systems, and 3-D scene reconstruction.

Camera calibration is the process of estimating parameters of the camera using images of a special calibration pattern. The parameters include camera intrinsic, distortion coefficients, and camera extrinsic.

3. IMAGE ACQUISITION

The first stage of any vision system is the image acquisition stage. After the image has been obtained, various methods of processing can be applied to the image to perform the many different vision tasks
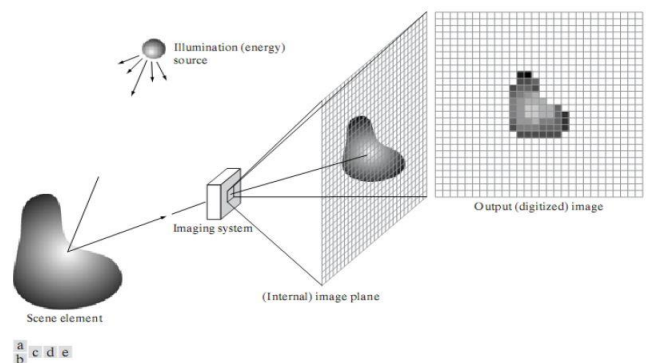
Fig 3. Image Acquisition

4. IMAGE PROCESSING

Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some

useful information from it. It is a type of signal dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Usually **Image Processing** system includes treating images as two dimensional signals while applying already set signal processing methods to them

Purpose of Image processing

The purpose of image processing is divided into 5 groups. They are:

- ✓ Visualization - Observe the objects that are not visible.
- ✓ Image sharpening and restoration - To create a better image.
- ✓ Image retrieval - Seek for the image of interest.
- ✓ Measurement of pattern – Measures various objects in an image.
- ✓ Image Recognition – Distinguish the objects in an image.

5. R.F. Module

An RF module (radio frequency module) is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In this system RF module is used to communicate between transmitter and receiver section of the system wirelessly. The property of its wireless communication using RF signal makes the system flexible. At the transmitter section the digital information of the location and path of the chair (using camera and matlab) is transmitted over RF signal. At the receiver section this signal is received and used by microcontroller and motor driver IC to move the chair in desired direction.

6. ATmega-16 microcontroller

ATmega16 is an 8-bit high performance microcontroller of Atmel's Mega AVR family with low power consumption. Atmega16 is based on enhanced RISC (Reduced Instruction Set Computing,

Know more about RISC and CISC Architecture) architecture with 131 powerful instructions. Most of the instructions execute in one machine cycle. Atmega16 can work on a maximum frequency of 16MHz.ATmega16 has 16 KB programmable flash memory, static RAM of 1 KB and EEPROM of 512 Bytes.
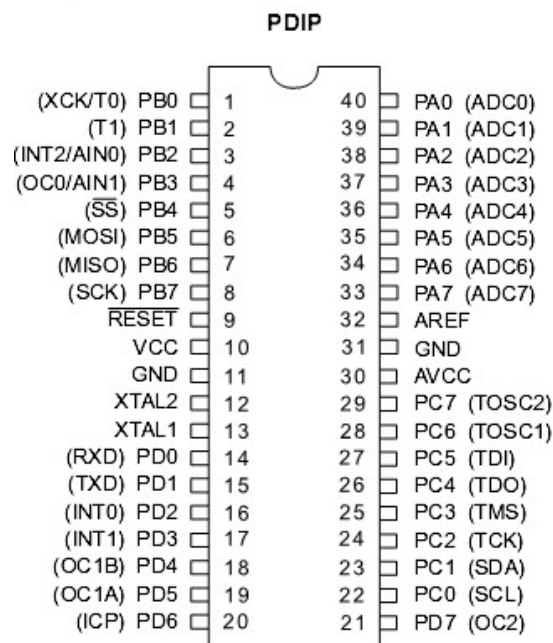
Fig 4. Pin diagram of At Mega 16

It receives the compared result from matlab through RF module .Atmega 16 implements the results of the matlab and serially communicates it with motor driver IC .

7. L293D Driving IC
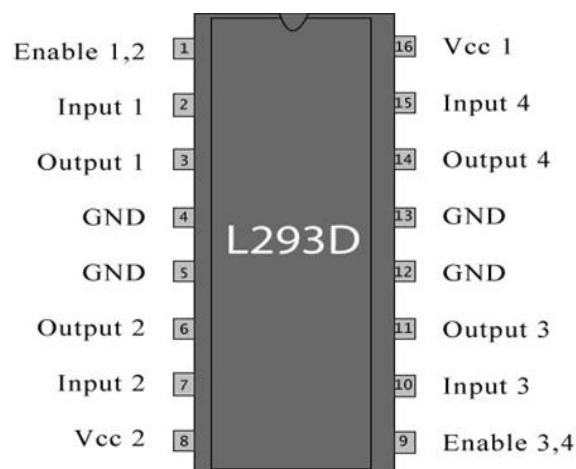
Fig 5. Pin diagram of L293D driving IC

Fig 5 shows L293D motor driver. L293D is a double H-connect engine driver coordinated circuit (IC). Engine drivers go about as momentum intensifiers since they take a low-flow control flag and give a higher-ebb and flow flag. This higher current flag is utilized to drive the engines. L293D contains two inbuilt H-connect driver circuits. In its basic method of task, two DC engines can be driven at the same time, both in forward and invert heading. The engine activities of two engines can be controlled by input rationale at pins 2 and 7 and 10 and 15. Info rationale 00 or 11 will stop the comparing engine. Rationale 01 and 10 will turn it in clockwise and anticlockwise bearings, individually. Empower pins 1 and 9 (comparing to the two engines) must be high for engines to begin working. At the point when an empower input is high, the related driver gets empowered. Thus, the yields wind up dynamic and work in stage with their sources of info. Thus, when the empower input is low, that driver is incapacitated, and their yields are off and in the high-impedance state.

8. DC Motor

Fig 6. DC motor

A DC motor is any of a class of rotary electrical machines that converts direct current electrical power into mechanical power. A 30 RPM, 12 V DC supply DC motor is used to move the chair as per the instruction.

Specifications and Features:-

- RPM: 30.
- Operating Voltage: 12V DC
- Gearbox: Attached Plastic (spur)Gearbox
- Shaft diameter: 6mm with internal hole
- Torque: 2 kg-cm
- No-load current = 60 mA(Max)
- Load current = 300 mA (Max).

9. Flow Chart
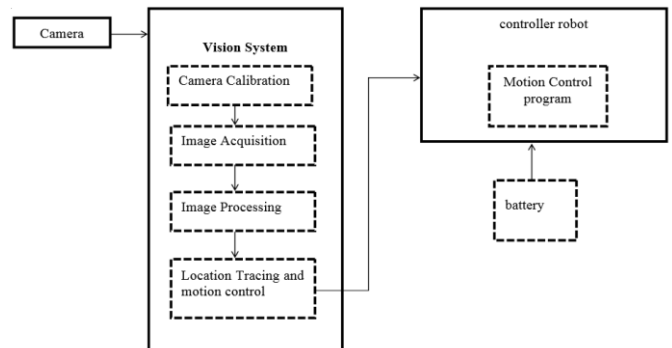
10. Algorithm

1. Live image of the chair is captured by the camera.
2. Centroid of the red block which is placed on chair is detected through image acquisition.
3. A path is set initially using matlab.
4. The centroid and the points of set path is compared through image processing.
   a. If the centroid is to the left side of the point of the set path then –move Right.
   b. If the centroid is to the right side of the point of the set path then- move Left.
   c. If the centroid is at the point of the set path then- move forward.
5. The compared results are transmitted and received by the RF module.
6. Atmega16 implements the received results and serially communicates to the motor diver IC.
7. Motor driver IC L293D is used to generate voltage required by the DC motor.
8. DC motor rotates and moves the chair as per the desired path.

V. CONCLUSION

Using this system we can reduce the human effort. It is a selfparking system because of this there is no

manual operation required. Due to this we can easily arrange the chairs in their respective places just by giving the interrupt to the chair.

VI. ADVANTAGES

1. Path can be easily updated.
2. Eliminates the need of different sensors (IR, Proximity, Magnetic field sensor) thus makes system more compact and cost effective.
3. Possible to continuously track vehicle and avoid obstacles in path.

VII. FUTURE SCOPE

1. In corporate companies like board room after completion of meeting the employees moves away without arranging the chairs thus, this system automatically arrange the shuffled chairs to their respective position.
2. It may used in schools and colleges like in the practical labs the students moves away without arranging the shuffled chairs hence, by giving the interrupt to the system it arrange the chairs in their original destination.
3. In conference halls the people goes away after completion of conference without arranging the displaced chairs. This system helps in arranging the displaced chairs in their located position.

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Arduino Based Spy Robot Using Night Vision Wireless Camera

Vishwal Karad, Jasaswini Pradhan, Meghana Patil, S. S. Jadhav
Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

ABSTRACT

The main objective behind developing this robot is to prevent human life losses in war fields where there is a threat to the soldiers. The robot will be able to alert the soldiers in unknown territories and will be a great help. It consists of a wireless camera to update the soldiers for the where about of unknown territory and is controlled by Arduino Uno by the help of which the robot can transmit live videos. It also makes use of RF technology to make the interfacing of wireless camera and the display screen. It also carries mine detection and fire detection sensor in order to detect bomb and fire which further gives more security to our soldiers. The robot will serve as the appropriate machine for the defense sector to reduce the loss of human life and will also reduce illegal activities.

Keywords: War, Night Vision, Bluetooth Module, Arduino UNO, RF technology

I. INTRODUCTION

The armies which invested in modern technologies and development of robotic system have a considerable advantage over other less developed armies, which may make them stronger in combat. Even without deep analysis we are able to predict that modern conflicts will be to a large extent carried by devices with a high degree of autonomy, thus with the greatest possible independence on human. Robotic automation is in fact an inevitable process of modern human civilization development and therefore the topicality of the issue is undeniable. If armies want to be competitive (facing new global threats) they will have to invest heavily in the development of modern technologies and especially into robotic system.[1]

The remote control station and the robot play very important role in the future military operations. Nowadays the technologies are improved so creating a multipurpose operation robot for military surveillance will be an asset. Currently, the Indian Army has Daksh Military robot to combat in battle field. As the technology proliferate rapidly in automation field by incorporating Military Robots as Soldiers in war field to reduce grievance and demise in war fields.[2]

The main technology used here for serial communication is Bluetooth technology. This technology can be used to share data between two devices considering the distance between the two. The Bluetooth module HC-05 will be connected with the robot and the commands to the robot will be given through the Android application. The war filed robot consists of Arduino Uno board as a controller board. It has L293D motor driver ICs along with the HC-05 Bluetooth module. Two DC motor are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360degree via the Android application through motor.[3]

The existing system has used the 8051 micro controller and PIC microcontroller in order to design the robot. Here, we are using Arduino with Bluetooth and RF technology[4].

In proposed system user can control the robot by using the blue control screen app from the Android mobile. We use a wireless night vision camera. This is connected by an RF module receiver section. The receiver module is connected to a laptop or a monitor. The video surveillance will be monitored by a person. The video can be recorded for future purposes. Through this robot

we can easily spy the remote areas as it can be used for military purposes and other rescue operations.[4]

II. METHODS AND MATERIAL

BLOCK DIAGRAM

We have over here an Arduino Uno, few sensors like metal detector sensor and fire detector sensor, DC motor, Bluetooth module, RF module and night vision wireless camera. The Arduino has been interfaced with these components through our program. The Arduino acts as the brain of the whole project.

Firstly, when we apply the power supply to Arduino, it turns on along with other components. We need to write the program first in the software called as Arduino, as the name suggests. Then the program is dumped into the Arduino hardware and this minicomputer is ready for the operation now.

The Arduino Uno uses the microcontroller ATmega328. All the components used are connected to it. The wireless camera is connected to the Arduino and transmits data with the help of RF transceiver. The wireless camera is a night vision camera which can send images and video at night also. The data transmitted by the camera is shown in the laptop with the help of RF technology. The robot is controlled by an Android application which is interfaced by the microcontroller first i.e. ATmega328. The commands are sent by the Android application and it is implemented by the robot. The Android application and the robot are connected through the Bluetooth module.

The DC motors are required for the movement of the robot. For this purpose we are using two DC motors. These motors can perform movements like forward, backward, right and left. We have also connected fire sensor which can detect fire and a metal detector which will be able to detect explosive bombs containing metal. These are connected to the Arduino Uno directly.
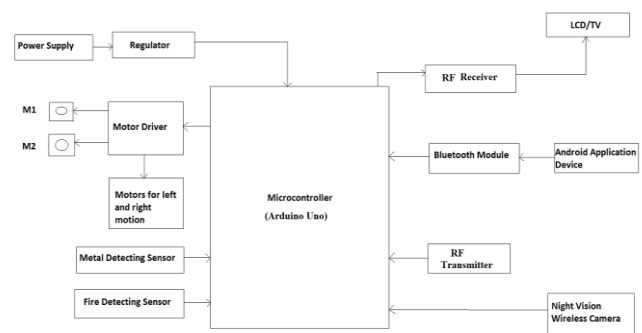
Fig.1: Block diagram

This section includes the description of the components that are going to be used in the proposed system.

Algorithm

Algorithm for this paper is given in this section.

1. Power up.
2. Arduino board is connected to the Bluetooth module.
3. Through Bluetooth module Arduino is connected to the Android application.
4. Arduino is connected to the metal sensor and fire sensor.
5. Through RF module the wireless camera is connected to the laptop.
6. The robot is then ready to act. It waits for the Android application to send the command.
7. When command is send it performs the respective operation.
8. The photos and videos are captured and send to the laptop.
9. It simultaneously checks for fire and metal.
10. If fire and metal is detected it sends the signal to laptop through RF.
11. If not detected it keeps on following the commands provided by the Android application and captured images and videos.
12. Power down.

Arduino Uno

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or breadboards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler tool chains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

Bluetooth Module

Bluetooth is an open wireless technology standard for exchanging data over short distances from fixed and mobile devices, creating personal area networks with high levels of security. It can connect several devices, overcoming problems of synchronization. Bluetooth technology is designed for and optimized for use in mobile devices. Mobile computers, cellular handsets, network access points, printers, PDA's, desktops, keyboards, joysticks and virtually any other device can have short range Bluetooth radios operating in the free 2.4GHz Industrial-Scientific-Medical (ISM) band integrated into them (single chip).

Metal Detector Sensor

Inductive Proximity Sensors detect the presence of metal objects which come within range of their oscillating field and provide target detection to "zero speed". Internally, an oscillator creates a high frequency electromagnetic field (RF) which is radiated from the coil and out from the sensor face. When a metal object enters this field, eddy currents are induced into the object. As the metal moves closer to the sensor, these eddy currents increase and result in an absorption of energy from the coil which dampens the oscillator amplitude until it finally stops.

Fire Detector Sensor

A flame detector is a sensor designed to detect and respond to the presence of a flame or fire. Responses to a detected flame depend on the installation, but can include sounding an alarm, deactivating a fuel line (such as a propane or a natural gas line), and activating a fire suppression system.

There are different types of flame detection methods. Some of them are: Ultraviolet detector, near IR array detector, infrared (IR) detector, Infrared thermal cameras, UV/IR detector etc. When fire burns it emits a small amount of Infra-red light, this light will be received by the Photodiode (IR receiver) on the sensor module. Then we use an Op-Amp to check for change in voltage across the IR Receiver, so that if a fire is detected the output pin (DO) will give 0V(LOW) and if the is no fire the output pin will be 5V(HIGH).

Motor Driver

A motor driver is an integrated circuit chip which is usually used to control motors in autonomous robots. Motor driver act as an interface between Arduino and the motors. L293D consists of two H-bridge. H-bridge is the simplest circuit for controlling a low current rated motor. L293D consists of 16 pins with 8 pins on each side dedicated to the controlling of a motor. There are two INPUT pins, two OUTPUT pins and one ENABLE pin for each motor.

Night Vision Wireless Camera

The wireless night vision camera consists of automatic motion detector features. It has minimum 100meters transmission distance without block. It consists of imaging sensor 1/3 inch-CMOS. The total CMOS pixels in this camera is 628*582(PAL)/510*592(NTSC). The minimum illumination of this camera is 1.5 lux. The view angle is 62 degrees. The head weight of the camera is 15 grams.

Power Supply

A power supply unit (or PSU) converts main AC to low voltage regulated DC power for the internal components of a computer. Modern personnel

computers universally use switched-mode power supplies. Some power supplies have a manual switch for selecting input voltage, while others automatically adapt to the mains voltage.

III. RESULTS AND DISCUSSION

The figure 2 is the robot prototype which will continuously live stream the video with the help of LCD/TV. The robot is controlled by the android application with help of Bluetooth module. It will also sense the metallic bomb and fire with the help of metal sensor detector and fire sensor respectively.

Fig.2 : Hardware model

IV. CONCLUSION

In this paper, the model of spy robot is described which can be operated in night irrespective of the intensity of available light. Fire detection and metal detection are introduced in this robot which makes this robot multifunctional. More features can summon in the robot to make it useful. The robot can be made for advanced by adding features like gas sensors, automatic shooting gun and bomb diffuse kit. In future the robot may also consist of gas sensors to detect the poisonous gas in the environment. The robot may also include a bomb disposal kit in order to diffuse bombs in the war field.

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IoT Based Automatic Chair Parking

Akshay Hajare, Priyanka Bhosale, Sudhakar Jondhale

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

An amusing video has surfaced about an intelligent parking chair inspired by Nissan; the video shows the chairs swinging into action, self-guiding to finally park at a table in response to a person. They can also reverse and turn. "The Intelligent Self-Parking Chair" is a promotional project that materializes vision of 'enriching people's lives through technology. This concept aims at increasing data round the latest technology adopted by Nissan vehicles, while showing how this is slowly changing our daily lives.The "Intelligent Parking Chair" may be a distinctive chair that mechanically moves to a group position. The chair includes a roller to mechanically move 360 degrees paired with a system that indicates the target position. Four webcams placed on the room's ceiling generate a bird's-eye view for image acquisition and to wirelessly transmit the chair's position and its route to destination. With this innovation in office technology, we are now freed from the troublesome task of arranging chairs.Conversely the surprise and luxury earned from this easy method may be equally seen within the "Intelligent Parking Chair".

Keywords : bird's eye view, webcams, image acquisition.

I. INTRODUCTION

Vision-guided AI has been one in all the foremost analysis areas within the mechatronics community in recent years. The aim is to emulate the sensory system of humans and permit intelligent machines to be developed. Self-parking chair one quite parking units that follow numerous operating space. Nowadays the creations of Self-parking chair model can be found from Nissan technology, as it give advantages in our lives. The base "Bird's-eye view" and "Automatic Movement" concepts are also introduced in the Intelligent Parking Chair. It works rather like a mechanism because it is in a position to sense and response to the setting. Considering that, Self parking chair should be well developed to optimize its benefits to our own living. The aim of this project is to build a prototype of a

Self-parking chair model that can move on a flat surface with its two driving wheels and afreewheel.

II. LITERATURE SURVEY

A one of a kind answer for the issue of cleaning up lines of seats after office gatherings a notable Automakers Nissan have built up the innovation. The Japanese firm has concocted self-fueled office seats that stop the rearranged seats themselves over into their stopping position with the sound sensor. This Japanese organization utilized four movement delicate cameras toward the edges of a roof and utilized them to track general office seats on wheels this innovation is otherwise called picture handling. The Wi-Fi controlled cameras find each seat's area and it takes after the course back to its beginning stage. The room format is pre-modified into the framework, with

singular seats allocated their own spot at the table. The seats have been customized to react to the sound sensor or the hints of a human applaud, with each seat consequentlybackpedals to its underlying position. We were really taking a gander at office seats as a theme and seek there is a need after this in some real organization, in their gathering room. "Nissan's definitive objective is self-driving (autos), and the self-stopping part is only one of the procedures en route. More than considering them just furniture, we trust individuals can consider it to be the means by which our innovation can be brought into different articles". Some even said they wished to see it in their own homes like examination room, feasting table and so forth [1] from the innovation and learning behind its self-stopping autos, Nissan planned what it calls the "Intelligent Parking Chair." The Intelligent Parking Chair can turn 360 degrees, and finds an objective position with the assistance of four cameras, put all through the room, that "produce a best view to remotely transmit the seat's position and its course to goal." [2]

It is centered around accomplishing just a single errand (self stopping) by coordination of sensors and engines controlled by microcontroller and methodology arranging/coding, in this manner the vehicle stage isn't worked from the parts however from changing a RC toy auto rather to save the time. There are three sorts of stopping designs: parallel, front/back-in opposite, and with a point (45 degrees normally), and thisundertaking is generally simply centered just around parallel stopping. [3] Making our ventures Wireless dependably makes it to look cool and furthermore broadens the range in which it can be controlled. Beginning from utilizing an ordinary IR LED for short separation remote control till an ESP8266 for overall HTTP control there are bunches of approaches to control something remotely. In this task we will figure out how we can assemble remote activities utilizing a 433 MHz RF module.These modules square measure shoddy for its capacities and square measure effectively accessible.They can either

be utilized as independent Transmitter and Receiver or be interfaced with a Microcontroller. Here we will take in the rudiments of RF module and how to utilize it as an independent RF Transmitter and Receiver. Here we have clarified the RF Transmitter and Receiver Circuit by controlling the LEDs remotely utilizing RF[4] 8051 Microcontroller is a programmable gadget which is utilized for controlling reason.Fundamentally 8051 controller is Maskprogrammable suggests that it'll bespoke at the season of collection and will not changed another time, there's a subsidiary of microcontroller, miniaturized scale controller that is re-programmable. is 8-bit gadget implies it can do 8-bit tasks. It have 4 ports which are utilized as information or yield as per your need. This device likewise have Timer, Serial Port interface and Interrupt controlling you can utilize these as per your need[5]

Auto parking areas are a critical protest class in numerous rush hour gridlock and non military personnel applications. With the problems of increasing urban movement blockage and also the systematically increasing lack of space, these auto parking areas are should have been all around outfitted with programmed stopping Information and Guidance frameworks.Objectives of shrewd parking garage administration incorporate checking the amount of stopped autos, and distinguishing the accessible area. This work proposes another framework for giving stopping information and direction utilizing image making ready. The proposed framework incorporates checking the quantity of stopped vehicles, and recognizing the slows down accessible. The framework acknowledges autos through photos as opposition utilizing electronic sensors established on the ground.

A camera is introduced at the section purpose of the parking garage. It will catch picture groupings.Setting image of associate degree automotive vehicle as reference image, the caught pictures are consecutively coordinated utilizing picture coordinating.For this

reason edge location has been done utilizing Prewitt edge identification administrator and as per level of coordinating direction and information is given to the approaching driver [6].Microcontrollers resemble microchips, yet they are expected to fill in as a real single chip structure by organizing each one of the devices required for a system on a singular chip. The major viable units of a microchip will be ALU, a game plan of registers, timing and control unit. The microcontroller will have these handy squares and moreover may have IO ports, a programmable clock, RAM memory and EPROM/EEPROM memory. Some microcontrollers may even have internal ADC and furthermore DAC.[7] In composing analyzing chip, we consistently watch the term embedded system.Chip and microcontrollers are extensively used as a bit of introduced structure things.

An embedded thing uses a microchip or microcontroller to finish one endeavor and one task in a manner of speaking. In spite of the way that microcontrollers are the favored choice for some introduced structures, there are times that a microcontroller is insufficient for the arranged.Along these lines, currently varied manufacturers of extensively valuable chip, as an example, Intel, Freescale semiconductor INC.

Furthermore,Cyrix have concentrated on their chip for the high end of the embedded market. The in particular standard in picking a microcontroller is that it must address the activity that issues to be done profitably and cost suitably. In analyzing the necessities of a microcontroller based exercises, we should first watch whether a 8-bit, 16-bit or 32-bit microcontroller can manage the figuring needs of the task for the most part feasibly.[8]

BLOCK DIAGRAM
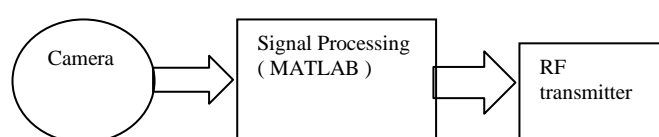
Fig 1. Block diagram of Transmitter
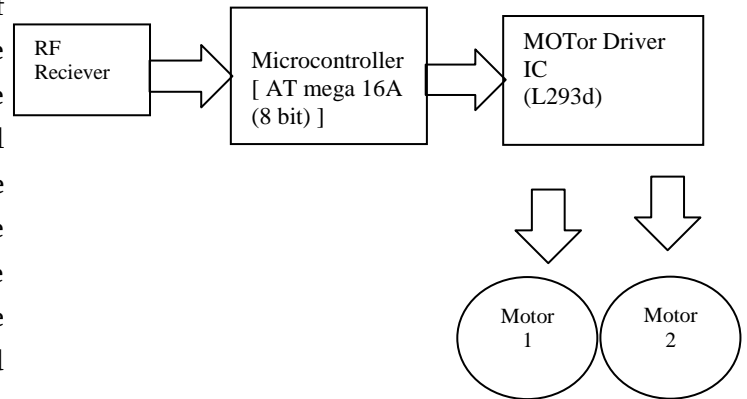
Fig 2. Block diagram of Receiver

III. PROPOSED SYSTEM

Camera is interfaced with PC for image acquisition. MATLAB is used for image processing.Path is simply determined by user on operating space image by interface application. Communication between PC and controller robot can be carried out by RF module. Based on the location of vehicle, commands will be sent from pc to controller robot using RF module. Controller robot will then move robot forward, backward, left, stop or right.

IV. SYSTEM COMPONENTS

ATmega16 Microcontroller ATmega16 is an 8-bit high performance microcontroller of Atmel's Mega AVR family with low power consumption. Atmega16 is based on enhanced RISC (Reduced Instruction Set Computing, Know more about RISC & CISC Architecure) architecture with 131 powerful instructions. Most of the instructions execute in one machine cycle. Atmega16 can work on a maximum frequency of 16MHz.ATmega16 has 16 KB programmable flash memory, static RAM of 1 KB and EEPROM of 512 Bytes. The endurance cycle of flash memory and EEPROM is 10,000 and 100,000, respectively. ATmega16 is a 40 pin microcontroller. There are 32 I/O (input/output) lines which are divided into four 8-bit ports designated as PORTA,

PORTB, PORTC and PORTD.ATmega16 has various in-built peripherals like USART, ADC, Analog Comparator, SPI, JTAG etc. Each I/O pin has an alternative task related to in-built peripherals. The following table shows the pin description of ATmega16.

FLOW CHART

Vision System
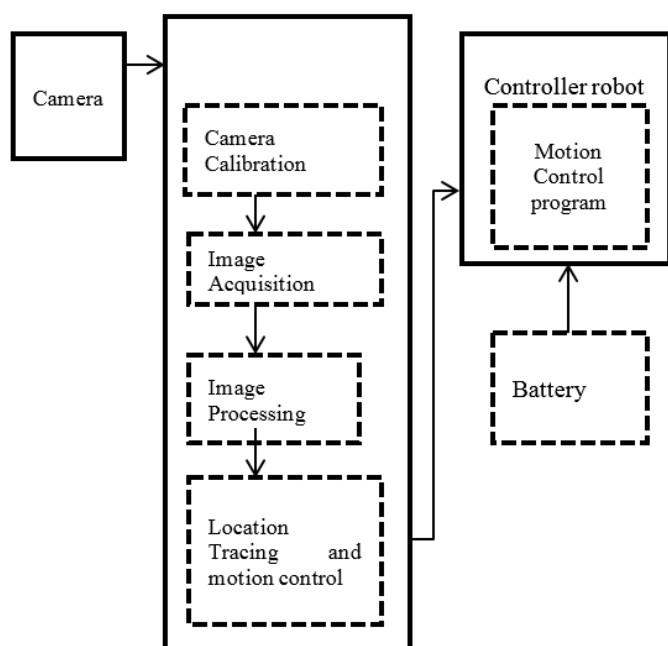
Fig 3. Flow chart

From above fig. the exact operation of the "Intelligent Self-parking Chair" can be understood properly.

V. EXISTING SYSTEM

In our system we have used microcontroller IC with RF transmitter and receiver which is generally works on 5V and 6V. The main specialty of our system is that we have not used SMPS in it because it works on different voltages, since we do not have continuous power supply, we used 7805 IC on which our system is working which convert the 12V power into 5V due to which our whole circuit is working. A 12 volt supply is used for the motor driver. In this system first we power on the supply

due to which microcontroller will on and then we have given an interrupt as soon as we gives an interrupt to chair it will start rotating in 360 degree to find its position. As before long as chair finds its parking path it'll moves towards its revered parking position.If any obstacle comes between the chair and to its position the obstacle sensor will detect the obstacle and will stop at its position until the obstacle moves. As the obstacle moves chair will starts moving towards its respected parking position.

1. Once the length of a parking space larger than the length of the car plus a buffering distance is detected, the chair will stop automatically.

2. Perform a smooth and efficient parking behavior according to the relative positions of the car and the parking space.

The automatic chair parking system has the following major components:

The chair consists of 12V DC a servo motor in the front and 12V DC power supply Microcontroller, L293D motor driver interfaced with the servo motor and microcontroller.

VI. FUTURE SCOPE

i. In corporate companies like board room after completion of meeting the employees moves away without arranging the chairs thus, this system automatically arrange the shuffled chairs to their respective position.

ii. It may used in schools and colleges like in the practical labs the students moves away without arranging the shuffled chairs hence, by giving the interrupt to the system it arrange the chairs in their original destination.

iii. In conference halls the people goes away after completion of conference without arranging the displaced chairs. This system helps in arranging the displaced chairs in their located position.

VII. ADVANTAGES

1. Path can be easily updated.
2. Eliminates the need of different sensors (IR, Proximity, Magnetic field sensor) thus makes system more compact and cost effective.
3. Possible to avoid obstacles in path by using IR sensors and by continuous tracking of chair.

VIII. APPLICATIONS

1. Widely useful in conference halls, offices, public fields.
2. Can be useful for physically challenged people.
3. Most importantly it cab used in hospitals.
4. It can be used st home and shopping malls also.

CONCLUSION

According to this review paper, we have concluded that by using image processing application we can easily recognize the shape of an object, location of any object. It is helpful to minimize the labor cost and time. We also conclude that the efficient communication can be takes place between various components using wireless communication devices.

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IoT Based Smart Dustbin

Nilesh Damakale*, Pratiksha Rite, Abhilasha Wagh, Prof. Dr. Saniya Ansari

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

This project mainly concentrates on offering an easy, reliable solution to the common problem of inefficient garbage disposal faced at present, which also implies that the main users of our product would be all type. To overview the existing problem of GMS new method is proposed. Internet-of-Thing (IoT) used allows the waste management to monitor based on the level of the garbage depth inside the dustbin. With alert the level of garbage. The real time and triggers the garbage collection process via IOT. In the implementation of the system MP Lab and CCS compiler to program the microcontrollers.

Keywords: IOT, Ultrasonic Sensor, Gas Sensor, PIR Sensor, Load cell Sensor, DC Motor.

I. INTRODUCTION

Due to rapid population growth, a lack of public awareness and garbage management is becoming a global problem. Due to the lack of care and attention by the authorities the garbage bins are mostly seem to be overflowing. It has to be taken into care by corresponding authorities and should think what method can be followed to overcome this. Internet and its applications have become an integral part of today's human lifestyle. It has become an essential tool in every aspect. Due to the tremendous demand and necessity, researchers went beyond connecting just computers into the web. These researches led to the birth of a sensational gizmo, Internet of Things (IoT). Communication over the internet has grown from user - user interaction to device – device interactions these days. The IoT concepts were proposed years back but still it's in the initial stage of commercial deployment. IoT provide a platform for smart garbage management. Some of the commonly used methods are implemented using sensors and microcontrollers. The details of each bin are monitored by the authority with the help data received on webpage.

The implementation of smart garbage management system using sensors, microcontrollers and GSM module assures the cleaning of dustbins soon when the garbage level reaches its maximum. If the dustbin is not cleaned in specific time, then the record is sent to the higher authority who can take appropriate action. This system also helps to monitor the fake reports and hence can reduce the corruption in the overall management system. This reduces the total number of trips of garbage collection vehicle and hence reduces the overall expenditure associated with the garbage collection. It ultimate helps to keep cleanness in the society. Smart collection bin works with the sensors will show us the various levels of garbage in the dustbins and also the weight sensor gets activated to send its output ahead when its threshold level is crossed. If dustbins are not cleaned in time, the details will be forwarded to higher authority. Different implementation methods are explained in the remaining parts. The level of dustbin is indicated

on the display. In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as the infrastructure of the information society system but is able to interoperate within the existing Internet infrastructure. The area around an improperly maintained dust bins can house disease spreading insects like mosquitoes, flies, bees and driver ants. The environment around a dustbin is also conducive for increasing the pollution level in air. Air pollution due to a dustbin can produce bacteria and virus which can produce life threatening diseases in human beings.

II. LITERATURE SURVEY

Dr. N. Sathishkumar et.al [1] they develop a system which is helpful for the ultimate need of developing nation is the key for "Smart City". The influential ecological factors that pose to be a threat may include: hazardous pollution and its subsequent effects on health of humanity, alarming global warming and depletion of ozone layer etc. Mostly Environmental pollution may be owing to the Municipal Solid Leftovers (MSL) [2]. A Proper maintenance becomes mandatory for an efficient and effective removal of the generated Municipal Solid Leftover [8]. It is perceived that often the waste space gets too much occupied due to irregular removal of garbage occupancy in the dustbin.

Navghane, S. S et al [2] they develop a system which has become an essential tool in every aspect. Due to the tremendous demand and necessity, researchers went beyond connecting just computers into the web. These researches led to the birth of a sensational gizmo, Internet of Things (IoT). Communication over the internet has grown from user - user interaction to device – device interactions these days. The IoT concepts were proposed years back but still it's in the initial stage of commercial deployment. Home automation industry and transportation industries are seeing rapid growth with IoT.

Lewinsohn, H. C et al [3] Things that are connected to the Internet and those devices controlled from the Internet is called Internet of Things. In this system, the smart bin is connected with the internet to display the exact information about the dustbin level and to which area it belongs. The overflow of dustbin will create an unpleasant environment and it affect many people by spreading the deadly disease the truck driver will go immediately and collect the waste form the dustbin. Multiple dustbins are connected through the cities. The Dustbins are integrated with ultrasonic sensor, RF module. The ultrasonic sensor is used to detect the level of dust in the dustbin. After detecting the level of dustbin the information is send to the RF Transmitter and received by the RF Receiver at the Central System and Internet connection is enabled through the connection of Wi-Fi module. The data is Received and processed in the cloud. This information is send to the web browser.

Sharma, Narayan et al [4] developed a system which overcomes problems of garbage bins being overflow and all the garbage spills out resulting in pollution. This also increases number of infection as large number of pest and mosquitoes breed on it. Hence they designed a System Based on AT89S52 for collecting the garbage from a particular region – the region whose public Garbage Bins are overflowing with previous concern. Solid waste management is a big challenge in urban areas for most of the countries throughout the world. An efficient waste management for uphold a safe and green environment as there are rising all kinds of waste disposal.

Dugdhe, Saurabh, et al [5] The Internet of things (stylized Internet of Things or IoT) is the internetworking of physical devices, vehicles (also referred to as connected devices and smart devices), buildings and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data.

Fahiszrulzaki, Muhammad, et al [6] this article presents a Smart Solid Waste Monitoring and collecting system. It is a common sight to witness garbage spilled out in and around the dust bins. Additional care must be taken in a densely populated area where the waste deposits in the bins are sufficiently high [1] [2]. Dustbin level is transmitted through server with the help of Ultrasonic sensor [3]. At a time we can monk-tor the dustbin throughout the network. It means we can access the data from dustbin where all the com-putter terminals are connected to the same network.

III. METHODS AND MATERIAL

Proposed system allows the waste management to monitor based on the level of the garbage depth inside the dustbin. The system gives alert to user about the level of garbage; (domestic waste, paper, glass and plastic). The system consists the ultrasonic sensor which measure the garbage level as well as PIR sensor, GAS sensor(co2) and an PIC18 microcontroller which controls system operation whereas everything will be connected to server. At the same time, the level of garbage be displayed will display on LCD to allow user to know the level of garbage in the dustbin without opening it. At the same, PIR and GAS sensor detect the presence of person as well as amount of gas particle per meter these data all the data transferred and displayed on server. The LCD is interfaced with PIC microcontroller to display the percentage of the garbage for bins and the gas amount the domestic waste does not to wait the bin to be 100% full as the longer it will be in the bin; the longer the domestic waste will be rotten and create unpleasant environment.

PIR sensor check the presence of human being and motion so when a person is coming toward the dustbin it will detect presence of person and it will automatically open. The range is selected 2 to 3 m. Load cell is a sensor used to check the weight of dustbin sometimes the level is not full but the heavy garbage is placed in it due to which the dustbin may

get damage to avoid this we used load cell. In some case the value of level sensor and load cell is not changed but still garbage is drop at that time the buzzer will beep. Sometimes some poisonous gases are developed in the dustbin which are hazardous for human health that gases are detect by gas sensor and it will sprinkle the baking soda .
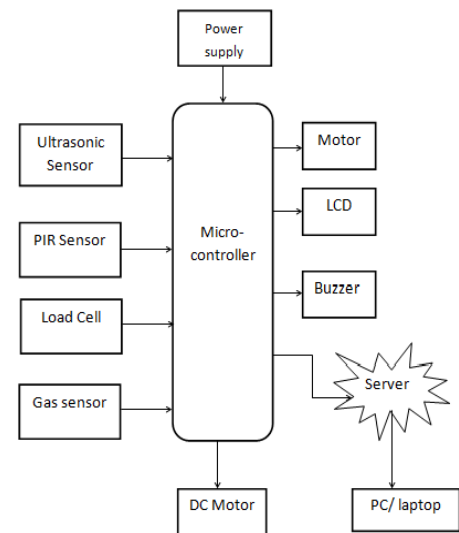
Fig. 1 Block Diagram IOT Based Smart Dustbin

Ultrasonic sensors: - Ultrasonic sensors are used for distance measuring applications. These gadgets regularly transmit a short burst of ultrasonic sound to a target, which reflects the sound back to the sensor. The system then measures the time for the echo to return to the sensor and computes the distance to the target using the speed of sound within the medium.

PIR Sensor: - PIR sensor detects a human being moving around within approximately 10m from the sensor. This is an average value, as the actual detection range is between 5m and 12m.PIR are fundamentally made of a pyro electric sensor, which can detect levels of infrared radiation. For numerous essential projects or items that need to discover when an individual has left or entered the area. PIR sensors are incredible, they are flat control and minimal effort, have a wide lens range, and are simple to interface.

Load Cell: - A load cell is a sensor or a transducer that converts a load or force acting on it into an electronic signal. This electronic signal can be a voltage change, current change or frequency change depending on the type of load cell and circuitry used. There are many different kinds of load cells. We offer resistive load cells and capacitive load cells.

Resistive load cells work on the principle of piezo-resistivity. When a load/force/stress is applied to the sensor, it changes its resistance. This change in resistance leads to a change in output voltage when a input voltage is applied.

Gas Sensor: - A gas detector is a device that detects the presence of gases in an area, often as part of a safety system. This type of equipment is used to detect a gas leak or other emissions and can interface with a control system so a process can be automatically shut down. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals. This type of device is used widely in industry and can be found in locations, such as on oil rigs, to monitor manufacture processes and emerging technologies such as photovoltaic. They may be used in firefighting

Flowchart of overall system:-
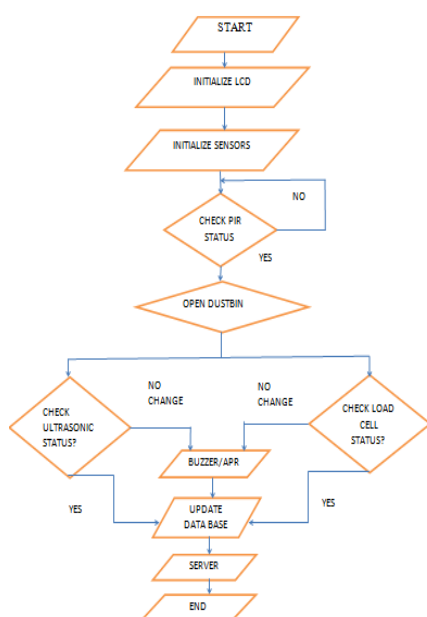
Flowchart of GAS Sensor:-
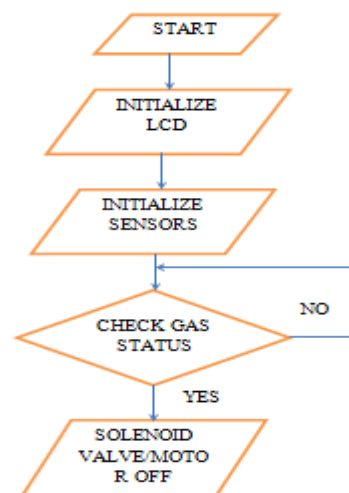
IV. RESULTS AND DISCUSSION

The dustbin is able to open the lid with the help of servo motor and PIR sensor whenever it detects motion. The ultrasonic sensor is giving the details about the waste present in the dustbin. The status of the waste is transferred to the authority whenever it is exceeding the threshold value.

Table No. 1 Sensor Specification

Sr. no.	sensors	Normal value	Threshold value
1.	Ultrasonic sensor	20 meter	1 m to 2 m
2.	PIR sensor	10 meter	1 m to 3 m
3.	Load Cell sensor	15 volts	1 to 3 mV/V.
4.	Gas Sensor	100 to 10,000 ppm	0 to 2000 ppm
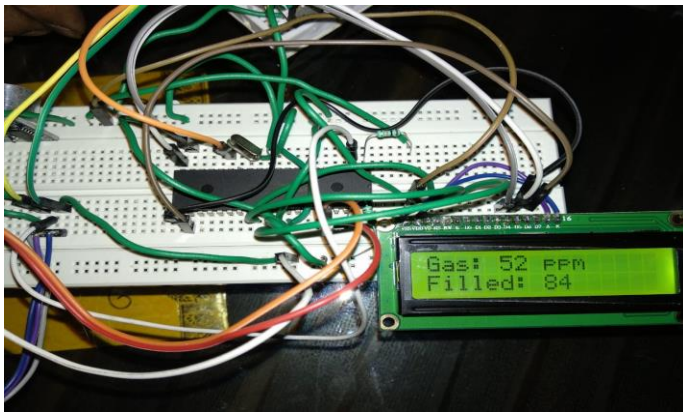
Fig. 2 Demonstrated Results

V. CONCLUSION

This project work is the implementation of Automatic Garbage Fill Alerting system using Ultrasonic sensor, PRI, GAS, Buzzer and PIC18 module. This system assures the cleaning of dustbins when the garbage level reaches its maximum. This reduces the total number of trips of garbage collection vehicle and hence reduces the overall expenditure associated with the garbage collection. It ultimately helps to keep cleanliness in the society. Therefore, the Automatic Garbage Fill Alerting system makes the garbage collection more efficient and cost effective.

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IOT Based Attendance Log System Using Raspberry Pi

Aayush*, Mukund Kumar, Pooja Kulkarni, Prof. Mrs Neha Tiwari

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,

Lohegaon, Pune, Maharashtra, India

ABSTRACT

In this paper, the development of an attendance log system using Fingerprint (biometric) is proposed. Managing student attendance during lecture periods has become a difficult challenge. The ability to compute the attendance percentage becomes a major task as manual computation wastes a lot of time. And for that reason, an efficient attendance system using fingerprint is designed. This system takes attendance with the help of a fingerprint device and the records of the attendance are stored in a database to a server. Attendance is marked by Students only after giving access code to unlock device by Faculty member of particular subject.

The results will show improvised performance over manual attendance system.

Keywords : Fingerprint, Biometrics, Database, Students, Faculties, Attendance Log System, Raspberry Pi

I. INTRODUCTION

The availability of internet has provided almost all the information, which causes the students to be less interest in attending the classes in their working hours. The roll calling or filling up proxies are however time consuming and laborious because the valuable lecture time that could otherwise been used for lectures is dedicated to student attendance taking and sometimes not accurate.

A technology that can solve this problem and even do more is the IOT based Attendance Log System (Biometric System). Biometric is an automated identification and data collection technology that ensures more accurate and timely data entry. Biometric(Fingerprint Authentication) is not actually a new technology, it only quickly gained more attention now-a-days because of its low cost and its advantages in other computing fields that open up more application areas. Fingerprint module captures a digital image of fingerprint pattern. The capture image is called a live scan. This live scan is digitally processed to create a bio-metric template which is stored and used for matching.

A fingerprint module has some basic jobs, like it need to get an image of your figure and it need to determine whether the pattern of the ridges and valleys in this matches the pattern of valleys & ridges in pre-scanned image. Only particular characteristics of fingerprint is ever saved, only a series of number (binary code), which is used for verification. The algorithm can't be reconverted to an image, so no fingerprint can be duplicated. WI-FI module is used to send a data stored in device over the Internet after the end of particular session.

In this Project we are not talking only about Student's Attendance marking. This Particular device will get unlocked only by the access code given by the particular faculty of the particular Subject for a specific period. And for latecomers there will be some consequences too. Like, their data will get saved in late coming attendance database or if faculty wants then will be marked absent too. If any student is absent for lecture(s) then an SMS will automatically

get generated and get sent to his/her parent's Registered Number. And also on Monthly basis, Defaulters list will get generated using Log System. The whole log system will be saved in a Single Parent Server.

II. METHODS AND MATERIAL

The attendance system is implemented which consists of two stages:: The Enrolment Stage, where each student biometric details was taken and stored in the database and, The Authentication Stage, where each student's biometric features will get extracted and compared with all fingerprint templates in the database.

There are numerous benefits to using this Attendance Log System. It eases all the system's processes. It has Server storage. The Server Storage Method is more efficient than a paper-based file system. There is another factor which the system has taken into consideration is human error made in the recording and filing process which is avertable in a database system. It also makes provision of easy corrections of errors occurred.

Modules of the Project:
The system is designed in a way that only particular faculty of particular subject is allowed to access the module. The records would be modified by only the admin (faculty/H.O.D).

- *LECTURER*

This module is protected by user access code. It consists of all lecturers that have a hand in access code for unlocking the Device.

- *STUDENTS*

This module is protected by a fingerprint code and some access code. This is where students have to put their finger on the device after unlocking that with access code to mark their attendance, which will go directly to the Server.

FLOWCHART:
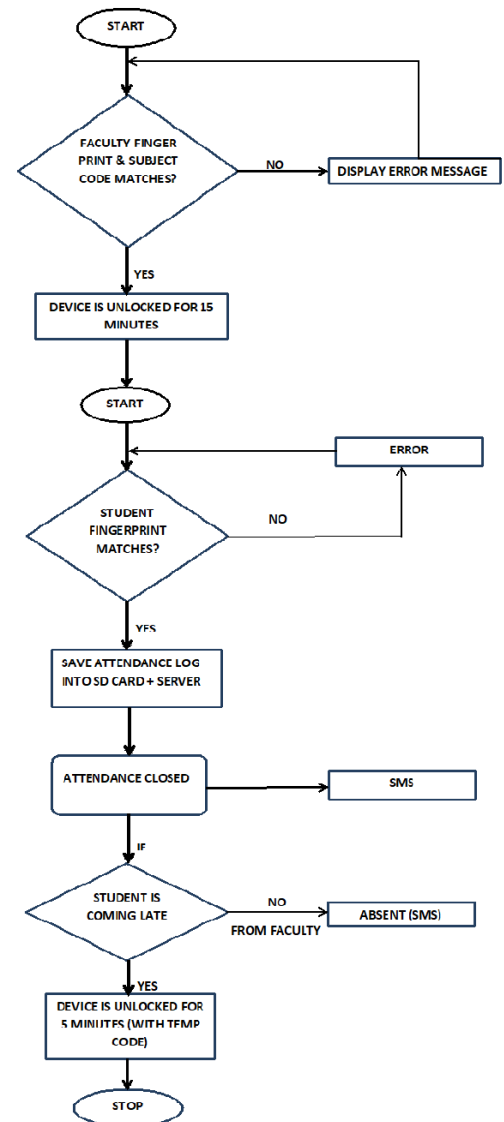
III. RESULTS AND DISCUSSION

1. **Raspberry Pi :**

In this thing we have installed the OS on which our project is going to run. We did dump some code like Python, Java etc. which relates with Fingerprint module, Database, SMS and all.

2. **Fingerprint Module:**

How this thing gonna work? It's going to work in the manner like, the Student will put his/her finger on it and using the sensor the student's authentication, the database matching takes place and finally the attendace is going to marked and will saved on server.

3. GSM Module:

There will be some cool modifications, and one of them is if a student is late or absent for a particular lecture , then a SMS will automatically get generated and get sent to their parents number.

4. Attendance Database:

In the end , on monthly basis ,also a Defaulter' list will get generated and will show the monthly Student's being Absent and Present record for the lectures.

IV. CONCLUSION

We are implementing an Attendance System based on IOT using Raspberry Pi technique. Our algorithm successfully authenticates the Student's Identity from his/her fingerprint and database from server and registers his/her attendance. We are applying our algorithm on many objects (person) and found that it successfully detect the fingerprint and capable of make it matching with right database.

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Implementation of Robotic Path using Ant Colony Optimization

Ashutosh Sinha, Avinash Kumar, Dipesh Saivanya, S. S. Jadhav

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

Path planning problem, is a challenging topic in robotics. Indeed, a significant amount of research has been devoted to this problem in recent years. The ant colony optimization algorithm is another approach to solve this problem. Each ant drops a quantity of artificial pheromone on every point that the ant passes through. This pheromone simply changes the probability that the next ant becomes attracted to a particular grid point. The techniques described in the paper adapt a global attraction term which guides ants to head toward the destination point. The paper describes the various techniques for the robot path planning using the Ant colony Algorithm. The paper also provides the brief comparison of the three techniques described in the paper.

Keywords : Ant Colony Optimization, Microcontroller, RISC, EEPROM, JTAG Interface, L293D, SN745510

I. INTRODUCTION

Path-planning can be described as the task of navigating a mobile robot around a space in which a number of obstacles that have to be avoided. Optimal paths could be paths that minimize the amount of turning, the amount of braking or whatever a specific application requires. Path-planning requires a map of the environment and the robot to be aware of its location with respect to the map. A reliable navigation algorithm must be able to

✓ Identify the current location of the robot,
✓ Avoid any collisions,
✓ Determine a path to the object.

Mobile robot navigation problem is a challenging problem, and a number of studies have been attempted, resulting in a significant number of solutions. Three major concerns regarding robot navigation problems are efficiency, safety and accuracy. The main scope of the path finding problem involves the efficiency and safety issues. The path finding problem can be overcome by combining global path planning and local path planning.[4]. The robot path planning methods could be classified into different kinds based on different situations. Depending on the environment where the robot is located, the path planning methods can be classified into the following two types as shown in Figure 1.

✓ Robot path planning in a static environment which contain only the static obstacles in the map; and
✓ Robot path planning in a dynamic environment which has static and dynamic obstacles in the map.

Let robot A be a single rigid object moving in a two- or three-dimensional Euclidean space (called work space W); and let obstacles B be rigid objects distributed in W. Assume there is no kinematic constrains that limit the motion of A (Le., A is a "free-lying" object), then a path planning problem can be formulated as the following ([1]):

Given an initial position and its orientation, a goal position and its orientation's of A in W, generate a path that specify a sequence of positions and

orientations of A avoiding contact with B, starting rom the initial position and terminating at the goal position. Report failure if no such path exists.

The studies of path planning started in late 60's ([1]) and many different algorithms have been proposed, including the roadmap approach, cell decomposition,0potential ields, and mathematical programming, etc. ([2]). It has been found that the above methods are either ineicient, due to the high computational cost; or inaccurate, due to the trapping in local minima ([2]).

To overcome these limitations, many heuristic approaches have been developed, such as the application of artificial neural networks. One of the major advantages of heuristic algorithms is that it can produce an acceptable solution vey quickly, which is especially suitable for solving NP-complete problems.

The ant colony optimization (ACO) algorithm is a meta-heuristic approach inspired by the behavior of the biological ants in real world. It is one of the most successful examples of swam intelligent systems and has been applied to solve many different types of problems, such as optimizing nonlinear objective functions and network routing in telecommunication networks.

In this research, the application of the ant colony optimization algorithm for robot path planning is investigated. The goal is to ind the shortest and collision-ree route (if exists) between a starting point and a destination point in a grid network. To simulate a dynamic environment, obstacles with different shapes and sizes are added ater the optimal path is founded in the original (obstacle free) network. Two different pheromone re-initialization schemes (Le., the local initialization and the global initialization) are discussed and compared. Computer simulation results are presented to demonstrate the effectiveness of the ACO algorithm.

II. ANT COLONT OPTIMIZATION

Ant colony optimization algorithm is a Meta heuristic approach proposed by M. Dorigo et.al in 1992 as a solution to solve optimization problems. It is based on probabilistic technique and gives optimum solution through graphs. It is inspired from the foraging behavior of real ants. When searching for food, ants move randomly in different directions. They release a chemical substance called "pheromone" along the path they trace on their return trip. The amount of pheromone deposited depends on the quality and quantity of the food. This pheromone evaporates with time. After a certain interval of time, the concentration of pheromone is greater along the shortest path as the ant makes more number of trips compared to others. The higher concentration of pheromone attracts other ants and thus each one make it along the shortest path from nest to food source. This sort of indirect communication between species is called "stigmergy" this concept was first introduced by French biologist Pierre-Paul Grasse in 1959. With stigmergy, ants communicate among themselves by modifying their local environment. This characteristic of real ants is used in artificial ants to solve optimization problems. Ant Colony Optimization (ACO) algorithms, initially aimed to search an optimal path in a graph, have been applied to solve many combinatorial optimization problems.

In case of any obstacles present in their path, ants move along the contour of the obstacle on either ways and find their way to the food source, the concentration of pheromone being greater along the shorter path as the ants accumulate more pheromone in a given time interval along the shorter path. All ants move at approximately the same speed and deposit pheromone at the same rate. Ants prefer a higher pheromone trail level that makes the accumulation quicker on the shorter path.

III. SYSTEM SPECIFICATION

1. RF available frequency at: 2.4 to 2.483GHz.
2. RF module operation temperature range: -40 to +85°c
3. Operating voltage of ATmega16 is 4.5 to 5.5 V.
4. Speed grade for ATmega16 is 0 to 16MHz.
5. High performance, low power consumption AVR 8 bit microcontroller

BLOCK DIAGRAM

HARDWARE SPECIFICATION

Microcontroller

AVR(ATmega 16)

- ✓ High-performance, Low-power AVR® 8-bit Microcontroller
- · Advanced RISC Architecture
- · High Endurance Non-volatile Memory segments
- – 16K Bytes of In-System Self-programmable Flash program memory
- – 512 Bytes EEPROM
- – 1K Byte Internal SRAM
- · On-chip Boot Program
- · Programming of Flash, EEPROM, Fuses, and Lock Bits through the JTAG Interface
- · Peripheral Feature
- ✓ ·Two 8-bit Timer/Counters with Separate Prescalers and Compare Modes
- · Real Time Counter with Separate Oscillator

- ✓ ·Four PWM Channels
- · 8-channel, 10-bit ADC
- ✓ ·Programmable Serial USART
- · Master/Slave SPI Serial Interface
- · Programmable Watchdog Timer with Separate On-chip Oscillator
- · On-chip Analog Comparator
- ✓ ·Power-on Reset and Programmable Brown-out Detection

- ✓ ·Six Sleep Modes: Idle, ADC Noise Reduction, Power-save, Power-down, Standby
- ✓ and Extended Standby
- · I/O and Packages
- – 32 Programmable I/O Lines
- – 40-pin PDIP, 44-lead TQFP, and 44-pad QFN/MLF
- · Operating Voltages
- – 4.5 - 5.5V for ATmega16
- · Speed Grades
- – 0 - 16 MHz for ATmega16

L293D (motor driver IC)

L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC. Dual H-bridge Motor Driver integrated circuit (IC).

Why we choose L293D?

Main difference between L293 and L293D , D in L293D indicates an internally fitted diode
(Output Clamp Diodes) meaning that we don't need to add any external components. But if using L293 external diode has to be added. This diode is used for Inductive Transient Suppression.

L293D IC is cheaper than SN745510 IC.

There are 4 input pins for l293d, pin 2.7 on the left and pin 15, 10 on the right as shown on the pin diagram. Left input pins will regulate the rotation of motor connected across left side and right input for motor on the right hand side. The motors are rotated on the basis of the inputs provided across the input pins as LOGIC 0 or LOGIC 1.In simple you need to provide Logic 0 or 1 across the input pins for rotating the motor. L293 D Logic Table .Lets considers a Motor connected on left side output pins (pin 3.6). For rotating the motor in clockwise direction the input pins has to be provided with Logic 1 and Logic 0.

L293 D Logic Table .Lets considers a Motor connected on left side output pins (pin 3.6). For rotating the motor in clockwise direction the input pins has to be provided with Logic 1 and Logic 0.

Pin 2 = Logic 1 and Pin 7 = Logic 0 | Clockwise Direction
Pin 2 = Logic 0 and Pin 7 = Logic 1 | Anticlockwise Direction
Pin 2 = Logic 0 and Pin 7 = Logic 0 | Idle [No rotation] [Hi-Impedance state]
Pin 2 = Logic 1 and Pin 7 = Logic 1 | Idle [No rotation]
In a very similar way the motor can also operate across input pin 15, 10 for motor on the right hand side.

Power supply design

An ideal regulated power supply is an electronic circuit designed to provide a predetermined voltage Vo, which is independent of load current, temperature and also of any variations is line voltage.
The power supply consists of

- ✓ Step-down transformer
- ✓ Bridge Rectifier
- ✓ Filter
- ✓ IC Regulator

Power supply is a vital part of all electronic systems. This circuit is required to drive the various components on the board. It is normal voltage regulator built with ubiquitous Transformer-Bridge Rectifier-Filter-Regulator assembly. We required a 5v supply for digital IC's.
A step down transformer in the block diagram decreases the value of primary mains voltage at 50 Hz and applies a pure sign wave with 0 average values to a rectifier circuit. The circuit converts such wave forms to a pulsating DC wave forms having a non-zero average or DC value.

Such a ripple containing DC waveform is applied to a filter which reduces the ripple factor and improves the DC contents in the waveform. If the output waveform across filter is directly connected to a load, without the regulator block, the load is said to be connected to an unregulated power supply.

IV. SOFTWARE DESGIN

Codes were written in MATLAB Part by part circuit simulation was carried out on Proteus Design Suit. Complete interfacing diagram was prepared on EAGLE.

1. FLOWCHART
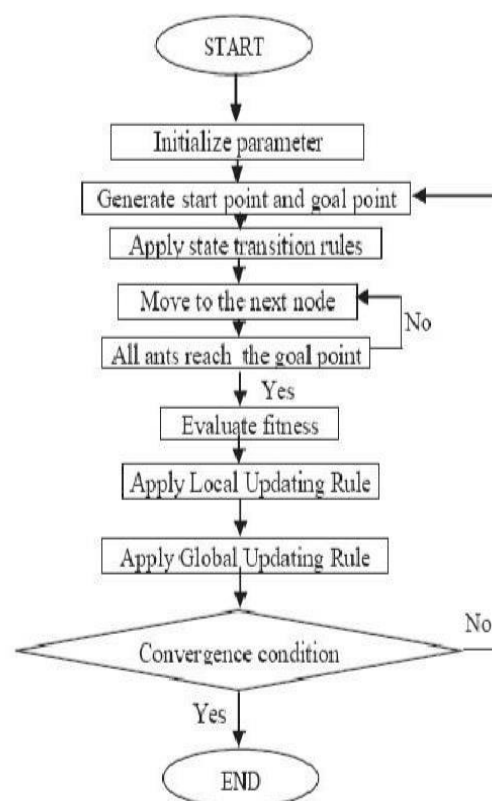
2. Algorithm

Step no 1: Start
Step no 2: ACO algorithm for the shortest path
Step no 3: Adding obstacle(s)
Step no 4: Pheromone re-initialization
Step no 5: ACO algorithm for the shortest path
Step no 6: Max Iteration?
Step no 7: if maximum iteration does not exist then it will again check ACO algorithm for the shortest path
Step no 8: Stop

ROBOTIC PATH PLANNING

In this research, the ant colony optimization (ACO) algorithm is applied to find the shortest and collision free
Route in a grid network for robot path planning. Obstacles with various shapes and sizes are considered to simulate a dynamic environment. Computer simulation results demonstrate that the ACO algorithm can successfully re-route the optimal path for the new network after obstacles are added. Future works may include the investigation on different ACO algorithms, such as the Elitist Ant System (EAS), the Rank Based Ant System, and the MAX-MIN Ant System (MMAS). Also, simulation works can be performed with more complicated networks and obstacles.
To simulate a dynamic environment, barriers (obstacles) re added after the algorithm converges (for a fair comparison, the sizes of obstacles are proportional to the sizes of networks). Fig. 3 illustrates such an example, where the two darker areas inside the 40X40 grid represent two arbitrary obstacles added at the positions that re randomly chosen. The ACO algorithm must be called again in order to ind the shortest path in his new network with obstacles. The low chart is shown in Fig. 4.

Pheromone initialization plays an important role in ACO algorithm. In this research, after the obstacles are added, the pheromones in the network are re-initialized. Two different re-initialization schemes, namely, the global initialization and the local initialization are tested and their performances are compared. In global initialization, all the pheromones in the entire network are uniformly reset back to the original pheromone level, which is 0.1. With local initialization, a "gradient" of pheromones is initialized around the object. The value of half the highest pheromone levels in the network is applied directly to the points that are next to the object. The pheromone levels re then decreased by a fraction (e.g., 50%) s the points move outward in a "circle" around the object.

Fig. 3 shows the optimal path found in a 40X40 grid with obstacles using the local initialization method.

The performance of the two different initialization approaches are summarized in Table 1 (for local initialization) and Table 2 (for global initialization),based on the additional number of iterations needed to ind the optimal path after obstacles re added, as well as the length of the inal optimal path. From the data, we can conclude that he local initialization outperforms the global initialization. For a 20X20 grid network, though they eventually found the optimal path with the same length, the numbers of additional iterations requested using the two methods are different. It only takes 122 additional iterations for the local initialization method while 151 iterations are needed for the global initialization method (an increase of 23.8%) . The advantage of using local initialization is even more significant for larger networks. In a 40X40 grid network, the additional number of iterations needed by local initialization is 69 while the additional number of iterations needed by global initialization is more than doubled (i.e., 148). Even with more iterations, the path length found by local initialization is 7.8% shorter (128 blocks) than its counter algorithm (138 blocks).

Table I. The additional number of iterations and the optimal path found by ACO with obstacles (local initialization)

Size	20X20	30X30	40X40
Number of iterations	122	84	69
Path length	39	64	128

Table 2. The additional number. of iterations nd. the optimal. Path

Size	20X20	30X30	40X40
Number of iterations	ISI	277	148
Path length	39	66	138

Fig. 5 demonstrates another simulation with three obstacles in different shapes and sizes. In (a), ACO algorithm is implemented for only 1 iteration after these obstacles are added. Obviously, the path shown in (a) is not optimal; thus more iterations are needed. The much improved result is shown in (b), which is obtained after the ACO algorithm for 1000 iterations.

(a)

(b)

Fig. 5. The Optimal path found by ACO (with nother obstacle) in a 40X40 grid network The result of the irst iteration ater the obstacle is added The path resulted ater 1000th iterations

V. CONCLUSION

In this research, the ant colony optimization (ACO) algorithm is applied to find the shortest and collision free route in a grid network for robot path planning. Obstacles with various shapes and sizes are considered to simulate a dynamic environment. Computer simulation results demonstrate that the ACO algorithm can successfully re-route the optimal path for the new network after obstacles are added. Future works may include the investigation on different ACO algorithms, such as the Elitist Ant System (EAS), the Rank-Based Ant System, and the MAX-MIN Ant System (MMAS). Also, simulation works can be performed with more complicated networks and obstacles.

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A Comprehensive Study of Efficient Thermal Management Techniques for Handheld Devices

Raghuveer Rajesh Dani

Department of Electronics and Telecommunication Engineering, Sinhgad Institute of Technology and Science, Narhe, Pune, Maharashtra, India

ABSTRACT

Modern research and development in computer technology has caused the electronics chips to shrink. The increasing needs for hand-held devices that use these VLSI & ULSI chips gave rise to new studies and developments. The increased demand for higher speed processing gave rise to clock speed of the CPU. Recent studies have found out that the failure rate in these chipsets is rising exponentially and is linked with the temperature variations caused by very large scale integration and reduces chip area. It is observed that the devices, currently in the market, heat rapidly. The traditional heat sink and cooling techniques fails to perform with these new devices. The need for a comprehensive study of electronic system design and thermal management in electronics devices is increasing. Study has revealed that miniaturization of the cooling mechanism, and the electronics components should go hand in hand. The study, research and implementation of the new thermal management or cooling techniques for various handheld electronic devices, is the need of the hour. In this paper, the author has explored various methods and effective thermal management schemes for handheld devices.

Keywords : VLSI, ULSI, MP-SoC, CEO, Dynamic Voltage and Frequency Scaling, Thermal Interface Materials

I. INTRODUCTION

The advancement in various fields of science and technology is because of the experimentation and innovation being carried out in the Electrical and Electronics Engineering. The transistor considered as a fundamental building block of processors and microcomputers, is the most important innovation of the 20th century. The increasing demands of the consumer have caused the electronic systems to shrink at a mind boggling rate. The need for more compact designs and advancement in technology has resulted in manufacturing of multiprocessor SoCs which includes CPUs, memories, and communication architectures on a single die. This shrinking of chip size and increased integration has in turn resulted in excessive heat generation. Multiprocessors were introduced recently, which has more than 1 core. Hence, the MP-SoC produces more heat. Due to reduced size of the devices,

the heat is not dissipated equally and efficiently. There is a special branch in modern engineering design that works around energy, thermodynamics and heat transfer. This branch is known as Thermal Design.

Gordon Moore, the co-founder of Fairchild Semiconductor and CEO of Intel, stated a law in year 1965. Moore's Law asserts that the number of transistors on a microchip doubles every two years, though the cost of computers is halved [1]. This means that each year, the level of integration, increments noticeably.

In a study conducted by Mingzong Wang on a Chip Scale Package (CSP) they observed that, when the die size is more than 80% of the chip size the rate of heating is increased [2]. Since this package size is shrinking day by day, heat spreading and dissipation is

a challenge. It is reported that the heat flux in the integrated circuits has enhanced from 330 W/cm2 to 520 W/cm2 by the international technology road map for semiconductors [3]. Power dissipation levels in mobile phones are increasing mainly due to gaming, higher power applications, and increased functionality associated with the internet [4]. Heating in handheld devices can be summarized mainly due to two main components: 1) CPU 2) Battery. High temperatures in the chip surroundings may create a number of problems. The transistors can fail to switch properly (this can lead to software or hardware errors). The accelerating clock rates lead to steadily increasing power densities [5].
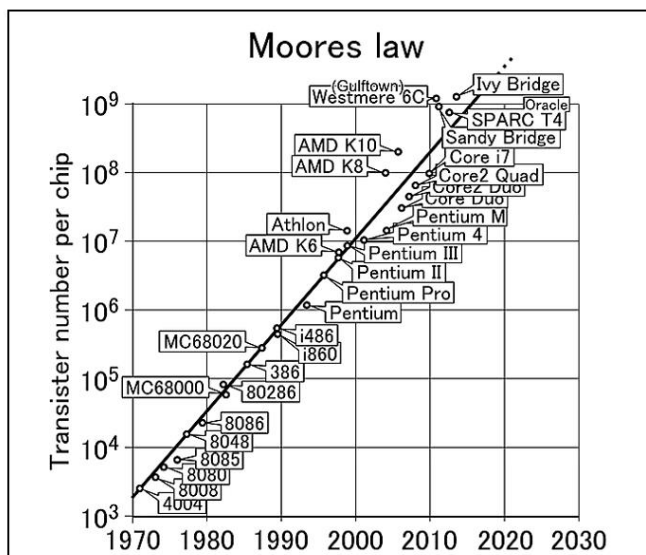
Figure 1. plot of CPU transistor counts against dates of introduction.(source [1])

RISE IN TEMPERATURE OF THE DEVICE DUE TO HEATING OF THE CPU

The currently available handheld devices use a multiprocessor SoC as their CPU. Although new thermal management techniques are introduced, the strain on MP-SoC is still increasing day by day. The need for more processing speed is going high. This causes the CPU to degrade over a time. Degradation of CPU is a process by which a CPU loses the ability to maintain an equivalent overclock, which can be sustained by increasing core voltage levels, is observed

as a form of ongoing failure [6]. Overclocking refers to increasing the clock speed of the CPU in order to operate or process at faster speed. Each processor, regardless of silicon quality, is capable of sustained error-free operation while functioning within the bounds of the specified environmental tolerances (temperature, voltage, etc.) [6]. That means, rather than keeping the operation while functioning within the tolerances and increasing the sustainability, processors are configured to their highest achievable speed by applying no more than the process's maximum allowable voltage.

The myth, that overclocking is "safe" as long as we don't increase the processor core voltage is not true. With increase in frequency, the load temperature increases. This in turn reduces life of the CPU. Figure 2 shows degradation of CPU over the years. It clearly shows that the rate of degradation has increased due to rise in temperature.
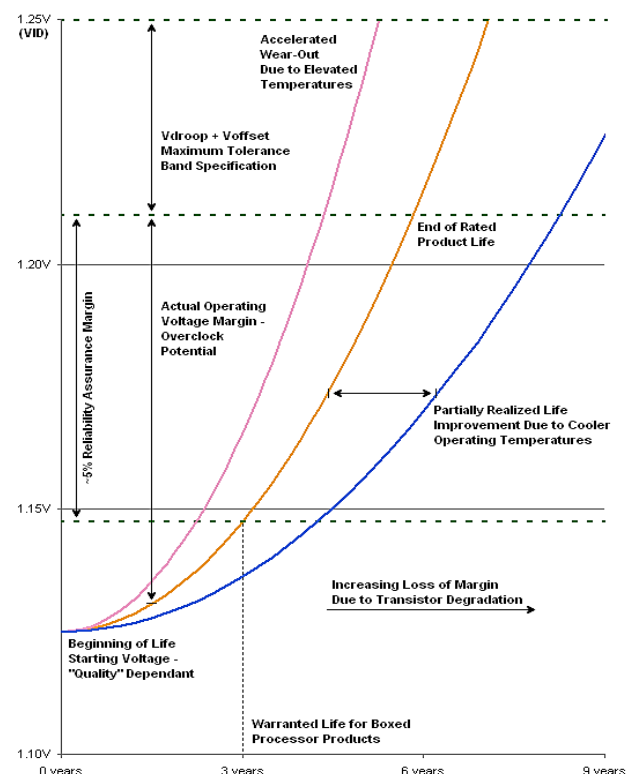
Figure 2. Degradation of CPU due to elevated Core voltage and temperature (source [6])
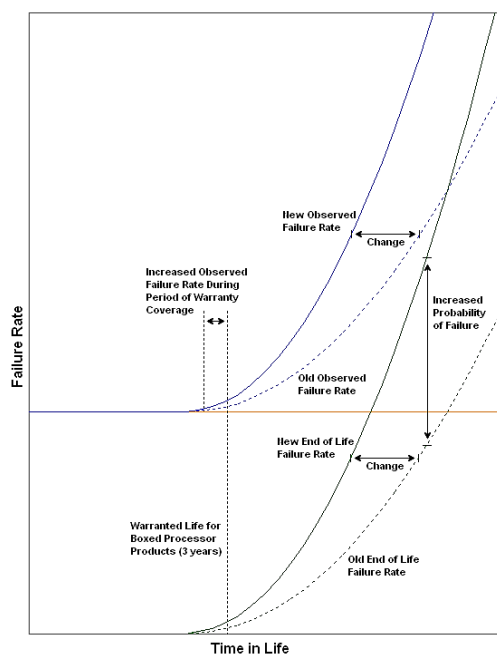
Figure 3. Failure Rate in the CPU (source [17])
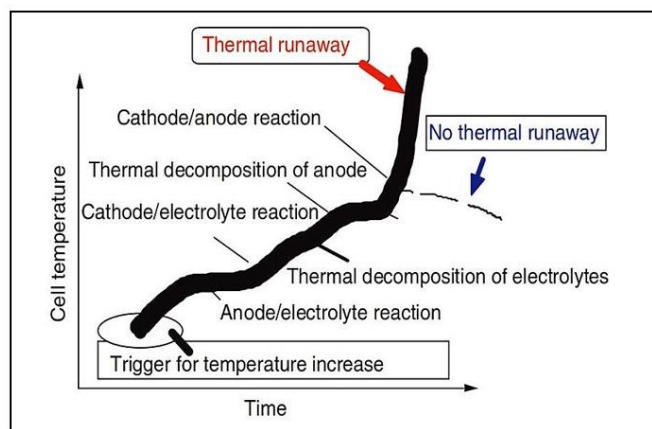
RISE IN TEMPERATURE OF THE DEVICE DUE TO HEATING
OF THE BATTERY

Figure 4. Thermal Runaway in a Cell of Battery

The increased thermal densities inside the Core of mobile devices can affect not only the CPU but also the peripheral components such as Batteries, Speakers, Camera module etc. Phone batteries are safe and give optimal performance around 20°C to 30°C. Most handheld devices have either a Lithium-ion battery or a Lithium-Polymer battery. After experimenting on different types of batteries at different temperature levels, it was observed that the Lithium-ions batteries were affected the most. These batteries tend to

encounter a problem called 'Thermal Runaway'. 'Thermal Runaway', is a cumulative effect observed when the device heats rapidly and eventually ends up generating more heat than the maximum permissible value.

John C et al. defined thermal runaway as a phenomenon in which heating of battery causes even more temperature rises within the handheld devices, which ultimately leads the device to overheat [7]. If pressure builds up inside the battery, the battery could then swell, release toxic chemicals, or even explode. Temperature rise because of battery are mainly due to poor charging discharging cycles, bad power supply to the battery or prolonged use. The cause for rise in temperature due to the battery is approximately 30% and due to heating of Core/CPU is 70%. Hence, in this paper, we will focus mainly on rise in temperature due to CPU heating. The temperature variation in the device not only damages the components but also increases the power consumption over a period. In a study conducted by Gochman, they concluded that there is a constant need to develop new cooling methods for the heat dissipation in integrated chips [8].

As discussed before, in this paper, there are various reasons for temperature variations in the handheld devices. Few of them, as discussed before, are directly related to malfunctioning of either the CPU or the battery. In the handheld devices like mobiles and tablets, the components are closely packed. Many components take a very small space. Therefore, we cannot employ separate cooling techniques for individual components. Hence, we have to look for techniques which involve in cooling of the entire device. There are many ways in which a good thermal exchange can be achieved. The traditionally used methods include use of heat sink or heat spreaders. As the chips evolved further, these traditional methods fell short while managing the heat of these devices. This lead to more research in new thermal management schemes and the result was use of phase

change materials (PCM's), forced air convection, liquid cooling, cold plates etc. These newly discovered methods ruled the entire electronics industry for about a decade or so. Although these methods were convenient and had good thermal exchange efficiency, they fell short while meeting the expectations of the next generation technology. The new generation devices, such as mobiles and tablets needed quick cooling techniques. In this paper the author will be seeing various such techniques and will present a critical review upon concluding.

Survey of various thermal management techniques

Thermal management of a handheld device can be done with two methods i.e., with the help of Hardware, Software or both. Methods, involving hardware for thermal management, are termed as Passive or Static methods as once installed they cannot be altered at runtime. But, the new devices embedded with nanometer technology, require more adaptive techniques that can meet user requirements (thermal management) in the runtime. Hence, the new devices utilized software based schemes such as specially designed algorithm for runtime thermal management along with passive techniques.

The Thermal Management techniques mainly suitable for various types of handheld devices that use Multiprocessor SoC can be classified as:

A. Thermal Management with System Programming and Operating System:

Dynamic Thermal Management (DTM)
✓ Processor Throttling (Dynamic Voltage and Frequency Scaling (DVFS))
✓ Temperature-Aware Scheduling
✓ Thermal Herding
✓ Clock Gating
✓ Activity Migration

Temperature Management Unit (TMU)

Passive Thermal Management:
✓ Heat Spreader
✓ Heat Sink
✓ Heat Pipes
✓ Thermal Interface Materials (TIMs)

Active ThermalManagement:
✓ Forced Air Convection

Thermal Management with System Programming and Operating System:

Heat is generated in CPU is due to reasons such as high clock rates, improper execution of programs that cause deadlock, frequently restarting applications such as antivirus app etc. First rule of thermal management design is, "keeping cool starts from within". The processor chip is one of the main sources of heat within a smartphone. Hot spots can lead to power leakages, performance loss, and eventual degradation of the processor chip. As it is difficult to place a fan for cooling the processor in mobile, we need to employ software enabled techniques for thermal management.

1). Dynamic Thermal Management (DTM):

The Chip Multiprocessors (CMPs) have conquered the modern microprocessor market. With the reduced cost and complexity of designing thermal packaging, many Dynamic Thermal Management (DTM) schemes are being widely adopted in the modern processors as a useful technique to control CPU power dissipation.

DTM can be classified as (General Classification):

Software Enabled (Implemented only in software):
E.g. Temperature aware scheduling

Hardware Throttling:
Global Hardware Throttling:

Hardware support only for throttling the whole chip
Local Hardware Throttling :
Hardware support for throttling parts of the chip
Examples: Clock gating.

Hybrid Throttling:

Combinations of previous classes

The overall temperature of CMPs is highly dependent on the temperature of each core in the CMPs. Hence, the thermal model for uniprocessor environments cannot be directly applied in CMPs due to the potential heterogeneity. As shown in the figure 5, when the trigger occurs, DTM turns ON. The time difference between the occurrence of the trigger and the actual action taken is termed as 'startup delay'. The triggering event is a thermal sensor or a power estimator [9]. Once the trigger goes off, there is some initiation delay while an operating system interrupt and handler are invoked to interpret the triggering event.
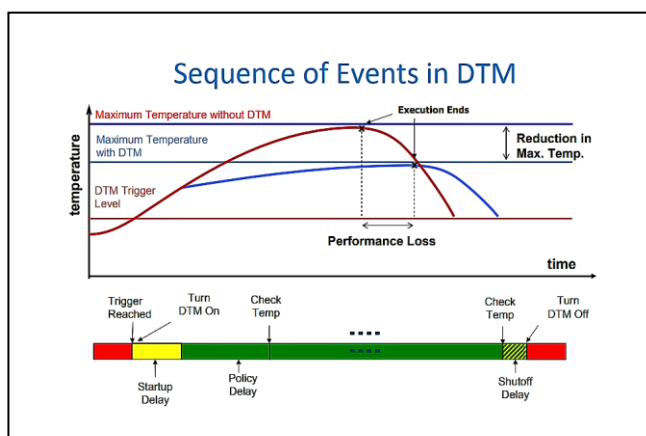
Figure 5. Sequence of Events in DTM

Once the handler has been executed, some DTM response begins. The response includes either voltage or frequency scaling. Depending on the type of response chosen, there may be some delay inherent in invoking it. This delay is termed as response delay. Once the response is in effect, the next issue concerns when to turn it off. Turning the response off as soon as the temperature dips below the threshold may not be good enough as the temperature may fluctuate

around the threshold. Finally, once the DTM has determined that the response should be turned off; there is often a shut off delay while the voltage or frequency is readjusted.

There are various methods in which DTM can be implemented. Few are as follows:

Processor Throttling (Dynamic Voltage and Frequency Scaling (DVFS)):

CPU throttling is also known as Dynamic Clock or Dynamic Frequency Scaling (DFS). When the processes in the CPU are light, it runs at a lower clock speed and keeps the CPU cooler and uses less power, especially when combined with voltage throttling. This is because power used in a CPU is linear with clock frequency and voltage.

The dynamic power consumption can be calculated as,
$$P_T = C_{PD} \cdot V_{CC}^2 \cdot F_I \cdot N_{SW} \quad \dots (1)$$

Here,

P_T	=	Transient Power consumption
C_{PD}	=	Power Dissipation Capacitance
V_{CC}	=	Supply Voltage
F_I	=	Input Signal Frequency
N_{SW}	=	Number of bits Switching

In CMOS circuits almost 70% of the dynamic power is consumed in the parasitic capacitance in their digital gates. Dynamic voltage and frequency scaling (DVFS) is a DTM method to optimize dynamic power consumption [10]. DVFS takes advantage of the relationship between speed and power consumption as a function of power supply voltage. (Refer equation (1).) The effect of CPU frequency and voltage is cubic. This is because power consumption has a linear relationship with input frequency and quadratic relationship with supply voltage. When some heavy (intensive) process is running and the CPU detect overheating, it automatically switches from a high

frequency clock source to a low frequency clock. There are only one or two clock sources in the architecture of currently available mobile CPU's. The desired frequency is derived using a set of frequency multipliers. When the temperature of the CPU comes back to the normal value, the clock frequency is regained. This process happens in the background. All these alterations are carried out dynamically while considering the real time CPU temperature. The performance may get affected for a certain time slot but not significantly. The FPS (Frames per Second) rate is reduces causing the graphics to slow down. Vinod Viswanath, in his article, explained that an efficient DTM system would reduce operating frequency and, at the same time, reduce the supply voltage [11]. This may affect the performance in terms of speed. Some example commercial implementations of dynamic voltage frequency scaling (DVFS) technology are Intel's SpeedStep and AMD's PowerNow. DTM / DVFS can be specifically used for handheld/portable/embedded systems i.e., in battery constrained devices. For example, AutoDVS, is a system for handheld computers that offers dynamic voltage scaling (DVS). AutoDVS not only lowers the amount of energy used but also ensures service quality by estimating user interactivity time, think-time and computation load, system-wide and for each program [11].

Temperature-Aware Scheduling

In the dynamic thermal management, microprocessor's temperature is controlled by the hardware that continuously monitors the chip temperature and reduces the processor's speed as soon as the preset thermal threshold is exceeded [12]. But practically, in real-time systems, all tasks are not the same. Some tasks take less CPU power, but a large amount of time. Some tasks are more CPU-intensive and generate more heat during execution. In the temperature aware scheduling, the tasks are executed according to their nature [13]. Each task is sorted according to its start time, deadline and heat contribution. Its working mechanism can be classified

in three main steps as assuming, approaching and measuring. In the assumption stage, the program's hotspot behavior is characterized by intensity of its accesses to 'int' and 'fp' register files. Then the instruction from the thread that is likely to cool or less quickly heat the register files is approached. To detect thermal danger, the CPU temperature is sensed continuously. If we assume, at some step, the CPU temperature is t° C and a task is to be executed. Assume that the task has heat contribution h° C. Then the temperature T_N, at next step, after execution of the task can be given by,

$$T_N = (t + h)/2$$

Therefore the temperature cannot exceed the thermal threshold T. Therefore, when the CPU hot, less intensive tasks are scheduled and executed. And when the CPU is cool, more intensive tasks are executed [13]. This helps in maintaining the temperature within the safety limits.

Thermal Herding

The embedded system developers have started producing products in 3D integration technology. 3D integration greatly increases transistor density while providing faster on-chip communication. Multiple cores can be embedded in a small space. 3D implementations of processors simultaneously provide increased device density, reduced latency and lower power consumption [14].
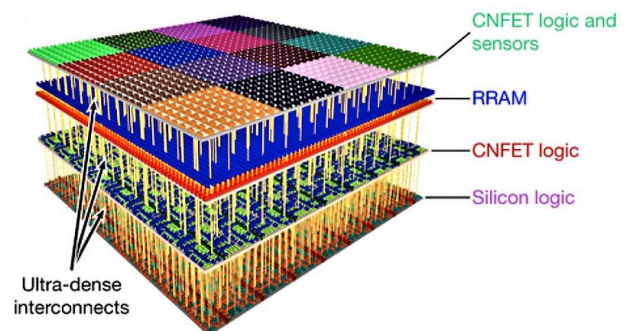
Figure 6. Vertically integrated 3D chip design(source [14])

However, 3D stacking of active devices on a single die increases power density. This increases thermal problems. In thermal herding, the multiprocessor activities are directed to the less heated area of the core. The traffic is diverted to another core if the existing core is heated or predicted to be heated [15]. Thermal Herding, also known as distributed traffic throttling, involves steering the traffic throughout the chipset to avoid hotspots. This reduces 3D power density and can be used to direct heat to the die closest to the heat sink in the chip. The major advantage of this technique is that the real time performance of the CPU does not degrade. But, on the other hand, this method is only applicable to the chips with on-chip networks.

Clock Gating

As we have discussed before in this paper, the power used in a CPU is linear with clock frequency. Hence, as the clock frequency increases, the power dissipation also rises. If the CPU temperature exceeds the thermal threshold, then immediate actions needs to be taken. Ideally speaking, the clock should be cut-off from the CPU in order to reduce power dissipation. The technique used, in which the clock is cut-off from the sequential circuits, is known as "Clock Gating". In the synchronous digital circuits, the clock is major cause for heat dissipation (up to 40-50%) [16]. Clock continuously consumes power as it keeps on toggling the registers. So, when the power consumption increases, the clock is shut off and the current state of CPU is maintained. Clock gating can be implemented by two ways i.e., 'Global Clock gating' and 'Local Clock gating'. In the global clock gating, the clock to the processors in the CPU is paused for few microseconds at a time. The cooling efficiency of Global Clock gating is about 70-80%. As it halts entire logic in the processor, the performance deteriorates. But the CPU cools efficiently [17]. As shown in the Figure 7, enable signal (EN) is necessary to generate a gated clock signal. The enable is made low when the clock is to be shut off. The output of latch and the clock signal are ANDed and the gated clock is provided to the registers in the CPU. When the EN is logic 1 CGIC output is passed on to the output. But when the EN is logic 0, CGIC output is gated i.e., clock is shut off thereby reducing the power consumption.
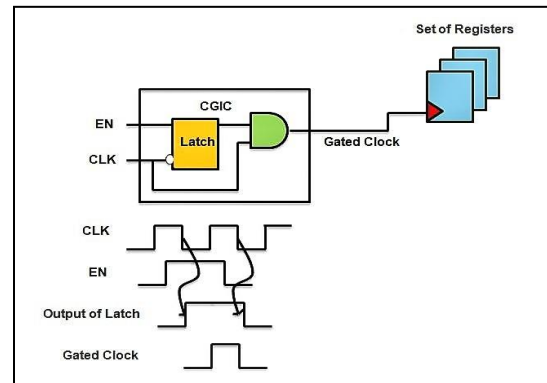
Figure 7. Clock Gating Integrated Cell (CCIG) (Source [16])

In the Local Clock gating, clock signal only of the desired core is shut off. Clock signal of the core which heats up more rapidly is shut off. This helps in sustaining the performance of the system. But, the cooling is not as efficient as Global Clock gating. The cooling efficiency of Local Clock gating is only 25-30% [17].

Activity Migration

In the processor, if some process is executing for a long time on a single computing unit, then there is high possibility of formation of localized hotspots. If these processes are switched between different computing units of the same processor then the chances of hotspot formation reduces significantly. Activity Migration is a specialized form of thermal management techniques in which the process or ongoing activity switches from one computing environment to another during its execution. This is also called as activity ping ponging. In the multicore processors, process migration is implemented using scheduling algorithm. It is easy for the multicore processors to switch or transfer the process through its

various units as the resources need not be changed (memory, files, and sockets).
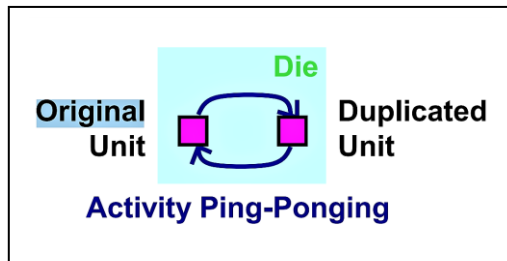
Figure 8. Activity Migration (source [18])

Process migration can be implemented in two ways:

a) *Non-preemptive process migration:*
In non-preemptive process migration, migration takes place before the execution of process. In a process need not be preempted.

b) *Preemptive process migration:*
In preemptive process migration, a process is first preempted then migrated and continues processing in a different computing environment.

The preemptive process is relatively expensive, since it involves recording, migration and recreation of the process state as well as the reconstructing of any inter-process communication channels to which the migration process is connected [18]. The non-preemptive process migration is relatively cheaper as relatively little administrative overhead is involved.

3) Temperature Management Unit (TMU)

A section presented by Se-Hyun Yang et al. described thermal management as a continuous process [19]. Their model consists of thermal sensors and a thermal management unit (TMU). Temperatures at various components are sensed using the thermal sensors and TMU records this temperature at every component so that it doesn't exceed the threshold called as throttling. If the TMU finds that a component has reached throttling point, it shuts off power supply to the related components till the temperature is settled down to an acceptable level.
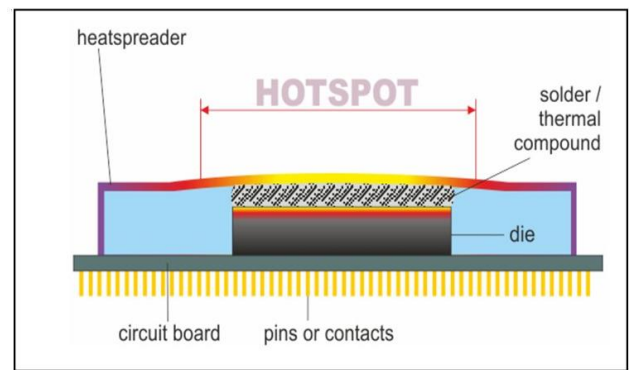
Figure 8. Typical Heat Spreader

B. Passive Thermal Management:

1) Heat Spreader:

Most mobile phones and handheld devices currently use a SOC or system on a chip that manages the device's operating system, memory, and microprocessor. These
Devices generate a significant amount of heat when operated for a prolonged time. Hence, the designer uses metal lids to direct the heat away from the SOC. The local area heating of the transistorized chip, also known as hot-spot, takes place in VLSI chips [20]. To minimize such type of heating, a thermally conductive foil is placed over the chip. Jaeho Lee et al. observed that by increasing surface area by 4mm could reduce the temperature by around 50C-250C. It acts as a heat spreader and reduces the effect of hot-spots [21]. The heat spreaders spread the accumulated heat over a large surface area. This results in faster cooling. Heat spreaders do not cool the CPU by themselves; they only transfer the heat to the outer environment where it can dissipate away from the processor without affecting the other components [22].
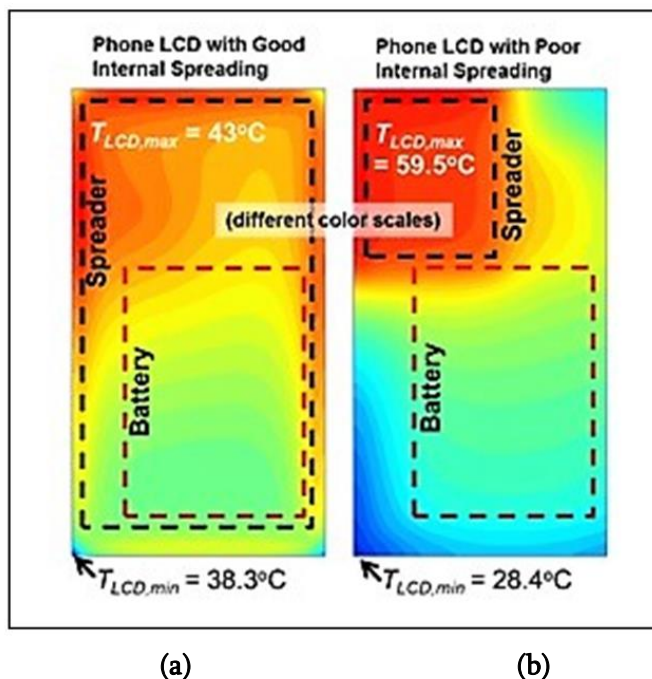
Figure 9. Simulated temperature distributions on the surface of a generic phone (138 mm x 70 mm) for two different thermal management schemes. (a) Large heat spreader (128 mm x 62 mm), which couples the battery with the heat generating chips and yields a more uniform temperature. (b) Smaller heat spreader (35 mm x 33 mm) yielding highly nonuniform LCD temperature. (source [23])

As shown in the Figure 2, Heat Spreader is placed over the die. It spreads the accumulated heat, at a certain hot spot, over a large surface area. According to the principle of heater spreader, it spreads over a larger area than the chip. Hence, they occupy more space on the PCB. Therefore, applications where circuit area is a major constraint, heat spreaders may not be a good choice. Heat sinks are known for their performance as they are noiseless and cost effective. Heat spreaders can also be combined with a heat sink for a better performance. Victor Chiriac et al. (Figure 2(a) & 2(b)) illustrated that phone thermal design must meet certain skin limit temperatures and avoid the formation of hot spots [23]. The poor heat spreading on the device surface leads to a peak temperature of 59.5°C (Figure 2(b)), violating the 45°C skin temperature limit specifications set for the current design. By improving the thermal spreading, the peak temperature drops below the critical limit (Figure 2(a)).

Heat Sink:
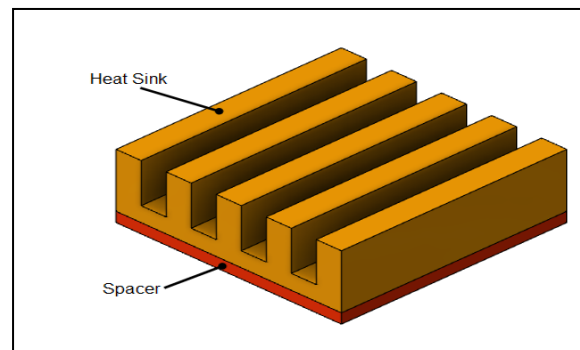
Figure 10. Typical Heat Sink

Heat sinks are used dissipate heat from the processor out into the surrounding air. They absorb the heat and dissipate it to the environment. Similarly, to control the heat accumulation in an Integrated Circuit package, a metal block or shield which acts as heat sink, is mounted on top of die [22]. Chien-Cheng Lee et al. carried out an experiment, in which a metal coin was inserted into PCB to dissipate the generated heat. Metal coin was mounted on PCB under some high power components like power transistor [24]. Yin Xiong et al. conducted experiments with very thin heat spreaders made of Graphite. Graphite was used because of its unique anisotropic properties of high in-plane thermal conductivity and low thickness thermal conductivity [25]. Size of heat sink varies according to the heat flux density of the component.

Heat Pipes:

Another way to transform a heat spreader into a cold plate is to use heat pipes. A fluid is used to enhance heat exchange between two surfaces. Samsung already succeeded using water filled copper pipes in their S7 devices, as well as their S8 and S9. Though this method is efficient, it is costly.

Thermal Interface Materials (TIMs):

There are various materials that have a good thermal conductance i.e., they have the ability to absorb heat faster than others. They are available in various forms such as tapes, grease, paste, liquid solution, phase change materials, heat pads etc. They are used with heat sink or heat spreaders to enhance heat transfer.

Active Thermal Management :

Forced Air Convection:

Air is one of the best coolants. Air is directly subjected to the heat prone area with the help of fans. This method is known as active cooling technique. These generally have a fan or blower of some kind. But, in

handheld devices, space is major constraint [26]. The initial proposed design was too large to fit in a handheld device such as PDA or a mobile phone Yoshiharu Iwata et al. proposed a new outline design method for layout design of handheld device package [27]. It is shown in figure 12.
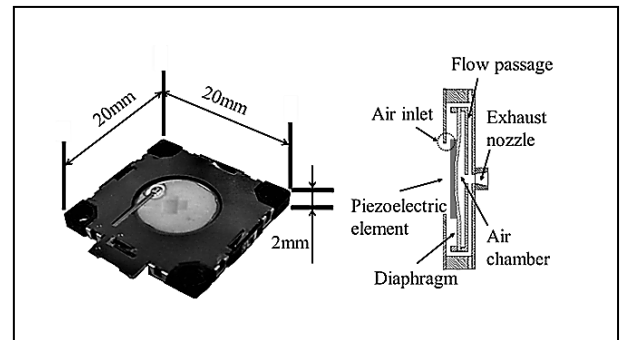
Figure 11. Piezoelectric Micro- Blower Fan-sink

TABLE 1. COMPARISON OF COOLING TECHNIQUES

Methods \ Parameters	Small In Size (For μm and nm Technologies)	High Cooling Efficiency	Rapid Rate Of Cooling	Least Effect on Performance (processing activities)	Cost Effective	Simple Design
Processor Throttling	✓				✓	
Temperature-Aware Scheduling	✓	✓	✓			
Thermal Herding	✓	✓				
Clock Gating	✓		✓		✓	✓
Activity Migration	✓					
Temperature Management Unit (TMU)	✓		✓			
Heat Spreader		✓		✓		✓
Heat Sink		✓		✓		
Heat Pipes		✓		✓		
Thermal Interface Materials (TIMs)	✓			✓	✓	✓
Forced Air Convection				✓		

II. REVIEW

In this paper many possible ways for efficient heat transfer for handheld devices have been discussed. As the author have discussed, in the handheld devices like mobile and tablets, the size of chipset is shrinking. This is done in order to ensure that many components fit in a small space thereby reducing the size and overall cost of the device. As we pack multiple computing elements on a single die, the problem of hot spot arises. As the number of hotpot rises, the life of CPU degrades. To deal with such conditions a proper heat transfer mechanism should be implemented.

Table 1 shows comparison of thermal transfer methods. As the DTM techniques are software enabled, they take very less on chip area. But, these techniques do occupy memory. The passive cooling techniques, except the use of TIMs, take large chipset area. If compared on the basis of cooling efficiency, temperature aware scheduling and thermal herding are found out to be the best techniques. Also, the heat sinks and heat spreader do perform well. Hence, they also have a high cooling efficiency. Cooling efficiency is not only dependent on the rate of thermal transfer, but also the ability to keep the device cool for long hours.

If compared on the basis of rate of cooling, the temperature aware scheduling, thermal herding and TMU can be the best option. In temperature aware scheduling, the processes are executed according to their priority and by the amount of heat they contribute while executing. Hence, before the execution of any task, the care for keeping the CPU cool already has been taken. Similarly, in the TMUs, power supply to the related components is shuts off till the temperature is settled down to an acceptable level. Hence, these methods have highest rate of cooling. While using any of these cooling methods, the CPU performance should be least affected. In the software enabled techniques, the performance in terms of speed and throughput is affected significantly. Here the heat spreaders, heat sink and heat pipes perform better as they do not interfere with the CPU's processing activities. While designing any system, the designer has to think about the cost effectiveness. If compared on the basis of cost effectiveness, the techniques such as clock gating, processor throttling and use of TIMs are found to be the best. These techniques require minimum number of resources and hence, they are cost effective. However, the design complexity of clock gating, heat spreader and TIMs is less. This makes it easier to implement thereby reducing the system complexity.

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Logistic Management in Fuel Tankers

Dr. Mithra V., Radhika Prajapati, Priya Vats, Shruti Chandra

Department of Electronics and Telecommunication Engineering, Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

ABSTRACT

The paper develops the system for the secure distribution of fuel through tankers. Fuel security refers to the connection between fuel market and national security in the production, transmission and use of fuel. Security of the fuel in tankers is done through locking and unlocking of the valve by some means of security code. The fuel indicator in the tanker will help to know the exact amount of fuel available. Source and destination is used for the transportation of fuel. In between source and destination, if any other user tries to unlock the valve then the owner will be notified and the alarm will be raised. When the tanker reaches the destination then the message will be sent to the owner and how much fuel is being withdrawn. During this process, the driver is continuously notified about the level of fuel in the tanker after every short duration via LCD. The owner is informed about the same via wireless module. Fuel oils are mainly a blend of oils and other components. Fuel mixing results in calculation errors in product quantities resulting in incorrect blends. Mixture of components in the fuel tankers can be detected through comparator. The comparator compares two signals coming from the power supply and chip on board amplifies that signal and process it. In our work, the system locks or unlocks the tank valve of the tanker from petrol owner to destination.

I. INTRODUCTION

Fuel is one of the most essential thing in today's world.We can see number of petrol pumps around us. Our aim is to develop the system for the tankers of petroleum company.

The aim of the system is to open and close the tank valve of the tanker from DC motor. One unit of the system is placed at the tanker which will monitor the fuel level in the tank. The amount of fuel filled at particular petrol pump and petrol pump ID will be send to central office.

Our aim is to develop the system for the secure distribution of fuel through tankers. Fuel security refers to the connection between fuel market and national security in the production, transmission and use of fuel. Security of fuel in the tankers is done through locking and unlocking of the valve by means of some security code. The fuel indicator in the tankers will help to know the exact amount of fuel available. Source and destination is used for the transportation of fuel. In between the source and destination, if any other user tries to unlock the valve then the owner will be notified and an alarm will be raised. When the tanker reaches the destination then the message will be sent to the owner and how much fuel is being withdrawn. During this process, the driver is continuously notified about the level of fuel in the tanker after every short duration via LCD. The owner is informed about the same via wireless module. Fuel oils are mainly a blend of oils and other components. Fuel mixing results in calculation errors in product quantities resulting in incorrect blends. Mixture of components in the fuel tankers can be detected through comparator. The comparator compares two signals coming from the power supply and chip on board amplifies that signal and process it,

In our work, the system locks or unlocks the tank valve from petrol owner to the destination.

II. LITERATURE SURVEY

Prof. Chandrakant Umarani et al. [1] Prof. Vivek Gandhewar et al. [2] had proposed that there are many ways to determine the fuel stock in a vehicle's tank, there are contact less techniques and contact based techniques. Now a days, at many petrol pumps, we don't get the exact amount of petrol as shown by the filling machine. The amount of petrol we get is somewhat less than the amount we should actually get. So, to avoid this problem the fuel indicator in the vehicles is made digital, then it will help us to know the exact amount of fuel available/filled in the tank. The above fact is considered in the project. The exact amount of fuel available in the tank will be displayed digitally by making the use of sensor.

Kunal D. Dhande et al. [3] had proposed that there is a major problem of fuel thefting all over the world which includes removal of fuel pipe in the absence of owner and misusing the fuel from the vehicle. The vehicle owner is unaware of the fuel theft and will come to know about is only when he/she rides the vehicle on the next time. Previously due to absence of burglar alarm or buzzer the people were not aware of fuel thefting. To overcome this problem microcontroller is used with alarm due to which whenever there is fuel thefting an alarm will be raised. Due to this to owner will be notified and he/she can be aware.

Mrs. Udayavalli V. et al [4] had proposed that precision is an important application in the field of automobiles to measure and verify the fuel present in the vehicle with degree of precision. The previous techniques used analog strip or capacitor sensor which is either inefficient to measure to too costly to install. In the proposed method, two flow sensors are placed linearly, one sensor to measure the amount of fuel entering the tank and another sensor to measure the amount of fuel leaving the tank. The difference between the above measures gives us the amount of fuel present in the tank and it is stored in the microcontroller. It actively keeps the record of the fuel entering the tank and the fuel present in the tank and it is displayed in the LCD. If the fuel is low it will be displayed in the LCD. This system is designed to cut down the cost and increase the level of accuracy.

Paper	Author	Technique	Gap identified
Instrumentation of automated fuel stock digital display for vehicles.	Prof. Chandrakant Umarani, Prof. Vivek Gandhewar.	A digital liquid level transducer based on optical fiber.	Fuel level measuring system.
Fuel level measuring technique.	Kunal D. Dhande.	Thefting of the fuel in the vehicles and to overcome the problem.	Fuel thefting survey.
Embedded system based intelligent digital fuel gauge.	Mrs. Udayavalli V.	Study of exact amount of fuel in the fuel gauge.	Stuy of fuel gauge system.

III. METHODOLOGY
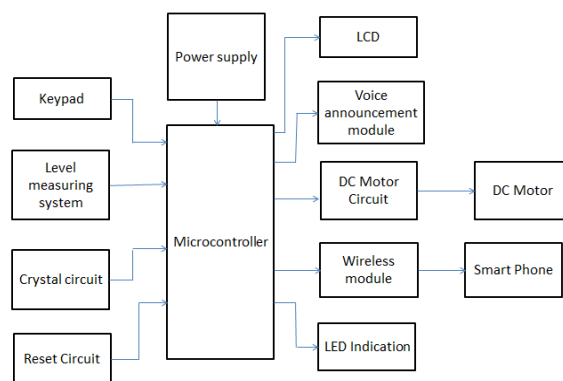
Fig: Block diagram of main station

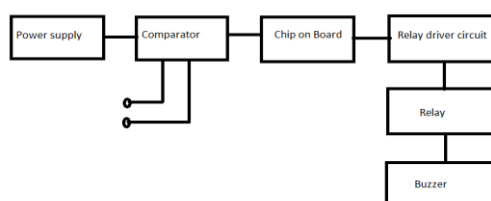**Fig 1 :** Block diagram of tanker station

WORKING

In this project we are mainly dealing with the transportation of fuel through the tankers. As we know that now a days, many thefting of fuel is going on. So we have made a system for the secure distribution of fuel through tankers. In this, when the fuel is filled in the tank and taken for distribution then the valves of the tanks are open and closed via a

security code which is provided by the keypad. Keypad is placed at the tanker doors. When the correct security code is provided then the tanker doors is opened and closed with the help of DC motors. The DC motor will rotate forward and backward when the doors are open and closed. Level measuring system is used to determine the level of fuel in the tanker. LCD is used to display the amount of fuel after every short interval of time. When transporting the fuel form one place to other, if any unauthorized user tries to unlock the tanker door (valve) then an alarm will be raised by voice announcement module. Through wireless module the information of the tanker will be known to the owner after every short duration. LED determines the amount of fuel in the tank at each pre-defined level. For the mixing avoidance in the fuel comparator compares two values coming from the power supply which will be supplied to chip on board. The signals coming out from the chip on board will be given to relay and buzzer.

DESCRIPTION

PIC16F877A- PIC 16F877A is most advanced microcontroller from microchip.This controller widely used in various experiment and application because of its low price,high quality,and ease of availability. The pic 16F877A features all the components which modern microcontrollers have.
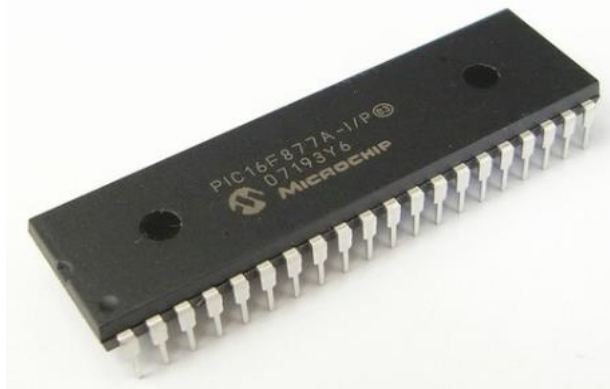
Fig 2 : PIC16F877A

LCD- An LCD is used to display the status of entire work. The main idea is to make this project is cost-effective, a 16 by 2 LCD is sufficient enough. We have many bit LCD available but model we are using is HAD44780. This display is a dot matrix display which is used to display character, alphanumeric, symbol etc. The LCD unit receives character code from microcontoller, send the code to the display data RAM, transform each character code into 5*7dot matrix character pattern, display the character on LCD screen.
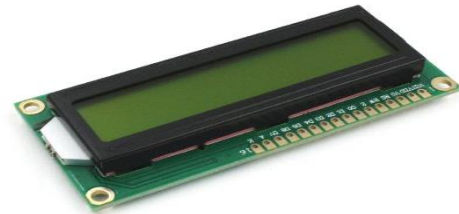
Fig 3 : LCD

LED- A light-emitting diode (LED) is a two-lead semiconductor light source. It is a p–n junction diode that emits light when activated. When a suitable current is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.

Fig 4 : LED

Buzzer- Piezo buzzer is an electronic devise use to produce sound. Its light wright, simple construction and low price make it usable in various applications. Piezo is based on inverse principle of piezo electricity discovered by Jacques and pierre curie. It is the phenomena of generating electricity when mechanical pressure is applied to certain materials and the vice versa is also true. Such materials are called piezo electric materials. Piezo electric materials are either naturally available or manmade.
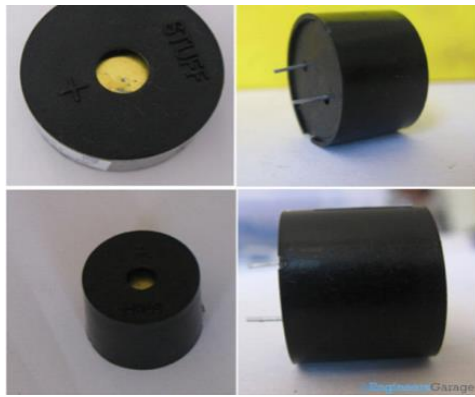
Fig 5 : Buzzer

Keypad- A keypad is a set of buttons arranged in a block or "pad" which bear digits, symbols or alphabetical letters. Pad which containing numbers are called a numeric keypad. Numeric keypads are found on alphanumeric keyboards and on other devices which require mainly numeric input such as calculators, push-button telephones, vending machines, ATMs, Point of Sale devices, combination locks, and digital door locks. A computer keyboard usually has a small numeric keypad on the side, in addition to the other number keys on the top, but with a calculator-style arrangement of buttons that allow more efficient entry of numerical data. This number pad is usually positioned on the right side of the keyboard because most people are right-handed.

Fig 6 : Keypad

Digital Fuel Level Indicator- The sending unit is located in the fuel tank of the car. It consists of a **float**, usually made of foam, connected to a thin, **metal rod**. The end of the rod is mounted to a variable resistor. A resistor is an electrical device which control the electricity. The flow of current is inversely proporstional to resistance. In a fuel tank, the variable resistor consists of a strip of resistive material connected on one side to the ground. A **wiper** connected to the gauge slides along this strip of material, conducting the current from the gauge to the resistor. If the wiper is close to the grounded side of the strip, there is less resistive material in the path of the current, so the resistance is small. If the wiper is at the other end of the strip, there is more resistive material in the current's path, so the resistance is large. When the float is near the top of the tank, the wiper on the variable resistor rests close to the grounded (negative) side, which means that the resistance is small and a relatively large amount of current passes through the sending unit back to the fuel gauge. As the level in the tank drops, the float sinks, the wiper moves, the resistance increases and the amount of current sent back to the gauge decreases.

Fig 7 : Digital fuel level indicator

Bluetooth- Bluetooth is a wireless technology use for exchanging the data over a short distance (using short-wavelength UHF radio waves in the ISM band from 2.400 to 2.485 GHz[3]) from fixed and mobile devices, and building personal area networks (PANs). Bluetooth is managed by the Bluetooth Special Interest Group (SIG), which has more than 30,000

member companies in the areas of telecommunication, computing, networking, and consumer electronics.[5] The IEEE standardized Bluetooth as **IEEE 802.15.1**, but no longer maintains the standard. A manufacture must need to reach the blutooth SIG standards to launch it as a bluetooth device in the market.

Smart Phones-

A mobilephone, cellphone or handphone, sometime shorted to simply mobile, cell or just phone, is a portable telephone that can make and receive calls while user is moving within a telephone service area. Morden mobile telephone services use a cellular network architecture, and, therefore, mobile telephones are called cellular telephones or cell phones.

DC Motor- A DC motor is a rotary electrical machine that converts direct current electrical energy into mechanical energy. The most common types relay on the forces produced by magnetic fields. Nearly all types of dc motors have some internal mechanism either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. . DC Motors could be powered from existing direct current lightning power distribution systems. A DC Motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings.

Fig 8 : DC Motor

Crystal oscillator- A **crystal oscillator** is an electronic oscillator circuit that use mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a precise frequency. This frequency is often used to keep track of time, as in quartz wristwatches, to provide a stable clock signal for digital integrated circuits, and to stabilize frequencies for radio transmitters and receivers. The most common type of piezoelectric resonator used is the quartz crystal, so oscillator circuits incorporating them became known as crystal oscillators, but other piezoelectric materials including polycrystalline ceramics are used in similar circuits.

Reset Circuit- A power on reset generator is a microcontroller or microprocessor peripheral that generates a reset signal when power is applied to the device. It ensures that the device starts operating in a known state. . In VLSI devices, the power on reset is an electronic device incorporated into the integrated circuit that detects the power applied to the chip and generates the reset impulse that goes to the entire circuit placing it into a known state. A POR uses the charging of a capacitor, in series with a resistor, to measure a time period during which the rest of the circuit is held in a reset state.

IV. RESULTS

In this project, due to the use of transistorised fuel level sensor exact amount of fuel can be detected by the use of digital process. Mixing of fuel can also be detected. If there is any thefting of fuel, buzzer will be on. So, by using this system thefting and mixing will be stopped. Opening and closing of valve is controlled by the DC motor. Wireless module like Bluetooth is also useful in sending the information to driver how much amount of fuel is detected. Android application is used which can lock or unlock the valve of the tankers. In this system, we provide security in the tanker and also provide good controlling for government and private sectors. Stilling of fuel like petrol, diesel etc. and unauthorized petrol selling by

distributor is controlled by this process. Mixing of impure and improper items in fuel is overcome. It reduces manual interference and it is user-friendly process.

V. CONCLUSION

Hence in our project we have developed the system for the secure distribution of fuel through tankers. Mixing of impure and improper items in fuel is controlled by this system. This process can be successful by providing wireless module durimg transportation of the fuel. Fuel mixing results in calculation errors in product quantities resulting in incorrect blends. In our project, the system makes lock or unlock the tank-valve of the tanker from petrol and also send tanker position to main position.

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AI-CAMX - Artificial Intelligence Enabled Security Camera

Manish Kumar, Mamta Rani

Department of Electronics and Telecommunication Engineering, Sinhgad Institute of Technology and science., Pune, Maharashtra, India

ABSTRACT

Artificial Intelligence is the ability to think, to understand, to recognize patterns, to memorize, to make choice from alternatives and to learn from experience with the help of pre-programmed algorithms. Artificial Intelligence is to make replica of human brain's capabilities so that the computers start doing all those activities that the human is doing and in much less time. In the future, intelligent machines will replace or enhance human capabilities in many areas Artificial intelligence is the intelligence exhibited by machines powered by advanced softwares. Application areas of Artificial Intelligence is having a huge impact on various fields of life as expert system is widely used these days to solve the complex problems in various areas as science, engineering, business, medicine, weather forecasting. One of the application that is going to be discussed here is AI enabled security systems which has the mind blowing features which includes concepts of autonomous computing, neural networks, machine learning and deep learning.

Keywords : Algorithms, Aritificial Intelligence, Autonomous Computing, Machine Learning, Deep Learning, Neural Networks.

I. INTRODUCTION

To execute versatile and persistent protection, security system needs to be upgraded with hi-tech and robust technologies. Artificial intelligence is not just the key to reach the possibilities, it has also power to recreate imaginations. Now a days some electronic chips embedded with sensors are capable of decision making, solving advanced algorithm, are capable of mimic human brain just in a couple of seconds it is all possible just because of new researches and inventions in artificial Brain and VLSI technology. Fifty years ago, scientists would have needed computers the size of Nevada to do what we today can do on chips of few mm. Although, AI isn't new concept, researchers were diving into the idea of autonomous computing back in the 1950s [1]. There are various applications of AI in daily life from public to government services which has been implemented or under research. One of the best application of AI anyone can imagine is the AI based security cameras which would have the ability to predict, notify and prevent events from happening before they become disasters and harm someone. It's not about something happening right now, when something happens, or happened, it's too late it's exciting to create an autonomous and intelligent network where we foresee and predict these cases just by implementing Machine learning and Deep learning powered by Artificial Intelligence and Machine learning.

AREAS OF ARTIFICIAL INTELLIGENCE

LANGUAGE UNDERSTANDING.

The ability to "understand" and respond to the natural language. To translate from spoken language to a written form and to translate from one natural language to another natural language.

- Speech Understanding
- Semantic Information Processing (Computational Linguistics)
- Question Answering
- Information Retrieval
- Language Translation

LEARNING AND ADAPTIVE SYSTEMS.

The ability to adapt behavior based on previous experience, and to develop general rules concerning the world based on such experience.
It includes
- Cybernetics
- Concept Formation

PROBLEM SOLVING.

Ability to formulate a problem in a suitable representation, to plan for its solution and to know when new information is needed and how to obtain it.
It includes
- Interactive Problem Solving
- Automatic Program Writing
- Heuristic Search

PEERCEPTION(VISUAL)

The ability to analyze a sensed scene by relating it to an internal model which represents the perceiving organism's "knowledge of the world." The result of this analysis is a structured set of relationships between entities in the scene. It includes
- Pattern Recognition
- Scene Analysis

II. Concept of AI-CAMX

Let's come to the concept behind the Artificial Intelligence based security cameras so what it is actually. Do you ever thought, does machines really recognizes humans based on their outfit , tags, face expressions ,gestures and take decisions on behalf of

you and provides you the best ever possible security and helps you in knowing someone in a new and better way. All this is possible just by integrating some current technologies and softwares and recreating new devices with endless possibilities and unimaginable upgradations without violating and safety and security of individual and environment. To understand it better, I have an example

Ex 1.1 "You are expecting a delivery of your flipkart order and it is to be delivered today at any time , unfortunately you are all alone at home and out of some important work so, if the delivery boy is at your doorstep at the time you are not at home and your phone is also not reachable then who is going to receive your order? Who is going to tell you that your delivery is attempted unless you get a SMS from concerned company or that delivery person. What do you think is it possible to automate this process and let the things to be delivered automatically by the correct person even in your absence?

So my answer is of course! Yes , do you wonder how. Before getting to the solution you need to know some of the concepts of Artificial Intelligence which we are going to use in this unbelievable concepts.

ALGORITHM

The most important part of AI is the algorithm. These are math formulas and/or programming commands that inform a regular non-intelligent computer on how to solve problems with artificial intelligence. Algorithms are rules that teach computers how to figure things out on their own. It may be a nerdy construct of numbers and commands, which has the ability to solve any logics like humans do , and the best thing is that it takes the much lesser time than an individual.

MACHINE LEARNING

The meat and potatoes of AI is machine learning — in fact it's typically acceptable to substitute the terms artificial intelligence and machine learning for one another. They aren't quite the same, however, but connected. Machine learning is the process by which an AI uses algorithms to perform artificial intelligence functions. It's the result of applying rules to create outcomes through an AI.

BLACK BOX

When the rules are applied an AI does a lot of complex math. This math, often, can't even be understood by humans (and sometimes it just wouldn't be worth the time it would take for us to figure it all out) yet the system outputs useful information. When this happens it's called black box learning. The real work happens in such a way that we don't really care how the computer arrived at the decisions it's made, because we know what rules it used to get there. Black box learning is how we can ethically skip "showing our work" like we had to in high school algebra.

NEURAL NETWORK

When we want an AI to get better at something we create a neural network. These networks are designed to be very similar to the human nervous system and brain. It uses stages of learning to give AI the ability to solve complex problems by breaking them down into levels of data. The first level of the network may only worry about a few pixels in an image file and check for similarities in other files. Once the initial stage is done, the neural network will pass its findings to the next level which will try to understand a few more pixels, and perhaps some metadata. This process continues at every level of a neural network.

DEEP LEARNING

Deep learning is what happens when a neural network gets to work. As the layers process data the AI gains a basic understanding. You might be teaching your AI to understand cats, but once it learns what paws are that AI can apply that knowledge to a different task. Deep learning means that instead of understanding what something is, the AI begins to learn "why."

SUPERVISED LEARNING

This is the very serious business of proving things. When you train an AI model using a supervised learning method you provide the machine with the correct answer ahead of time. Basically the AI knows the answer and it knows the question. This is the most common method of training because it yields the most data: it defines patterns between the question and answer. If you want to know why something happens, or how something happens, an AI can look at the data and determine connections using the supervised learning method.

TRANSFER LEARNING

Another spooky way machines can learn is through transfer learning. Once an AI has successfully learned something, like how to determine if an image is a cat or not, it can continue to build on it's knowledge even if you aren't asking it to learn anything about cats. You could take an AI that can determine if an image is a cat with 90-percent accuracy, hypothetically, and after it spent a week training on identifying shoes it could then return to its work on cats with a noticeable improvement in accuracy.

So the solution for the above example is explained in better way here.

INTERGRATION

To develop an AI based cameras we need advanced programmers and latest softwares with safe and efficient data centers to stores data of each individual and organization. It's not a big task for current engineers to develop the cameras which has the ability to take decisions, to store the image data, to imagine the future scenario and take decisions accordingly, to read and understand the patterns, and all this should be done by autonomous computing supporting AI.

This camera has the different jobs at different places. The data which has to be calculated is totally dependent on the place where we use it like

- Home security automation.
- Government Offices (Passport offices, Embassies, Transport offices, etc.)
- Airports
- Police station
- Railway station.

At different places we are going to train the AI with the already available databases like google photos for home security, Aadhar Information for public place security, and criminal's records for Airports and railway stations.

All this task is going to be performed by the Concept AI-CAMX.

III. AI-camx

AI-CAMX is a new concept camera which is based on machine learning, deep learning, and transfer of learning, powered by Artificial intelligence. These cameras would be capable decision making, communicate to public. It has the access to different databases depends on which authority is using it. The main purpose of implementing it is to upgrade the

security levels and fight and terrorism and reduce the crime rate.

Applications and implementations of AI-CAMX is described below with basic concepts and I bet it the future of security and automation.

IV. Applications

1. AI-CAMX IN HOME SCURITY AND AUTOMATION

The implementation of AI-CAMX is very simple what actually we need to setup AI-CAMX is its web and phone software along with google accounts which uses google photos data. Google photos already has the ability to categories the persons where we can name the persons under the sub categories of our parents, teachers, and friends. What is the current situation if anyone is at door then we need to open it and sometimes their might be a criminal or thief outside whom we don't know, in these cases we might stuck in a problem if we are alone at home and it can be dangerous for us. AI-CAMX is intelligent cameras which you can set at your door and program it according to your use and the most important thing is that it has power of machine learning which means it can learn itself by observing your activities ,like when you went to your office , when your kids arrive home. By connecting your google accounts you can set and automate many things like doors will automatically open when your parents are outside, if your kids move outside the room alone then camera will send you an alert to notify you about your kids. [2]

For example a Samsung service person is about to come for Air conditioner repairing and no one is at home as the AI-CAMX has access to read your messages and emails and it can automatically fetch the information related to Samsung from your phone and passes the data to the camera so that when the service person would come the cameras will detect him if his face id is present but if the face id's are

missing then it can detect him by the Samsung logo's on his pocket or cap or by the dress he is wearing. AI-CAMX has the ability to understand who is in front of the door and it will send you notification in audio or text format that "Samsung service partner is at door" It will ask you can I open the door ..if you approve then doors will automatically open and you no need to come to open the door. In case if he arrives in your absence then what? In these situations the cameras will send you an update about him and if in worst case cameras are unable to reach you then in such case it will take decision and will tell him to come later or reschedule the service appointment by its own.

Let's take another example or I can say the solution of the Flipkart delivery boy so how we can automatically get the product to be delivered. As the AI-CAMX is installed at door and it has already synced the data from your emails and SMS that today flipkart boy will come and this information is parsed to the camera through neural network so the camera is already programmed to detect the person and notify you or take decision on behalf of you. So how actually it is going to do this lets see this network
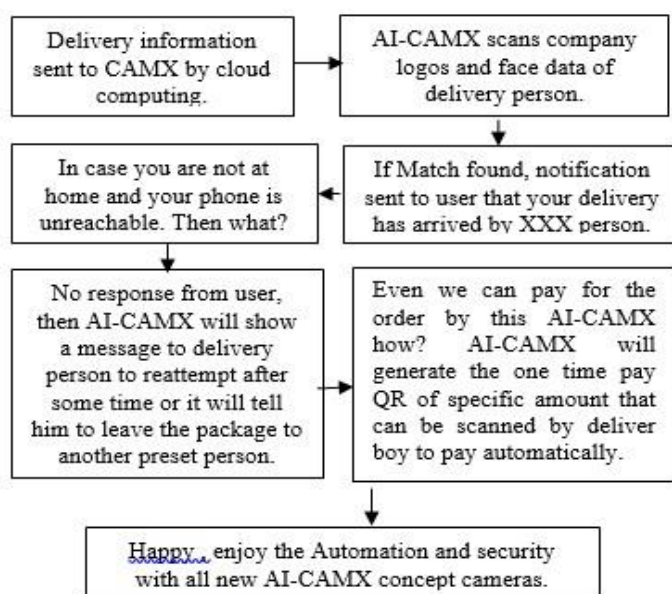
Flow chart 1

2. AI-CAMX AT PUBLIC PLACES(Passport office)

AI-CAMX can be used at the public places like in the passport offices. We already know the present scenario where a security guard has to check if the particular person is having an appointment or not. He just checks the appointment detail and allows the person to enter without even checking the full detail. Anyone can create a fake appointment and enter the office and cause risk to each and everyone's life whoever is present their at that moment.so to avoid such danger we are using AI-CAMX which has the ability to predict, notify and prevent events from happening before they become disasters and harm someone. It's not about something happening right now, when something happens, or happened, it's too late it's exciting to create an autonomous and intelligent network where we foresee and predict these cases just by implementing Machine learning and Deep learning powered by Artificial Intelligence in the AI-CAMX.These cameras first of all provide 100 percent safety as well as it reduces man efforts .[4]

These cameras are timing based which means it has to take decision from less data which makes it fast and efficient .it uses the technology of cloud computing to check the information between passport office servers and AI-CAMX so, we don't need to store data in the AI-CAMX. These cameras are placed at the gate barrier system. If any person who wants to enter the office should stand before the camera which will check the information from the passport server office based on the time and people who are having appointment at that time so using the face detection technique it matches the record of that person whether that particular person is allowed to enter the office at that time or not.

It only reads the data from the server using cloud computing but does not save it in the memory so no one can hack the information .If it detects that the person is having appointment at that moment then

the gate barriers opens and automatically the LCD placed there and will show the person's face and name and display the messages that on which desk the person has to go for further verification. Fig 1.

These cameras are not just automating the things it can also enhance the security with the new concept of centralized criminal face id record using cloud computing by using this technology the terrorism can be minimized , if any criminal or suspicious person enters into the office then these camera will match the record with the appointment record if it does not match then it will check with criminal record and if it matches then alarm is set in the passport security room and these information are immediately given to the higher authority and then they can take decision accordingly.

Fig 1.Facial Recognition.

Flow chart 2
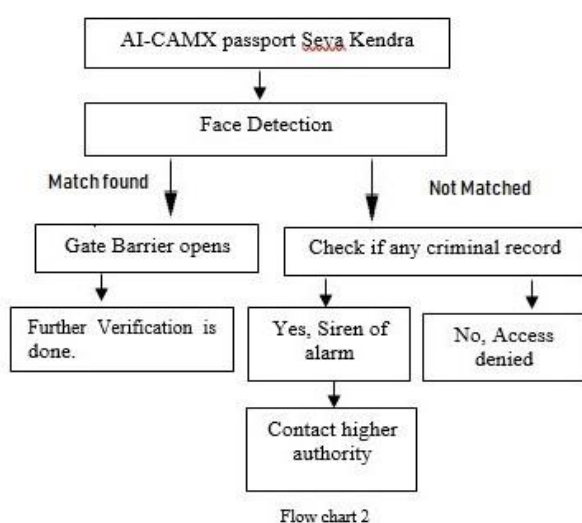
3. AI CAMX At ARMY BASES.

If we talk about security then it should be at the top level in each and every fields like Hospitals, Army Bases etc. So we will discuss about the installation of these AI CAMX in army bases as we know that now days there is always a risk of terrorist attacks and invading the protocols of Indian Army so to protect and enhance the regiment and soldiers security as they are protector of our nation. These cameras can be implemented which is enrolled with the Soldiers and working officials 3D face ID which works better than the 2D image data. AI Cameras will be fed with the details and will be operated by the Army Intelligence department and along with soldiers id these cameras will also have the access to the criminals and terrorist face and other data so that it will easier to detect the face of soldiers and will only allow the correct person to enter the base. Fig2

Here we are also introducing the New concept of Smart dresses in which the special QR code is printed on the Army dresses. These QR code is based on the Id number provided to each individual in the army base. These QR code is scanned and then the army people are allowed to enter inside the base if any other person come then it will transmit the alert signal to the higher authority. The details of the person will be encoded in that QR code like his Name, Age, Post, Id Number ,Region of posting ,etc. We are going to install these cameras at the entry check post the if any person comes near the camera so these camera will detect their Face ID along with the QR code and when both the data matches then only the person will be allowed to enter the regiment, so that no stranger can enter the army bases and cause danger to our nation as well as no one can break any Army protocols.

As we know in every electronic device there are some limitations which reduces the efficiency of the device which lead to the risk in security so to overcome some facial recognition errors we are

implementing these smart dress concept along with AI CAMX to improve the security among the army bases worldwide.

Fig-2 Artificial Intelligence Enabled Camera

V. CONCLUSION

AI is the center of new technology where we can do autonomous computing. Using AI, we are making the digital system to have equal intelligence as human or we can say even more than human.

AI-CAMX are extremely beneficial especially for the safety purpose.it reduces man power and also would make everyone care free. In the coming years these cameras based on AI will be integrated in 5G smartphones. This will benefit the user to collect, store, receive and process the real time data. AI and security were made for each other. AI based cameras involves protecting information and systems from major cyber threats such as cyber terrorism.

Finally, we can say that AI is the intelligence of machine and branch of computer science that create itself. Making of intelligent machines. Aspects of intelligent behavior, such as solving problems, making inferences, learning, and understanding language, have already been coded as computer programs, and within very limited domains, AI programs can outperform human experts. Now the great challenge of AI is to find ways of representing the commonsense knowledge and experience that

enable people to carry out everyday activities such as holding a wide-ranging conversation, or finding their way along a busy street. Conventional digital computers may be capable of running such programs, or we may need to develop new machines that can support the complexity of human thought.AI based cameras are used in the latest upcoming smartphones which has the capabilities to translate one language into another without being connected to web.

So, we can use AI based cameras in railway stations, Airports, Police Stations , Bus stops etc. It reduces human efforts and wastage of time.AI based camera must be deployed in maximum number of places for smart living.

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A Review on Active Power Factor Correction Schemes

Sanjay L. Kurkute*, Dr. Pradeep M. Patil
Department of Electronics Engineering, BSCOER, Pune, Maharashtra, India

ABSTRACT

Generally transformation of ac to dc voltages has been commanded by stage controlled or diode rectifiers. The non-perfect character of the input current drawn by these rectifiers makes number of issues like increment in reactive power, high input current sounds and low input power factor, lower rectifier effectiveness, extensive input voltage contortion and so on. To make up for the higher reactive power request by the converters at high power transfer levels, power factor correction ends up required. Stage controlled converters are broadly utilized on the grounds that these converters are basic, more affordable, solid, and don't require any recompense circuit. Be that as it may, the SPF in stage controlled converters is low when the output voltage is not exactly the maximum, that is, the point at which the terminating edge is substantial. As the terminating edge expands, the removal edge between the supply voltage and current increments and the converter draws additionally slacking reactive power, in this manner diminishing the PF. Semi-converter systems give preferred PF over full-converter systems, despite the fact that the enhancement isn't wonderful. This poor PF activity is a noteworthy worry in factor speed drives and in high power applications. Better electrical usage and productivity can be accomplished with the utilization of PF enhancement framework.

Keywords : Power Factor Correction (PFC), Active Power Factor correction (APFC), Pulse Width Modulation (PWM), Programmable Logic Controllers (PLC), Neural Network (NN), Field Programmable Gate Array (FPGA), Discontinuous Inductor Current Mode (DICM)

I. INTRODUCTION

The non-sinusoidal kind of the info flows lined by the rectifier cause a development in the information current music, responsive power and info voltage distortion. There are a couple of hindrances of the uninvolved power factor update strategies. These join tremendous output dc voltage swell, upgrade in the power factor for thin working area and colossal size of responsive parts [1]. These bothers are overpowered by using dynamic current wave framing strategies that further improve the execution of rectifiers. Use of several switches with variable on time and predictable switch recurrence outline the introduce of the movement of broken method of conduction [8,9]. Each exchanging period in EAC should give a vague

area to the broken current heartbeats from that of the zone under reference input current. Chance to contrast turn-on time is the clarification behind the model giving more precision to single stage rectifiers [10]. The best in class joined circuits for dedicated power factor controller fuse Microlinear'sML4812 [11] and Unitrode UC2854 [12]. Zheren Lai had proposed different predictable exchanging recurrence Pulse Width Modulated controllers for power factor rectification (PFC), which uses constant conduction mode [13-15].

Single-stage rectifier features have been illuminated and separated by Gerry Moschopoulos and Praveen K. Jain [16] to join nearly solidarity control factor assignment, fragile exchanging ability and negligible exertion. They furthermore give illumination about

the control technique that ensures enduring on time and variable off-time framework, along with unity control factor assignment. The options open for the structure of different PWM systems incorporate Sinusoidal, Regular-examined, Square-Wave, the Regular-Sampled Harmonic-Elimination PWM and consonant end PWM.A suitable PWM scheme is picked, dependent upon the essentials. For consonant end for the inverters output, PWM frameworks are used that in the meantime achieve the output voltage control [17].

By using DSP, the drawbacks of this PFC designs can be endure. Use of digital signal processor (DSPs) is in playing out the figuring of the commitment cycles early which is nesses to achieve solidarity control factor in a half line period. One of the essential purposes of enthusiasm, for utilization of digital control power factor amendment (PFC) in light of the control strategy, is that high exchanging recurrence of action is possible. The speed of assignment of DSP isn't a factor responsible for this. Pre-learned commitment cycles are used to control a lift converter that along these lines can achieve sinusoidal current waveform [18].

The execution and assurance of judicious calculation which is significant in digital power factor redress (PFC) relies upon lift topology. The commitment cycles age is required to achieve solidarity control factor in a half line period. It is performed early. The insignificant exertion DSP can help in execution of PFC working at higher exchanging recurrence. The achievement of 0.99 PF can be under goes the wide output control conditions and info voltage ranges. The sinusoidal current waveform in transient state is required for step stack change and info voltage change; the control procedure can achieve PFC [1]. The topological necessities and key principles shape a starting stage for a bit of the speculative parts of PFC circuit. Fundamental dc to dc converters can be made to give PFC. A fundamental designs accept an occupation to choose the total efficiency of a PFC voltage controller. The

relationship of theoretical efficiencies of principal setups is fundamentally required to choose the whole profitability of a PFC voltage controller. The likelihood of a diminished abundance control getting ready power factor remedy (PFC) voltage controller begins here [2]. The fundamental setup of converters required in achieving PFC and voltage control, has been cleared up in [3] giving idea for power stream. Deliberate advancement of PFC controllers can be performed, from a plan of sixteen possible surmised designs. The improvement in overall capability is possible given that the power arranged by one converter isn't reprocessed absolutely by the other converter inside the power factor redress (PFC) controller. The indistinguishable circuit in stationary state has been used in one exchanging cycle for PFC application in lift converter. Examination of the Buck converter with a LC input direct working in broken capacitor voltage mode and predictable inductor current mode which gives an average cognizance of the good conditions and insults of the system. A strong arrangement instrument has been addressed by the logical results, which was not available as of now. An examination and illumination of fourth request (fourth request) topology with galvanic separation is worked in the two modes [4]. The confirmation of exchanging clamor immunity is given by the new turning edge-examining calculation which is deduced [5]. The typical information current is used for control. It is important that the gotten tests decisively reflect the typical info current. This licenses exact extent of the ordinary information current. In the event that there ought to be an event of discrete current control mode algorithm [6], this performs high power factor redress for a lift converter. The controller beats get self-synchronized with the stage and recurrence of info voltage. As the controller works in reference stationary edge, the customary stage catapulted circle isn't required. For the equivalent single stage support rectifiers, two decoupled settled recurrence current mode controllers deliver the exchanging moments.

Using direct model Jian Sun proposed the power factor revision (PFC) technique by ZCD of lift single

stage cooling to dc converters where the fundamental period of the information current and the nonattendance of essential damping in the current loop is analyzed. To restricted or taking out the zero-crossing point bending, the showed method relies upon a clear stage pay framework [19]. To perform ZCS in the switches and zero-voltage-exchanging (ZVS) in the diodes, the zero current switching pulse code regulation (ZCS-PWM) aide circuit is structured in the displayed ZCS-PWM rectifier. The portrayal of seven change states for clearing up the direct of the ZCS-PWM rectifier in one exchanging period has been given. To foresee the structure execution, the beat width alteration switch demonstrate is used [20]. The power factor revision has been given by the zero request converter circuit. To make converter circuits that can achieve power factor amendment (PFC), the duality rule is associated. The mix of reasonable circuits is another issue is which gives power factor amendment and output control [21].

There is a framework of the particular techniques used for PF improvement. There are central focuses and hindrances of each strategy. One needs to pick a method, dependent upon the application close by and the cost. By the latest progressions like neural in the composition, further these controls can be superseded [7-8].

There is an extension in receptive U.power, input current music and info voltage curving due to the non-sinusoidal nature of the information current drawn by the rectifiers. In electrical systems, an examination of uninvolved symphonious channels arrangement to confine consonant turning caused by symphonious sources and reimburse control factor, has been performed. The weights of the dormant power factor cure frameworks are colossal size of receptive parts, power factor (PF) improvement for a thin working zone, broad output dc voltage swell [1]. Using two or three switches, the uncontrollable method of conduction works with predictable exchanging recurrence and variable turn-on-time [2, 3]. The bothers have been overpowered by using

dynamic current wave framing strategies and upgrade the execution of rectifiers. It should output an unclear area for the irregular current heartbeat from that of the locale under reference input current in each exchanging period in EAC. Since it has a chance to change the turn on time, the measure gives more essential exactness to single stage rectifiers [4]. Before long there are a couple of submitted PF controller is accessible, for instance, Microlinear's [5] and Unitrode [6]. For power factor alteration, Zheren Lai proposed a gathering of relentless exchanging recurrence Pulse-Width-Modulated controllers, which uses steady conduction mode [7-9].

The examination and illumination of the features of single-stage rectifier has been given by Gerry Moschopoulos and Praveen K. Jain [10]. These features fuse nearly solidarity power factor undertaking, fragile exchanging ability and simplicity. The illumination of the methodology for control used to ensure solidarity power factor movement a consistent on time, factor off-time technique has furthermore been given. For the engineer, particular PWM methods, similar to Square-Wave, Sinusoidal, Regular-in spected, consonant transfer PWM and the ordinary Sampled Harmonic-Elimination PWM are the open choices. In perspective of the necessities, the PWM plan is picked. The Pulse-width-Modulation systems are used, for consonant end at the output of the inverter and at the same time achieving the output voltage control [11]. By using DSP PFC plot, standard gear control plan for different stages, extraordinary commotion opposition, versatile structure changes, and effortlessness of use of cutting edge control calculations, less vulnerability to developing and environmental assortments to meet a specific customer need can be endure. By using digital signal processors (DSPs), the commitment cycles required to achieve solidarity control factor in one half line period are figured early. The action at a high exchanging recurrence which isn't explicitly expose to the getting ready rate of DSP is one of the essential positive conditions of the computerized control PFC use reliant on this control framework. Sinusoidal current

waveform can be practiced using the lift converter controlled by these prev by these prev processed obligation cycles [12].

In light of lift topology, a perceptive calculation for computerized control factor alteration (PFC) has been proposed by Zangetal [13]. For variable obligation cycles, to achieve solidarity control factor in a half line period are made. For step stack change and information voltage change, the control methodology can achieve PFC for sinusoidal current waveform in transient state. A diminished redundant power-preparing PFC voltage controller is proposed by Tse [14].

In light of a power flow thought, converters for achieving PFC and voltage direction are clarified in [15]. If the power taken care of by one converter isn't re-arranged totally by the other converter inside the PFC controller, the general capability can be upgraded [16]. For PFC application in lift converter for one exchanging cycle, the stationary state equivalent circuit is used. By using these working modes, the examination of the Buck converter with a LC input channel working in uncontrollable capacitor voltage mode and relentless inductor current mode that gives a conventional understanding of the central focuses and weights has been promoted. A strong plan instrument has been addressed by the consistent results, which was not open in advance. Guaranteeing exchanging commotion insusceptibility, the turning edge-sampling algorithm is induced in [17]. It is imperative that the procured models unequivocally reflect the normal info current, the normal information current is used for control. Exact extent of the normal info current has been permitted along these lines. Since exchanging beats get self-synchronized with the stage and recurrence of input voltage, discrete current mode control algorithm proposed by Souvik, Chattopadhay, Ramnarayanan [18] that performs high PF remedy for a lift converter, the controller input voltage detecting isn't required. One needs to pick the procedure, dependent upon the application close by and the cost. There can be further substitution of these controls by the latest

developments like neural which are open in the composing [19-21]. Using a cross breed display with two multi-circle controllers to control the power arrange, the quality of a lift power factor correction(PFC) circuit is proposed by Muzumder, Nayfeh [22]. The exchanging frequency approaching boundlessness is the one and the other for which it is finite but far reaching. The overall nearness of a smooth hyper surface for the lift PFC circuit isn't possible, using thoughts of intermittent systems. The structure drenches, if the headings don't accomplish the sliding surface. The strength of the period-one circle is lost everything considered. The onset of the speedy scale flimsiness happens when the inductor current procedures zero, using the conditions for nearness and the possibility of corresponding control, shows why, for the second closed circle structure. An answer that leaves the sliding surface (if nearness tumbles) everything considered can't stabilize in the splashed region. For an AC to DC power converter the power factor control circuit fuses an inductor getting AC redressed power elaborated by Joorabian, Seysossadat, Zamani in [23]. By an exchanging circuit reliant on an examination between a DC transport voltage and a settled reference voltage, the charging time of the inductor is controlled. Without an AC altered line detecting framework, and without a current-detecting resistor related with the wellspring of the MOSFET switch, the circuit works. In light of powerfactor remedy (PFC) and strategy used for examination, the structure and execution of two basic sorts of shunt consonant channels is discussed and an algorithm is presented for each in [24]. For consonant camouflage in AC side of a precedent six-beat HVDC converter, the procedure is used. For responsive power pay, stack modifying, symphonious pay and unbiased current pay and upgrading the supply side PF, the four-leg active power filter is used by [25]. There is a relationship of the dynamic PF to a stack that can be unbalanced and may in like manner draw consonant flows.

The illumination of the info channel necessities for a power factor alteration sort out reliant on a Boost

converter working in Discontinuous Inductor Current Mode (DICM), focusing on the relationship between the PFC orchestrate and the information channel is given in [1]. The PFC organize is possible to make sense of it. It has diverse characteristics. The info current with reduced high recurrence is used to restrict the information current separating necessities. The intrinsic power factor redress property is used to unravel the control circuit. The movement down characteristics are used to gain an output voltage lower than the abundancy of the changed sinusoid input voltage. To upgrade the capability of the PFC by bringing down the exchanging adversities or possibly conduction hardships there are circuit systems. By having less switches in the power path, or possibly by reducing their normal and RMS flows, PFC stage can be diminished and conduction hardships in the joined diode interface.

There is a phase down change extent for the Buck converter showed up in Fig 2.b.It is thusly possible to get an output voltage V2 lower than the plentifulness V1 of the input voltage. Right when the quick information voltage v1 is higher than the output voltage V2, the converter can work. The info current of the converter is broken, as depicted in Fig 2.b.Therefore the line current of a PFC subject to a Buck converter has half and half bends. For sure, even in CICM, in this way, the info current must be sifted through that has a significant high recurrence part [2-4].

Fig 2.c shows the Boost converter. Since the output voltage V2 is always higher than the abundancy V1 of the input voltage, it has a phase up change extent. The info current does not have cross breed turns, since errand is possible all through the line-cycle. Since the inductor is placed in course of action at the contribution, as appeared in Fig 2.d. the information current is steady. While working in CICM, thusly an input current with reduced high-recurrence substance can be gotten. The Boost converter working in CICM is extensively used for PFC in perspective of these reasons [3].

The Buck-Boost converter can work as either a phase down or a stage up converter, as showed up in Fig 2.e. The open door in deciding the output voltage has been given in light of the way that the output voltage V2 can be higher or lower than the adequacy V1 of the input voltage. A sinusoidal line current can be gotten and undertaking is possible all through the line-cycle. The output voltage is a changed that converts into higher voltage stress for the switch. The information current with altogether high-recurrence content are uncontrollable, similar to the Buck converter, as appeared in Fig 2.f. Table 1 shortens the topology-specific traits.

The two-switch Buck + Boost Converter [5] is a captivating game plan, despite these major converters. Exactly when the input voltage is lower than the output voltage, as a Boost converter and when the input voltage is higher than the output voltage, it fills in as a Buck converter. In a way like the Buck-Boost converter, in this way assignment is possible from first to last line-cycle and the output voltage can be changed in a wide range. At any rate this topology has an extended number of switches that prompts higher conduction incidents and cost. Because of its non-adjusted output, the voltage worry of the switches is lower than in a Buck-Boost converter, which is its positive part.

The inductor current in the midst of one exchanging cycle there is constantly imperativeness secured in the inductor since it never accomplishes zero, in this working mode. By constantly changing the obligation cycle of the converter using an appropriate control method, the volt seconds associated with the inductor which must be balanced all through the line cycle.

Case Of control plot is showed up in fig.3. To keep the output voltage of the PFC arranges reliable and to give the screw up flag the low-data transfer capacity external loop with trademark is used. To control the information current, the high-data transfer capacity internal loop with trademark is used. To give a reference, which is corresponding to the error flag , a multiplier is used. It has a changing sign with the

pined for shape for the input current. The most broadly perceived situation has been showed up in Fig. 3, where the tweaking signal is the rectified sinusoid input voltage. It is useful to use as an altering signal the complexity between the output voltage and the input voltage, dependent upon the topology of the PFC sort out [7].

The control circuit can be enhanced by abstaining from the multiplier and detecting of the line voltage. Since is the control signal from the low data transfer capacity output voltage controller, for this circumstance, the tweaking signal is equal and it is essentially unfaltering for the each line cycle. Subsequently, the info current is propped to a regard relative with and its shape approaches a square waveform. Consistence with the standard can be obtained up to generally 230Vrms input voltage and 500W power, as the revisions of the control circuit prompts a more damaged line current. if the edges of the line current waveform are loose, consistence up to a couple of kW can be gotten then trapezoidal waveform gained [8]. In the subsequent work, the related research work is tended to [10-14].

Low information PF and infusion of music into the utility lines is seen due to these set up converters that draw non sinusoidal info cooling flows. Single-stage switch mode cooling dc converters are being used as front-end rectifiers in perspective of the upsides of high capability and power thickness, in a grouping of applications. In light of stringent power quality control and strict limits on total consonant twisting (THD) of input current put by benchmarks, for instance, IEEE 519-19922 and IEC 61000-3-2, analyze in upgraded power quality utility interface.

For power quality improvement, distinctive investigators present the diverse procedures. For info current wave forming examination into dynamic and inert strategies has featured their common inconveniences. Resonation, enormous size and settled compensation are the awful signs of the detached channels while as a result of control multifaceted nature and included cost, the usage of dynamic converter is obliged.

Because of the closeness of lift inductor, the converter still experienced high voltage weight on the capacity capacitor. Semiconductor devices, like diodes, transistors, etc. with high voltage rating, should be used appropriately in wide input voltage applications; this moreover limits the helpful usage of SSPFC. Organize power exchange thought has been exhibited starting late in which an extra winding is implanted in parallel with coupled to the boost inductor and the output [28-30]. Through this coupled winding, a piece of info vitality set away in the boost inductor will be diverted to the output explicitly. At whatever point load and line moves then the voltage stresses and the voltage swing on the capacity capacitor are both decreased. The capacity capacitor voltage can't plunge under the apex line input voltage in view of the wandering up of input voltage by the boost inductor.

A high PF single switch forward AC-DC converter (SSFC) with low stockpiling capacitor voltage is presented in [29]. A heap up voltage source is familiar with discard the dead edge of info current over the considered input voltage transformer discretionary in the midst of the turn on time of power switch. Despite when the contemplated changed input voltage discretionary is lower than the output voltage, thusly the input power can even now trade to output (i.e., stimulating the output inductor). The DC voltage included over the reviewed input voltage is used to invigorate the lift inductor, in [29]. The capacity capacitor gets all the vitality set away in the lift inductor. Along these lines the capacity capacitor voltage is high and can't plunge under the apex input voltage. The reflected input voltage and the heap up voltage notwithstanding for the proposed SSFC are used to invigorate the output inductor clearly. Stood out from that of a boost inductor, the capacity capacitor is continued by the reset smaller vitality of transformer. In view of the nonattendance of lift inductor putting at the front end of the proposed circuit, the voltage on the widely appealing capacity capacitor keeps commonly low.

The computerized control fly back PFC framework is proposed [31, 32].Three power factor change

converters are shown [33], [34], [35], [36] and [37]. There is a discourse on the single switch forward dc-dc converter. For the transformer of the forward converter four dormant and one dynamic reset procedures are shown and the fittingness of the reset circuits for self-impelled synchronous revision is assessed. With dynamic secure reset circuit and with self-moved synchronous rectifiers, further the establishment information on forward converter is showed. The dynamic catch forward converter is proposed [38-41].

Inlight of lift topology, an insightful calculation for digital power factor remedy (PFC) is executed and construed. To achieve solidarity power factor in a half line period all required obligation cycles are made early. To execute PFC working at higher exchanging recurrence, a minimal effort DSP can be used. Under wide input voltage and output power conditions, the power factor of 0.99 can be practiced. For sinusoidal current waveform in transient state for step stack change and input voltage change, the control method can achieve PFC [1]. Starting from basic benchmarks and topological necessities having recognized the behavior by which essential dc to dc converters can be made to give PFC, the theoretical parts of PFC circuit is illuminated. A crucial activity is played by the examination of speculative efficiencies of essential arrangements, in which the power is taken care of, in choosing the general profitability of a PFC voltage controller. The likelihood of a diminished dreary power-handling PFC voltage controller is the aftereffect of this [2]. In light of a powerflow thought, the essential design of converters for achieving PFC and voltage direction is elucidated in [3]. Productive advancement of PFC controllers can be performed by deciding sixteen possible designs. On the off chance that the power arranged by one converter isn't re-dealt with totally by the other converter inside the PFC controller, the general capability can be advanced. For PFC voltage in boost converter for one switching cycle, the stationary state rise to circuit is used. A not too bad cognizance of the central focuses and hindrances is offered by examination of the Buck

converter with a LC input channel working in discontinuous capacitor voltage mode and relentless inductor current mode. A solid design instrument has been addressed by the explanatory results, which was not open heretofore.

The clarification and examination of the fourth-arrange topology with galvanic partition, working in the two modes has been given [4]. Guaranteeing exchanging clamor invulnerability, the trading edge-examining algorithm has been resolved in[5]. For control the normal info current is used. It is important that the obtained models unequivocally reflect the average input current. Exact extent of the average input current is possible along these lines. Since exchanging beats get self-synchronized with the period of information voltage and recurrence of info, the controller input voltage sensing isn't required for the discrete current mode control algorithm [6] that performs high power factor amendment for a boost converter. As the controller works in stationary reference layout, customary PLL isn't required. For the equivalent single stage help rectifiers, two decoupled settled recurrence current mode controllers make the exchanging minutes. By using the latest advances like neural in the composing [7-8], further these controls can be displaced. For dynamic power factor review the work done is in the writing [9-13].

Due to modernization in contraptions field and immediately extended amounts of electronic hardware, power hardware and high voltage power structure, the power quality of the AC system has transformed into a mind blowing concern. PFC investigate has transformed into a fervently discussed issue, improve transmission profitability and with the true objective to lessen consonant sullying in electrical cables. The plan and enhancement of 3φ power factor corrector using PIC (Programmable Interface Circuit) little scale controlling chip has been displayed. Using real algorithm to choose and trigger satisfactory exchanging capacitors with the ultimate objective to reimburse extraordinary responsive parts. Using PIC and sensors, there is detecting and estimation of the power factor a motivator from the

heap. As such PF near solidarity has been cultivated. Along these lines, it shows signs of improvement quality AC output. Upon their applications specifically fragments, distinctive power factor cure techniques will moreover be analyzed.

II. CONCLUSION

Semi-converter systems give preferred PF over full-converter systems, despite the fact that the enhancement isn't wonderful. This poor PF activity is a noteworthy worry in factor speed drives and in high power applications. Better electrical usage and productivity can be accomplished with the utilization of PF enhancement framework.

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