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Organised by

Computer Engineering Department,
Dr. D. Y. Patil School of Engineering,
Lohegaon, Pune, Maharashtra, India

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Innovation 2020
A Paper Presentation Competition
E-Conference

On

22nd April, 2020

Organized by

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Department of Computer Engineering
Report on Innovation 2020 E-Conference

Computer Engineering Department of Dr D Y Patil School of Engineering successfully executed Innovation 2020 E-Conference on Zoom on 22nd April 2020. This E-Conference was carried out in Association with **International Journal of Scientific Research in Science, Engineering and Technology (IJSRSET) and was sponsored by** TechnoScience Academy-The International Open Access Publisher

Four DYPSOE Computer Department Project Groups who won Best Paper Award in the Conference presented their papers through power point presentation. The Publication Certificates given by IJSRSET Journal, the Participation and Best Paper Certificates given by DYPSOE were also sent to all participants on the same day.

This E-Conference was joined by Dr Ashok Kasnale, Principal - Dr D Y Patil School of Engineering. His presence was motivating and encouraging for the participants.

Dr. Sheshang D. Degadwala- Associate Editor IJSRSET acted as Session Chair for the Conference who made an active interaction with all the participants and shared his expertise.
This conference was conducted under the state-of-art directions and guidelines of Dr Pankaj Agarkar – HOD Computer Engineering, Dr D Y Patil School of Engineering.

The processing of the complete E-Conference and pre and post publication work was successfully done by Dr. Bhavesh Kataria - Executive Editor IJSRSET.

This E-Conference Conduction and Paper Publication Process were successfully controlled by Prof Monika Dangore who acted as the Convener of the E-Conference.

DYPSOE Computer Department Staff Members and Project Guides also gave their contribution in making this E-Conference successful.

The Winners of Best Paper Awards shortlisted by IJSRSET Journal are as follows:

Manuscript Number	Title	Rank	Authors
IJSRSET2051030	Detection of Organic Chemicals in Soil	1	Khushal Patil, Prem Kakade, Shubham Taywade, Deepak Panchal, Prof. Vandana Chavan
IJSRSET2051022	Digital In-store Merchandising		Akash Agarwal, Amey Bhandari, Pravin Adep, Dr. Pankaj Agarkar
IJSRSET2051015	Personalized Smart Mirror	2	Yashoda Ghag, Shubham Pandit, Diksha Upadhyay, Sharvil Gadkari, Dr Sunil Rathod
IJSRSET2051038	Movable Road Divider for Organized Vehicular Traffic Control with Monitoring Over Internet of Things (IOT)	3	Suraj Shinde, Tinkesh Mahyawanshi, Ujala Malani, Shruti Kamble, Prof. Ajita Mahapadi

Photo Gallery

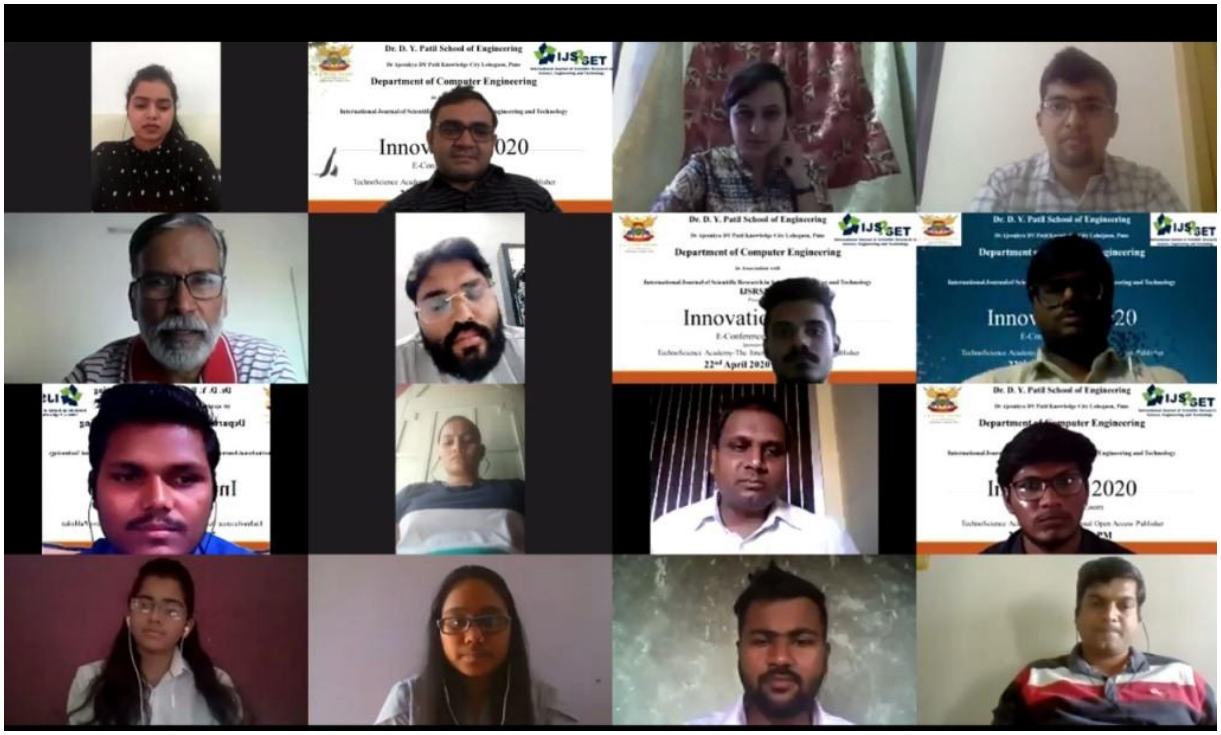
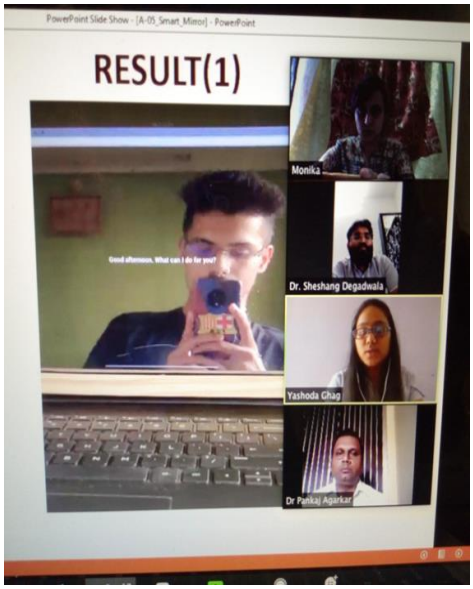


Fig. Experimental setup



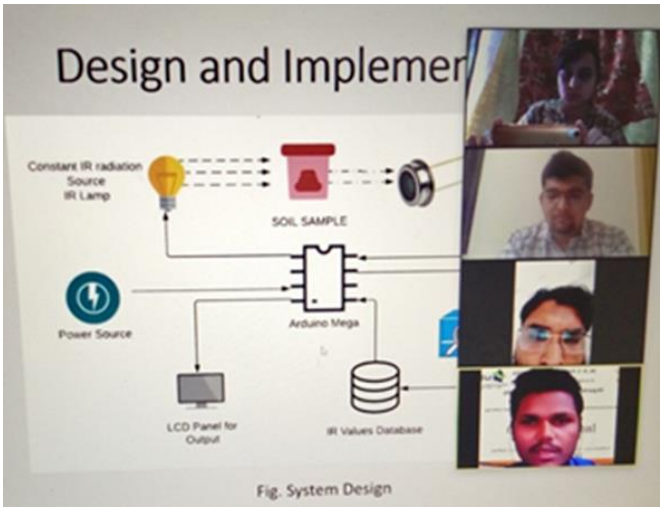


Fig. System Design

About the Institution

Dr. D Y Patil School of Engineering
(Affiliated to Savitribai Phule Pune University, Pune, Approved by NAAC, UGC New Delhi)

Dr. D. Y. Patil School of Engineering is one of the most prestigious academic groups in the state of Maharashtra which comes under the aegis of the Dr. D. Y. Patil Technical Campus. Dr. D. Y. Patil School of Engineering. Lohegoan (DYPSOE) , Pune , was established in 2010 under DYPTC by the Chairman of D. Y. Patil Group honorable Dr. Ajeenkye D. Y. Patil. The institute offers four UG Programs (B. E) , three PG Programs(M. E)and two Diploma programs.

Dr. D. Y. Patil School of Engineering, situated in "Oxford of the East" Pune, has Proven to be "Avant-grade" in field of Engineering over past few years in this region. The Institude , located in Lohegaon Pune , is spread over an area of 100 acres interspersed with various sport facility , wellness center a world class auditorium and lush green campus. Pune city is well connected with all states & metropolitan cities like Delhi, Mumbai, Kolkata, Chennai, Banglore etc. by regular flights and is on the main railway line route. The institute is 10 Km from Pune railway station and 7 Km from Pune International Airport (Lohegoan). Many industries, such as those Software, Mechanical, Automobile, Steel etc., are located in vicinity of the institute giving it a unique advantage for industry-institute interaction in various disciplines of engineering.

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Computer Engineering Department, Dr. D. Y. Patil School of Engineering, Lohegaon, Pune, Maharashtra, India in association with
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Automatic Text Summarization for files using TF-IDF Algorithm

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ABSTRACT

The nicely-shaped hyperlink network may be a properly-fashioned modeling methodology for effective records offerings. This project proposes a new textual content summarization approach that extracts nicely-formed link community from scientific paper together with language devices of various granularities as nodes and linguistics hyperlinks among the nodes, so ranks the nodes to pick out pinnacle-ok sentences to compose outline. A group of assumptions for reinforcing representative nodes is ready to mirror the core of paper. Then, properly-formed hyperlink Networks with differing types of node and hyperlinks are created with absolutely one of a kind mixtures of the assumptions. Ultimately, an unvaried ranking rule is meant for tough the load vectors of the nodes in a miles converged new release technique. The new release extra or less processes a stable weight vector of sentence nodes, which is stratified to pick out pinnacle-okay excessive-rank nodes for composing outline. In this task, we propose a singular continuous summarization framework called Sumblr to relieve the problem. In contrast to the conventional record summarization techniques which attention on static and small-scale statistics set, Sumblr is designed to cope with dynamic, rapid arriving, and massive-scale textual content streams. Three main components are in proposed work. First, we recommend an online textual content stream clustering algorithm to cluster textual content and hold distilled facts in a statistics structure known as cluster vector (CV). 2nd, we broaden a CV-Rank summarization method for generating on-line summaries and historic summaries of arbitrary time durations. Third, we layout a powerful topic evolution detection technique, which video display unit's precis-based/volume-primarily based variations to provide timelines mechanically from text streams.

Keywords : Text Mining, Document Classification, Summarization, TF-IDF, Cluster Vector

I. INTRODUCTION

Now an afternoon, with the enhancement in statistics mining and data retrieval structures, the quantity of data one has to address has improved rapidly. The range of documents to think about are some distance greater and the time to undergo all such files may be very much less. If the critical information present in these files are made to be had in condensed form, the user saves time and the person can recognition on critical elements of the documents easily. We've carried out an utility, that can be used in agencies for this very cause. All the users should register with the server to get admission to the capabilities provided via the server. Now, any of those users can upload useful documents on the server which they would like to go through.

- Whilst a user uploads a document, all the other customers acquire a notification that a brand new report has been uploaded.
- Person can look for a report he wants to undergo.
- If the consumer is short of time, consumer can get precis of the files he wishes to examine.

When a person uploads a record, all the different users acquire a notification that a brand new document has been uploaded. User can search for a report he desires to undergo. If the user is short of time, person can get precis of the documents he desires to examine.

Inside the recent years, facts grow unexpectedly in conjunction with the development of social media. The information maintains to spread at the net in particular in the shape of the textual data kind. For a brief textual content fact, it requires much less quantity of time for readers to recognize its contents. Even as, for a protracted text fact, the whole text of the file ought to be reviewed to understand its contents, so it takes extra time and effort. One possible answer from this trouble is to read the summary. The precis is the simplified version of a document which may be achieved the use of a summarization gear. Summarization tools assist the user to simplify the whole document and only show beneficial statistics (Munot & Govilkar, 2014). But, to generate such summary is not that easy, it entails a deep understanding of the files.

II. METHODS AND MATERIAL

There's diverse form of algorithm which can be used to create an automated summarization. The most generally used is an extractive text summarization with term Frequency-Inverse record (TF-IDF). This experiment targets to assist the users to efficaciously read the report(s) through summarization created by way of using this software.

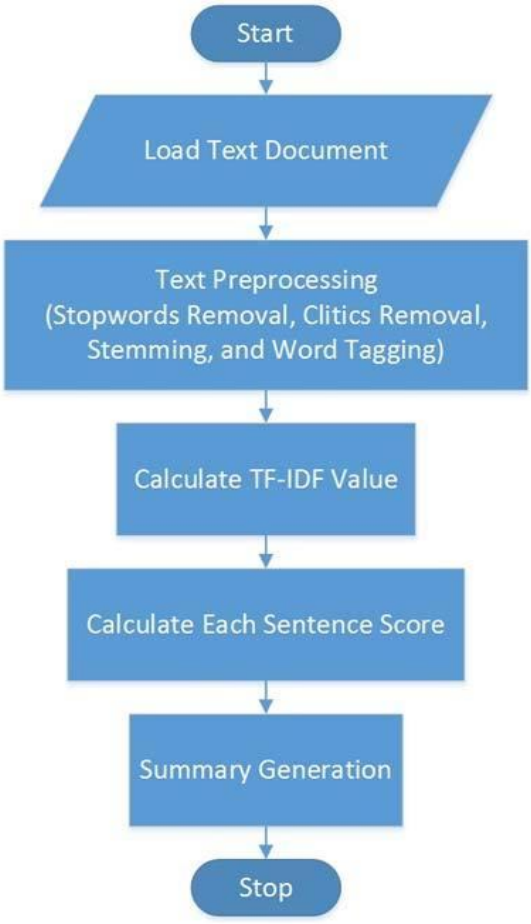

Fig.1 Flowchart of Automatic Summarization

There is numerous current gear that have the equal computerized summarization function as this program, but the different applications handiest assist to summarize the single file. This software is able to summarizing more than one documents. However, on this experiment, the researcher's simplest attention on the overall performance of the program in summarizing a unmarried file. This experiment also calculates the accuracy of the precis produced by way of using TF-IDF as compared to summary made through professional. The software program structure for this test may be seen in Figure 1.

From the pre-processed list of words, the TF-IDF value of each noun and verb can then be calculated. The equation of TF-IDF can be seen below.

$$TF = \frac{Totalappearanceofawordindocument}{Totalwordsinadocument} \quad (1)$$

$$\text{IDF} = \log \frac{AllDocumentNumber}{DocumentFrequency} \quad (2)$$

$$TF - IDF = TF \times IDF \quad (3)$$

□□ □

The fee of TF-IDF stages from zeroto one with ten-digit precision. After been calculated, these phrases are taken care of in descending order with the aid of its price. Then, it's miles compiled into the new dictionary of phrase and its cost. This sorting is critical to research the rank of TF-IDF price from all the words to check the output summary. After knowing TF-IDF cost of every phrase, it can calculate the significance fee of a sentence. The importance price of a sentence is a sum of the fee of every noun and verb inside the sentence. Each sentence in the report is sorted in descending order.

Eventually, three to 5 sentences with the highest TF-IDF cost are selected. The variety of sentences in the final precis can also trade relying on the compression fee of the program chosen through the user. As TF-IDF is an extraction technique, the sentences that appear inside the precis are similar to the unique report. These selected final sentences are sorted in accordance with its appearance within the original document. For the multi-report summarization, the sentences are sorted similarly with unmarried record summarization. The distinction is that it starts from the file which has the bottom general of TF-IDF.

III. RESULTS AND DISCUSSION

The program is created with Java Programming Language and compiled in Netbeans IDE 8.2. Moreover, the interface of the program is created by using the HTML, CSS which is a package of jsp Graphical User Interface. An additional package like Natural Language Toolkit and Textblob are used for the text processing. Upon execution, the program asks user regarding how many documents to be summarized are. After all the documents are loaded, the user can determine how long the summary is generated by changing the compression rate of 10% and 90%. Then pre-processing step such as stop words removal, stemming, and word tagging occur one at a time. Next, the program finds the features from the whole documents by using the statistical approach of frequency-inverse document frequency and performing selection to the sentence containing the features. The output summary is printed out in the output section of the interface, along with the percentage and statistical analysis of the summary. In this experiment, the program has executed six times, with a different set of documents and compression rate on each execution.

IV. CONCLUSION

Despite the fact that this research explains using the algorithm of TF-IDF in an automatic textual content summarization program. Through this test, it is able to be visible that the TF-IDF algorithm can be used as the effective technique to supply an extractive summary. It generates the summary with sixty-seven% of accuracy, which is a higher end result of the precis than different online summarizers. From the contrast end result between program summarizer and online summarizers by the usage of the statistical technique, it can be concluded that this system produces the better precis. By the use of the extractive method, TF-IDF is verified as a powerful approach to generate the cost which determines how vital a phrase in the report is. The value facilitates the program to decide which sentence to be used within a part of the summary. There are a few improvements that can be carried out to this program to provide a greater accurate precis. First, it's far by making the summary biased at the identity of the record. A name is a sentence or phrase that describes the principle occasion or what the thing is. Consequently, a excessive price of TF-IDF may be given to the phrase

that appears within the title so that this system can produce a higher result of the summary. 2nd, it's miles by using growing the range of test with a diverse kind of sample document to growth the accuracy to calculate precision, do not forget, and f-measure price. It's far because the extra files are summarized, the more legitimate the result of the average f-degree value turns into. Third, it need to involve more respondents to assess the machine by using determining the range of correct, incorrect, or overlooked sentences inside the summary. This manner will increase the validity of the test because the selection whether or not the sentence is the part of the precis is determined among the respondents.

V. REFERENCES

[1] H. Zhuge, "Dimensionality on summarization" arXiv preprint arXiv:1507.00209, 2015.

[2] H. Zhuge, "Multi-Dimensional Summarization in Cyber-Physical Society". Morgan Kaufmann, 2016.

[3] H. Zhuge and J. Zhang, "Automatically constructing Semantic Link Network on documents" Concurrency and Computation: Practice and Experience, vol. 23, no. 9, pp. 956-971, 2011

[4] C.-Y. Lin and E. Hovy, "Automatic evaluation of summaries using n-gram co-occurrence statistics," in Proceedings of the 2003 Conference of the North American Chapter of the Association for Computational Linguistics on Human Language Technology-Volume 1, 2003, pp. 71-78: Association for Computational Linguistics.

[5] A. Nenkova and K. McKeown, "Automatic summarization" Foundations and Trends in Information Retrieval, vol. 5, no. 2–3, pp. 103-233, 2011

[6] J.-Y. Yeh, H.-R. Ke, and W.-P. Yang, "iSpreadRank: Ranking sentences for extraction-based summarization using feature weight propagation in the sentence similarity network" Expert Systems with Applications, vol. 35, no. 3, pp. 1451-1462, 2008.

[7] M. Joshi, H. Wang, and S. McClean, "Dense semantic graph and its application in single document summarization," in Emerging Ideas on Information Filtering and Retrieval: Springer, 2018, pp. 55-67.

[8] Y. Kikuchi, T. Hirao, H. Takamura, M. Okumura, and M. Nagata, "Single Document Summarization based on Nested Tree Structure," in ACL (2), 2014, pp. 315-320.

[9] M.-T. Nguyen and M.-L. Nguyen, "Sortesum: A social context framework for single-document summarization" in European Conference on Information Retrieval, 2016, pp. 3-14: Springer.

[10] G. Durrett, T. Berg-Kirkpatrick, and D. Klein, "Learning-based single-document summarization with compression and anaphoricity constraints," arXiv preprint arXiv:1603.08887, 2016

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Smart Keyboard Using Internet of Things

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ABSTRACT

A keyboard is a main input device for any communication or any computer device mainly the portable one. Our objective was to interact between a computer and human-being, a system of keyboard is represented by means of camera and Image Processing. Our physical keyboard consists of a camera, Paper, Raspberry-pi-3b+ and a stand (approx. 35cm from the surface). The camera is used to capture several frames of finger tip to determine the button pressed. Every Keystroke can be determined by the camera using Imager thresholding and contours. Our Experiment shows that it is a reliable sense of technology with high accuracy.

Keywords : Paper Keyboard, Virtual Keyboard, Augmented Reality, Keyboard using sensor.

I. INTRODUCTION

People within ongoing condition are being occupied with their duties that they don't have a moment to waste. Others thrive to meet their daily job by using appropriate technology like Desktop Computers, laptops, mobile phones. So by going through we came to know to know that those gadgets contains very tiny little keys. Some people find it difficult to see the word on the keyboard and it is not ideal to use a full size keyboard onto the phones. The appearance of paper keyboard presented a newest replace to input on any portable device.

As compared with the other keyboards our system is more like to be paper based number board. We support user's enrolment in such a way that we design it according to their requirement for efficient typing and great accuracy. For now we just created a number pad that inputs the number on to the smart phone and clears it, but, in the future we will try to make it using qwerty.

II. KEYBOARD ARCHITECTURE

Our system consists of several components:

A paper with number keypad, A camera 5mp, Raspberry pi model 3b+, An acrylic stand, Bread board and led's, Power supply. The figure 1 shows the architecture of our system.

The Surface on which the keypad is printed should be a white surface and the background should also be white. That background should be free of objects and while working with the Image Processing this kind of back ground is must.

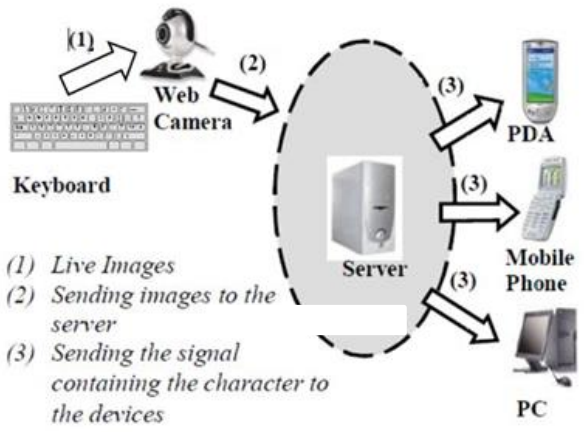

Figure 1. Design of System

The touching movement is improvised with a led light with red in color and the typed character is represented by a green led light. The typing movement on the paper board is captured and processed and sent to the server which we are using a firebase server in which user needs to login and after logging in you can type what ever you want. The camera captures the image frame one by one and processes it. First to spot the key locations the camera processes the initial image to identify the area of the contour and according to the array the second image is processed which leads to identifying the character. After this step the letter being identified by the raspberry-pi is uploaded to the hashmap which is in the firebase database. After the uploading is done then we start the application in phone and login. After Login the letter is typed directly onto the application. We choosed firebase beacause it is live database as soon as something happens it changes into the application.

A. Dividing the systems into Parts

The following diagram shows the full system which is divided into small sub systems like image capturing and processing it and character identification module which are described further:

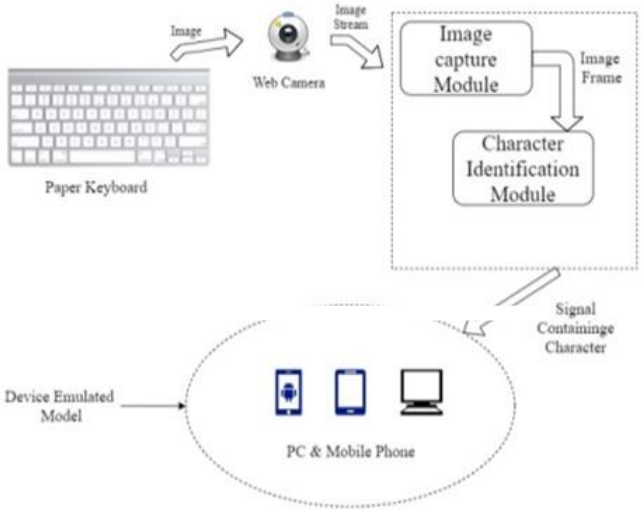

Figure 2. Division of system

B. Image Capturing Module:

This module is actually consisting of capturing the images of touching the paper board and storing them into the buffer like structure acting as queue. This modules come into play when a user has successfully decided which device he/she has to input the information in. The images are then coming out one by one to identify the character before giving the intitial frame rate for capturing of the buffer into the character identification module which is an aim to analyze it. After capturing the images they are stored as the backup copy which is again going for character identification once again. The following image shows the capturing of module:

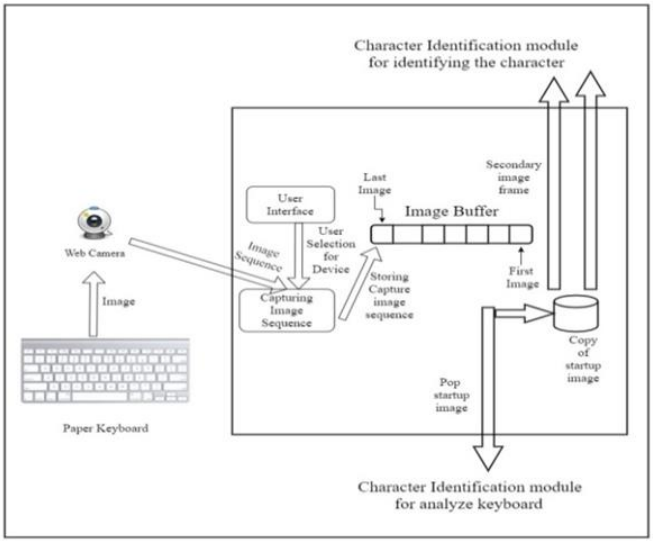

Figure 3 Image capturing sub systems

C. Character Identification module :

The images which were captured in the previous module are being sent to this module. That one image goes through many relevant techniques to determine the data which are essential and can be determined by various image processing techniques. The data are like:

1.) Analyzing the key locations on the paper
2.) Thresholding the background
3.) Creating contours
4.) Determining the character

After detection of edges which are nothing but contours form the first initial image the dimensions of the keyboard are being calculated. After that we use one method in OpenCV to determine the height and width of one each column in a row which apparently gives us the coordinates of each and every key. After each and every key being pressed it is hard to calculate the coordinates again and again. So the coordinates are stored in another file which is called at the starting of the camera to determine the area. After finding the blue pixel of the image, these coordinates are compared with the original array of coordinates to find the key block area and generate the letters.

D. Device Emulated Module:

Our server receives the implied code from the character identification module. The server accepts the signal from the raspberry-pi and forwards it to the keyboard driver. The application which is connected to the firebase server receives the signal from the driver. The user needs to login first into the application and then the given space is used for typing from the device driver. Thus this prototype simulates the keystroke by sending signal from raspberry-pi to the server using the firebase and device driver.

III. IMPLEMENTATION

The main operation of the proposed system is:

1.) the keyboard detected using edge detection.
2.) hand and finger tip detection using color segment.
3.) after detecting finger tip check for pressed key.
4.) obtain the press key.

A. Keyboard Detection:

Keyboard is identified using color differentiation. The border of keyboard is black, thus on thresholding, border of every key found.so location of keyboard is defined.

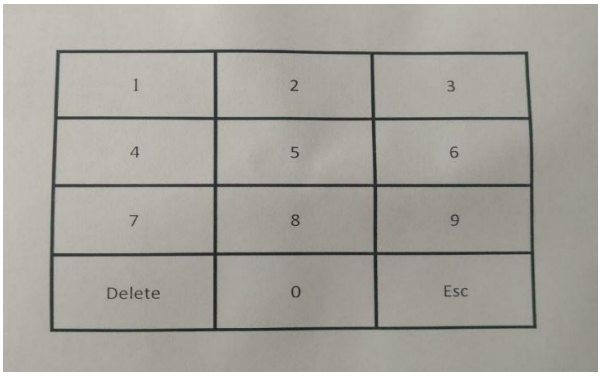

Figure 4 : Keyboard detection

B. Hand detection:

At first, a large number of hand images are collected. after observing those images the red component was higher than other component. So using image enhancement techniques we detected hand regions which are then thresholded to white and rest of image is black.

Figure 5 : Hand Detection using openCV

C. Edge Detection:

In this module, we use sobble technique, which is best for edge detection. Edge detection is use for detection of finger tip and we also use canny edge detection technique to complete the broken edges.

Figure 6 : Edge detection

The determination of those edges is one of the most difficult task because as our pi camera could capture about 640X480 pixel values. Since keeping above pixel values in mind we need to set the keyboard at an appropriate height which is approx. 32-35 cm. Only and only then we could capture an entire keyboard and as well as contours of it. However, you can use another external camera which has more resolution and much better fps than ours.

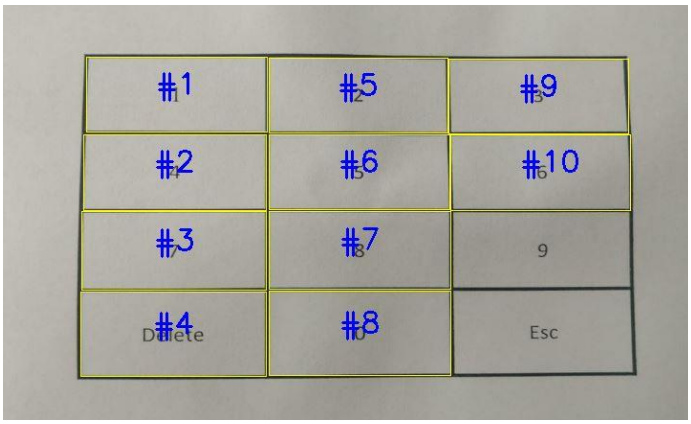

Figure 7 : Edges or contours of Keyboard

D. Touch Detection:

A small region around the finger is detected for shadows as shown. The figure shows that the tips which are discovered are white and the shadows are kept black through the thresholding as we want just the finger point. The white and black pixels ratio is determined, if the dimension of the ratios of non-shadowed area to the shadowed area exceeds a particular threshold we can determine that keys are being touched. We could use only trial and error method to determine the perfect threshold for this. The idea for touch detection is based on [11].

E. Firebase:

The main work for extraction of character is using above contours and edge detection techniques. Now comes the uploading or pushing the character value to database. Here, we are using Google's firebase because it has real time updation of data into any other device. It updates the data within couple of seconds. We have created a hash map for firebase which has name and value of the user. The name part is being fetched from phone in which user has logged in. The value comes from the raspberry pi which we have extracted using all the above techniques. So when the value part is being updated the phone's label box is also being updated constantly. When you login the first page is containing the on/off switch a profile picture and a label for the characters. The on/off switch allows users to change their status for retrieving the data from firebase.

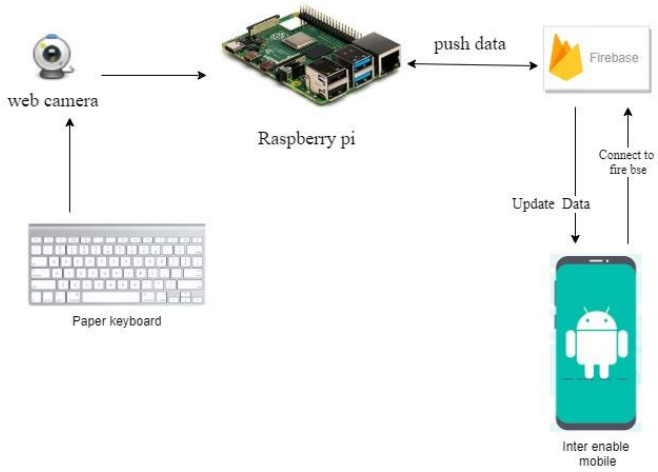

Figure 8 : Firebase connecting Raspberry

Figure 9 : Firebase structure

The above structure has two maps one is device and the other is users. The device has two fields data which is nothing but the characters form the raspberry-pi. Status is being fetched from user's phone for allowing or denying the update of characters. The users has only one field which is the phone number of user. The "imgurl" is the image url which is obtained by uploading an image to the firebase bucket and then that can return back a URL and that is the permanent URL for your phone to be determined by the database. Then any user can use this URL for any application for their purpose. Basically in our project it determines the profile picture that you have uploaded in our application. Now lets take look at mobile application:

Figure 10 : The mobile application having the typed data "123"

IV. RESULTS

We are using a red circular pixel as threshold to determine the pressed key. In context with the red pixel to determine, the background needs to be a little brighter because as we are using with background and it is seems clear that the camera reduces noise in the image and helps improving the accuracy. Hence, more the light more the accuracy. Our project is the evidence that the time required to type one character on the application is a little low as per the physical keyboard due to the cameras resolution and the frame-rates (fps of camera is 10). So, if you need to have a better typing I suggest you to use a Logitech camera maybe 720p or 1080p with 60 fps. Apparently the time needed to type in one character was about 2 seconds/character. It should be kept in mind that this time varies each time and the minimum time is 32 milliseconds/character.

TABLE I

Actual result for typing character into keyboard

TESTED VALUE	PHYSICAL KEYBOARD	PAPER KEYBOARD
Time Taken	51.9 ms	470 ms

Failure	0	12
Time per character	0.37 s	2 s
Accuracy	100 %	90 %

V. CONCLUSION

As compared with the physical keyboard, paper keyboard has more advantages for own personalization, convenience and is applicable to favorable environment. The precision and accuracy of the keyboard have been tested thoroughly. Based on the above conclusion we have reached to an agreement that this prototype is easily usable and practical. This paper should help other to develop their own keyboard much efficient and smarter than ours. The diagrams will surely help for the faster development of smarter keyboards in computer/IT industry.

VI. REFERENCES

[1] 2018 IEEE International Symposium on Circuits and Systems (ISCAS) : proceedings : ISCAS 2018 : 27-30 May 2018, Florence, Italy. .

[2] IEEE INFOCOM 2016 : the 35th Annual IEEE International Conference on Computer Communications.

[3] Y. Adajania, J. Gosalia, A. Kanade, H. Mehta, and N. Shekokar, "Virtual keyboard using shadow analysis," in Proceedings - 3rd International Conference on Emerging Trends in Engineering and Technology, ICETET 2010, 2010, pp. 163–165.

[4] V. Agarwal, S. Mishra, M. Nehriya, and R. Satpute, "Virtual laser keyboard."

[5] R. G. Gupta, R. S. Reddy, and N. N. Parmar, "IRJET) e-2 B.E, Department of electronics engineering," Int. Res. J. Eng. Technol., 2009.

[6] M. Hagara and J. Pucik, Fingertip detection for virtual keyboard based on camera. 2013.

[7] M. Karray, M. Krid, and D. Sellami, A survey of AR systems and a case study of virtual keyboard based camera projector system. 2017.

[8] R. Kumar and P. Chaudhary, User defined custom virtual keyboard. 2017.

[9] C. Livada, M. Proleta, K. Romic, and H. Leventic, "Beyond the touch: A web camera based virtual keyboard," 2017.

[10] N. Matsui and Y. Yamamoto, "A New Input Method of Computers with One CCD Camera : virtual Keyboard."

[11] A. Syaichu-Rohman, Institute of Electrical and Electronics Engineers., Institute of Electrical and Electronics Engineers. Indonesia Section., Institute of Technological Bandung. School of Electrical Engineering and Informatics., and University Kebangsaan Malaysia. Fakulti Teknologi dan Sains Maklumat., Proceedings of the 2011 International Conference on Electrical Engineering and Informatics : 17-19 July 2011, Bandung, Indonesia. IEEE, 2011.

[12] Y. Zhang, W. Yan, and A. Narayanan, A virtual keyboard implementation based on finger recognition, vol. 2017-December. 2018.

[13] Q. Zhao, Virtual Keyboard : A human-computer interaction, no. 61471110. 2015.

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Automatic License Plate Detection and Recognition Techniques : A Review

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ABSTRACT

In today's world license plate (LP) detection and recognition plays a major role as the number of vehicles increases day by day, breaking traffic rules, theft of vehicles, entering restricted area, toll control problem also increases linearly, so to tackle these problems Automatic License Plate Recognition (ALPR) system can be used. License plate detection and recognition involves the task of finding and recognizing LP in a given image without any human involvement. Many different methods have been introduced for ALPR. In this paper, we have done survey on various advance techniques to detect the LP.

Keywords : License Plate, Automatic License Plate Recognition

I. INTRODUCTION

Population explosion has given rise to increase in the number of vehicles on roads. This increase in the number of vehicles has caused various problems such as vehicle theft, traffic control, toll control, hit and run and parking lot access validation. Traditional methods which rely completely on human efforts cannot be used to deal with problem because of sheer number of vehicles.

In 2017, 39,084 motor vehicle theft cases were reported in Delhi, India which increased to 44,158 in 2018. However, only 19.6% of these cases were solved in 2018 [1]. These problems can be solved with the help of Automatic License Plate Recognition (ALPR) systems. An ALPR system takes an image as an input from a camera and gives license plate (LP) as an output which can be used by law enforcement or any other agencies. The recent developments in processing power and Deep Learning (DL) have led to improvement of computer vision tasks such as Object Detection, Image Classification and Object Localization, which have further improved ALPR systems. All motorised vehicles in India have a registration number. The vehicle registration plate which is also known as LP or number plate is issued by the Regional Transport Office (RTO) of a district in their respective states. An Indian LP consists of ten letters in order. The first, two alphabets represents the state where the vehicle had been registered. Every state is represented by combination of two alphabets which is unique for each state. The second, two numerals indicates which RTO has the car been registered by. The Third two alphabets followed by four

Figure 1 A typical Indian License Plate [2]

digits indicates the unique part of a vehicles' registration number. Figure 1 shows a typical Indian license plate.

A few challenges need to be face and overcome in developing an Automatic License Plate Recognition (ALPR) system. A general ALPR system consists of three steps. The first stage is detection of a vehicle from given input image. The second task involves the task of localizing the license plate (LP) region of the vehicle identified. And the final step is to recognize the registration information from the localized LP region. The first major challenge is to acquire image from the camera in an unconstrained environment. The image obtained might be blurred because of weather conditions such as rain or fog. The LP can be distorted due to oblique view. The next main problem occurs because of variety in the LP being used. The LP size and position may be different for a car and motorcycle. Sometimes along with the registration number other text is also present on the LP. It is important to detect and remove non-LP images to improve accuracy in LP detection.

II. RELATED WORK

Many system have been proposed in the literature for Vehicle license plate detection and recognition. Although the problem of Vehicle license plate detection and recognition has been studied for many years, it is still a challenging task detect and recognize license plate in unconstrained scenarios. Figure 2 shows basic architecture of an ALPR system.

Author [3] presents License Plate Detection (LPD) approach for multinational vehicles. V component of YUV colour space is used to locate the rear vehicle lights. As license plates are located in a range of rear vehicle lights, an area of interest is defined and license plates are identified by using a novel histogram based approach on edge energy map.

In [4], author uses a technique which uses Region based Convolutional Neural Networks (RCNN). The proposed RCNN method extracts the features from the convolution layers to predict the bounding boxes for the object and shares the extracted features with the Fast R-CNN.

In [5] author suggests a method which is capable of detecting License Plate(LP) area from an image in various hazardous conditions which includes foggy or rainy weather, low contrast environments, horizontally tilted LP area and objects similar to LP in the background. They tested the suggested system on 850 car images having a variety of hazardous conditions, and successfully obtained satisfactory results.

Author [6] proposes a License Plate Recognition (LPR) system which can handle all types of difficulties such as light variations, occlusion, and so on. The introduced system deals with these problems by integrating multiple features extraction and fusion. The suggested method consists of four major steps: (1)

pre-processing, (2) segment ROI, (3) features extraction and fusion, and (4) number recognition.

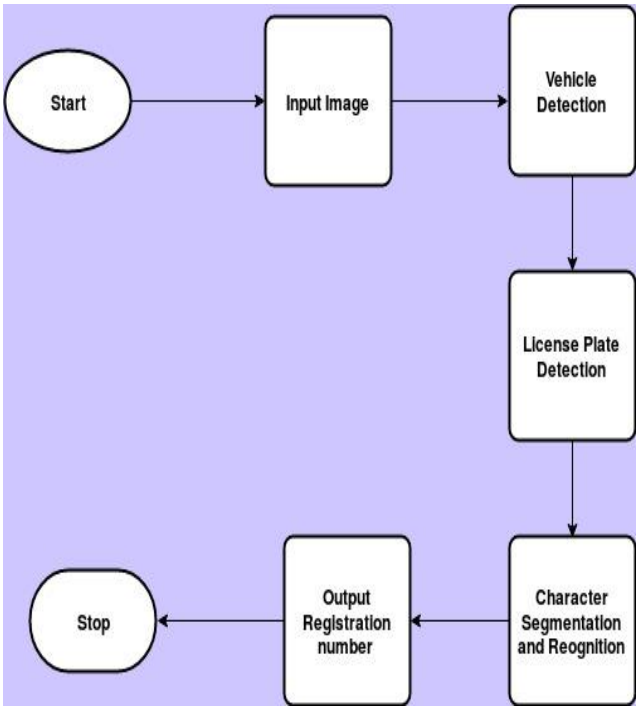

Figure 2. Basic Architecture of an ALPR system

Author [7] presents a Convolutional Neural Network (CNN) based method for real-time car license plate detection. They proposed a CNN-based method named as MD-YOLO" inspired by the "you only look once" (YOLO) [8] framework. The proposed system is capable of solving the problem of multi directional car license plate detection which can be deployed easily in real time scenarios, due of its reduced computational complexity.

In [9] author proposes an Automated license plate recognition (ALPR) system that consists of novel techniques for segmentation and annotation free ALPR, better plate automation and localization for failure identification. The system proposed can easily be proposed to many countries.

Table 1 compares the literature review of ALPR systems.

TABLE I . COMPARISON OF ALPR SYSTEMS

AUTHOR NAME AND YEAR	DESCRIPTION	TECHNIQUES USED	REMARKS
Muhammad Asif et al. (JVCIR 2017) [3]	They implemented License Plate Detection (LPD) which is capable of handling complex backgrounds. They tested the proposed system on 855 images from different countries including Italy, Serbia and Pakistan.	They used YUV colour space conversion and adaptive thresholding for identifying Area of Interest. The area with contains dense edges is then identified with a novel histogram based approach which is the license plate of the vehicle under consideration	They were able to correctly identify the license plates 90.4% of times with an average time of 0.25 s.
Muhammad Aasim Rafique et al. (Soft Comput 2018) [4]	They solved three main tasks related to LP detection. The first task was to detect LP in each from of a video. The second task was to detect partial LP. The final task involved detection of LP where either camera or vehicle was not stationary	They extended Pascal VOC2007 dataset by combining a publicly available LP dataset (lpdatabase) and Korean LP dataset (KoreanLP). They used RCNN, the exemplar-SVM, Faster-RCNN and Fast-RCNN to solve the problem of LP detection	The proposed techniques are capable of detecting LP in any region and environment.
Samiul Azam et al. (JVCIR 2016) [5]	The author proposes Automatic License Plate Detection (ALPD) method for hazardous condition. The proposed method consists of total five steps. These steps included grayscale conversion, contrast enhancement and binarization, filtering of local counting and connected component cropping, detection and correction of tilt angle and filtering non-LP areas.	To filter rain streaks frequency domain mask is used. Contrast enhancement method with a statistical binarization approach for low contrast images is introduced. Radon transform based tilt correction method and condition based on image entropy are used.	They managed to achieve 94% overall detection probability. For applying it in real time scenarios, the algorithm can be implemented either in C or C++.

M. A. Khan et al. (IET Image Processing 2018) [6]	Author proposes a new technique for implementing a License Plate Recognition system which is based on two types of extracted features and their fusion. They suggested an entropy based features selection followed by serial based feature fusion	The system is based on Otsu segmentation, Histogram of Oriented Gradients (HOG) and Support Vector Machine (SVM) based approach.	The proposed system managed to achieve accuracy maximum up to 99.5%.
L. Xie et al. (IEEE 2018) [7]	The author proposes a Convolutional Neural Network (CNN) based MD-YOLO framework for multi-directional car LP detection. By using an accurate rotation angle prediction and a fast intersection over-union evaluation strategy, the proposed system can handle rotational problems in real-time applications	The proposed Convolutional Neural Network architecture is based on the idea of "you only look once" (YOLO) [8] algorithm.	The system can be deployed easily in real-time scenarios, because of its very low computational complexity. Multi-directional license plate detection under poor conditions such as terrible illumination, low resolution and so on remains an unsolved problem.
O. Bulan et al. (IEEE 2017) [9]	Author proposes a system that localizes the license plate area in the captured image. A weak sparse network of winnows classifier is used in first stage to extract the candidate region which is further filtered using a CNN based classifier in the next stage.	The proposed system uses convolutional neural network (CNN) classifier, SNoW classifier, Markov models and Viterbi algorithm.	The proposed end-to-end ALPR system can easily be scaled various countries with very little human intervention and manual annotation.

III.CONCLUSION

This work compares various ALPR systems. There are three main methods on which an ALPR system is based: colour based methods, texture based methods and edge based methods. Colour based methods relies on the fact that many countries uses particular colours in their license plates. In edge based method the rectangular shape of the license plate boundary is the main feature utilized in order to extract the license plates. Texture based methods mainly exploit the considerable change in intensity of the pixels between characters and the background of license plate.

IV. REFERENCES

[1] Delhi Police. https://www.delhipolice.nic.in/ CRIMEinDELHI.pdf. Accessed on 11-12-2019.

[2] Girish Varma, Anbumani Subramanian, Anoop M. Namboodiri, Manmohan Chandraker, and C. V. Jawahar. IDD: A dataset for exploring problems of autonomous navigation in unconstrained environments. CoRR, abs/1811.10200, 2018.

[3] Muhammad Asif, Qi Chun, Sajid Hussain, M. Fareed, and Subhan Khan. Multinational vehicle license plate detection in complex backgrounds. Journal of Visual Communication and Image Representation, 46:176–186, 07 2017.

[4] Muhammad Aasim Rafique, Witold Pedrycz, and Moongu Jeon. Vehicle license plate detection using region-based convolutional neural networks. Soft Computing, 22(19):6429–6440, 2018.

[5] Samiul Azam and Md Monirul Islam. Automatic license plate detection in hazardous condition. Journal of Visual Communication and Image Representation, 36:172 – 186, 2016.

[6] M. A. Khan, M. Sharif, M. Y. Javed, T. Akram, M. Yasmin, and T. Saba. License number plate recognition system using entropy-based features selection approach with svm. IET Image Processing, 12(2):200–209, 2018.

[7] L. Xie, T. Ahmad, L. Jin, Y. Liu, and S. Zhang. A new cnn-based method for multi-directional car

license plate detection. IEEE Transactions on Intelligent Transportation Systems, 19(2):507–517, Feb 2018.

[8] J. Redmon, S. Divvala, R. Girshick, and A. Farhadi. You only look once: Unified, real-time object detection. In 2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), pages 779–788, June 2016.

[9] O. Bulan, V. Kozitsky, P. Ramesh, and M. Shreve. Segmentation- and annotation-free license plate recognition with deep localization and failure identification. IEEE Transactions on Intelligent Transportation Systems, 18(9):2351–2363, Sep. 2017.

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Inter-Vehicle Communication Using Li-Fi Technology

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ABSTRACT

Ensuring protection of travelers in speedy vehicles and other road-side commuters has always been the main emphasis of urban transportation authorities. Vehicle to Vehicle (V2V) communication is based on DSRC (Dedicated Short Range Communication). DSRCs are highly secure, short to medium range, high-speed wireless communication channels, which help vehicles to connect with each other for a shorter period of time. Through DSRC, two or more vehicles can exchange data regarding their speed, acceleration, distance and direction. Li-Fi (Light Fidelity technology) is defined as a light-based WiFi which uses light instead of radio waves to transmit information. In Li-Fi technology, for communication between two vehicle data is transmitted using bulb and at receiving end, photo detector to receive the data. In this technology none of vehicular protocol is used so it reduces the system complexity. Inter-vehicle communication is an effective method with productive results that the proposed system used in order to communicate between two vehicles and maintain safe distance between vehicles to prevent accidents. This can notify all vehicle drivers about things like lane change, approaching vehicle trajectory and relative speed of the other vehicle in real-time. Smart features of V2V will help vehicles to receive alerts on traffic congestion, obstacles, changing lanes on highways, traffic merging, railway crossing notifications, etc. So, the future of vehicular communication is Vehicle to everything (V2X) communication system, where vehicle communicates with any entity that may affect the vehicle including other vehicles, infrastructure, pedestrians, smart devices, other networks etc.

Keywords : Arduino, Wi-Fi (ESP 8266), Load cell, Database System

I. INTRODUCTION

In this paper, Li-Fi can be thought of as a light-based WiFi. That is, it uses light instead of radio waves to transmit information. And instead of Wi-Fi modems, Li-Fi would use transceiver fitted LED lamps that can light a room as well as transmit and receive information. Since simple light bulbs are used, there can technically be any number of access points.

This technology uses a part of the electromagnetic spectrum that is still not greatly utilized- The Visible Spectrum. Light is in fact very much part of our lives for millions and millions of years and does not have any major ill effect. Moreover there is 10,000 times more space available in this spectrum and just counting on the bulbs in use, it also multiplies to 10,000 times more availability as an infrastructure, globally. It is possible to encode data in the light by varying the rate at which the LEDs flicker on and off to give different strings of 1s and 0s. The LED intensity is modulated so rapidly that human eyes cannot notice, so the output appears constant.

More sophisticated techniques could dramatically increase VLC data rates. Focusing on parallel data

transmission using arrays of LEDs, where each LED transmits a different data stream. Other groups are using mixtures of red, green and blue LEDs to alter the light's frequency, with each frequency encoding a different data channel.

Li-Fi, as it has been dubbed, has already achieved blisteringly high speeds in the lab. Researchers at the Heinrich Hertz Institute in Berlin, Germany, have reached data rates of over 500 megabytes per second using a standard white-light LED. Haas has set up a spin-off firm to sell a consumer VLC transmitter that is due for launch next year. It is capable of transmitting data at 100 MB/s - faster than most INDIA broadband connections.

LiFi is high speed bidirectional networked and mobile communication of data using light. LiFi comprises of multiple light bulbs that form a wireless network.

When an electrical current is applied to a LED light bulb a stream of light (photons) is emitted from the bulb. LED bulbs are semiconductor devices, which means that the brightness of the light flowing through them can be changed at extremely high speeds. This allows us to send a signal by modulating the light at different rates. The signal can then be received by a detector which interprets the changes in light intensity (the signal) as data.

The intensity modulation cannot be seen by the human eye, and thus communication is just as seamless as other radio systems, allowing the users to be connected where there is LiFi enabled light. Using this technique, data can be transmitted from a LED light bulb at high speeds.

II. MATERIAL AND METHODS

According to the condition, user will give the input to the microcontroller using keypad switches. Microcontroller will convert the input into ASCII & then the ASCII value is given to output pins of microcontroller on which Li-Fi transmitter is connected. Li-Fi converts ASCII value into visible light spectrum. Now at the receiver side, Li-Fi receiver will receive the message sent by LED and decode the information and gives it to the output display device.

Fig 1. Li-Fi transmitter

It receives the modulated signal send by Li-Fi transmitter and demodulates the signal to recover the original signal. The receiver part detects these flashes using photodiode and then sends demodulated signal to microcontroller.

Fig 2. Li-Fi receiver

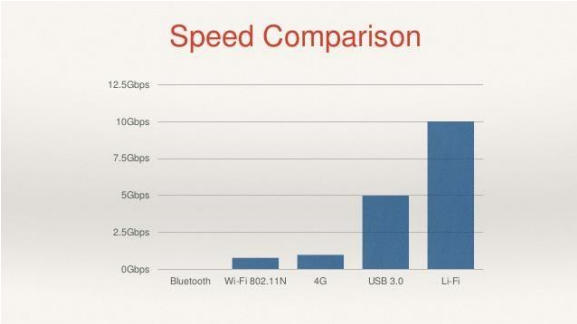
III. RESULT & DISCUSSION

Li-Fi uses the light waves to transmit data wirelessly compared to the radio signals used by Wi-Fi. Thus, it works efficiently within the light source and the environment within the allowed radius which

prevents any unwanted users sniffing the traffic and packets that are being transmitted. Whereas for Wi-Fi, the long-distance capabilities hinder the security as people who are far away can easily monitor packets and potentially carry out a manin-the-middle attack that severely compromises integrity and confidentiality of data.

LiFi could transmit up to 100 Gbps and possibly higher, but this would require a change in lighting technology.

Recent news report that LiFi is 100 times faster than WiFi. The assumption was that the average WiFi speeds are 10 Mbps, and that LiFi can be as fast as 1 Gbps. It is important to highlight that 1 Gbps transmission speeds from an offthe-shelf commercial LED light bulb have not been demonstrated, yet. In this discussion, it is important to compare like-for-like.



Following table is showing a comparison of speed and data density among different wireless technologies.

Technology	Speed	Data Density
Wi-Fi	150 Mbps	*
Bluetooth	3 Mbps	*
IrDA	4 Mbps	***
Li-Fi	>1Gbps	***

Data densities offered by LiFi allows for significantly greater capacity. For example in a room with 6 LiFi integrated lights, each light transmits 42 Mbps leading to a total capacity of 252 Mbps in that room. This results in a reliable and faster user experience.

Data density offers a greater user experience as it reduces the need to share the wireless bandwidth with other users. LiFi can achieve approximately 1000 times the data density of Wi-Fi offering more data per square meter. This is an important factor for wireless efficiency.

IV. CONCLUSION

We have presented an Inter-Vehicle Communication system consisting of a Li-Fi transmitter and receiver that is targeted at communication between vehicles, Li-Fi can be used to communicate with the LED lights of the cars and number of accidents can be prevented. Li-fi is ideal for high density coverage in a restricted region. It is believed that the technology can yield a speed more than 10Gbps.It is the fastest and cheapest wireless communication systems which are suitable for communication. Li-Fi will make all our lives more technology driven in the near future. Further research on Li-Fi is gaining pace in the recent times which will potentially resolve the many unsolved mysteries of the world.

V. REFERENCES

[1]. Noof al abdulsalam, raya al hajri, zahra al abri, zainab al lawati,and mohammed m. bait-suwailam " design and implementation of a vehicle to vehicle communication system using li-fi technology" 2015 international conference on information and communication technology research (ictrc2015).

[2]. "li-fi passes industrial test with bmw's robotic tools". eenews europe. 15 june 2018. retrieved 24 june 2019.

[3]. peakin, will (28 august 2018). "kyle academy first school in world using light tocreate

wireless networks". futurescot. retrieved 30 june 2019.

[4]. k.kalidhas, jerin ninan, jubin mathew chacko, sooraj saseendran, ullas chandran " implementation of li-fi technology for home automation and vehicle communication " ijste - international journal of science technology engineering —volume 2 — issue 10 — april 2016

[5]. s.nachimuthu , s.pooranachandran, b.sharomena aarthi "design and implementation of a vehicle to vehicle communication system using li-fi technology" international research journal of engineering and technology (irjet) volu.me: 03 issue: 05 — may-2016

[6]. d.v.charahte, p. r. wagh,333333 p. v. avhad, s. v. mankar n.s.mankar "design3 of vehicle to vehicle data transmission application using li-fi technology" iosr journal of computer engineering (iosr-jce) e-issn: 2278- 0661,pissn: 2278-8727, pp 26-29

[7]. muntazir mohd tali, aarti patil, sushmita chavan, prof. shailesh jadhav " inter-vehicle communication using li-fi technology" international journal of advanced research in computer and communication engineering iso 3297:2007 certified vol. 6, issue 3, march 2017

[8]. mr. jagdish a. patel, sagar c. dighe, shubhangi s. shinde, yashwant n. memane, suvarna b.mahajan " li-fi technologyvehicle to vehicle data transmission" international journal of innovative research in electrical, electronics, instrumentation and control engineering vol. 4, issue 4, april 2016

[9]. dahmani mohammed, bourzig dounia khawther dihya , meche abdelkrim, keche mokhtal " digital data transmission via visible light communication (vlc) : application to vehicle to vehicle communication" proceedings of 2016 4th international conference on control engineering information technology (ceit-2016) tunisia, hammamet- december, 1618, 2016

[10]. t. n. prabhu,adharsh m.,ashok kumar, m.gokul krishna ,dhayanithi g. "vehicle to vehicle communication using light fidelity" international journal of computer applications (0975 8887)volume 164 no 2, april 2017

[11]. d. passi, b. aggarwal and b. s. rawat, "li-fi: a new era of wireless communication data sharing," international journal of scientific & technology research , vol. 3, no. 10, pp. 118-119, 2014.

[12]. p. verma, d. j. shekhar, p. and d. a. asthana, "lightfidelity (li-fi): transmission of data through light of future technology," international journal of computer science and mobile computing, vol. 4, no. 9, pp. 113-124, 2015.

[13]. fernando n, hong y, and viterbo e 2011 flip-ofdm for unipolar communication systems.

[14]. khan l u 2016 visible light communication: applications, architecture, standardization and research challenges digit. commun. networks 3(2) pp 78–88.

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Application for Payment for Local and International Users as Mobile Wallet (E-Wallet)

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ABSTRACT

This is a digital payment system that allows you to transfer money through credit card, debit card, online banking, banking partners and also helps you to send money to people abroad currency conversion. By keeping money in the Application's wallet you can pay all bills without spending liquid cash anywhere. People don't carry hard cash with them as there are chances that the cash (notes) is torn off or bad in shape. Sometimes there are 1 in million chances that the cash is fake or not valid. So we introduced this app that acts as an E-wallet for users who don't want to carry liquid cash. This app makes it easy to transfer money over the internet using a secure protocol. So we can also link our credit and debit card to this app for faster transactions. Link your bank account so that you don't need to carry hard cash or you don't stand in the long bank queue to transfer money. Yes, we can transfer money from one bank account to another bank account securely. Also if you are trying to send money abroad where the currency changes. This can also send money directly from your bank account or Wallet to a person who is indifferent country automatically converting the currency to the required Country. It can be a breakthrough because no app has been designed to convert currency while sending it to different people based in different countries. Countries other than India doesn't have UPI (Unified Payment Interface) so this application can be the bridge between the two different Currencies. In Future we can use this app to integrate into various Ecommerce Platforms and Bill Payment Platforms.

Keywords : E-wallets, Application for International Payment, Money Transfer, Currency Conversion.

I. INTRODUCTION

A short story about our project and what makes it different Sending money home needs to be quick, affordable and secure. We have used the latest technology to give you payment options at the touch of a button, harnessing a world of information –from cost comparisons to ease of access evaluations and past customer choices –and putting it at your fingertips. It means you can be sure you are getting the best, most convenient deal, every time you need to transfer.

This application can be the breakthrough for sending money online whilst converting the money according to the country's standards. We have streamlined the process of making instant payments. We look at where your recipient is based and pull together the top platforms to send money to, listed by cost, proximity and customer reviews, allowing you to

transfer to a digital wallet or bank account, whichever is best.

Product consist of various components comprises of user interface with Network and Bank API's which helps user to carry out Transactions with a Wallet system and linking of Bank account via Debit or Credit card or Adding Bank Details manually. This is a Digital Payment system which allows you to transfer money through Credit card or Debit card or directly through your bank account online banking application and banking partners. By keeping Money in the application's wallet you can pay bills without spending liquid cash anywhere. So we introduce this Application that acts as E-Wallet for users who doesn't carry cash or want their wallet light

The E-wallet System proposed the various components that will help to transfer money securely and convert the currency by standards which will help users in different countries to spend money. This system works based on the following components:

1] Creating an Account on application.
2] Adding Bank accounts
3] Creating a Wallet
4] Currency conversion and Transfer Sending and Receiving money.

Forget transfer fees. You can issue payment requests at the touch of a button so people can pay you quickly and easily, straight into your Our App account. Or simply use the app to pay bills abroad directly, without the stress of making international transfers.

II. METHODS AND MATERIAL

In a current scenario, whenever we need to do international transaction we need to use or any mobile app like PayPal. But the problem in these situations is sometimes it takes more time, apps may take 2-4 working days and Charges of these institutions and apps are quite high in terms of daily transactions.

Most trending payment apps in India like GooglePay, Phonepe and Paytm supports easy and instant transactions but not useful for international transactions as it works on UPI (Unified Payment Interface) and every country don't support UPI.

III. RESULTS AND DISCUSSION

A. Productivity

Completing a typical undertaking, for example, paying with the e-wallet, ought to infer close to six stages, which is the number of steps it takes to pay with an installment card today (remove the card from the wallet – place it in the installment terminal – type the PIN – click OK – expel the card from the terminal – set it back in the wallet).

B. Utility

The e-wallet ought to give a proper arrangement of capacities that will empower clients to do their ordinary undertakings from the physical wallet, in the manner in which they need to do them. This was picked as a standard for ease of use due to the way that the interviewees had such a large number of various methods for utilizing their wallets.

COMPARISON TABLE

App	Transaction support	Charges	Wallet support
Google pay	Domestic	0%	No
PhonePe	Domestic	0%	Yes
Paytm	Domestic	0%	Yes
AmazonPay	Domestic	0%	Yes
Transwise	International	40.00$	No
Paypal	International	2.9%+0.30$	Yes
Remit2India	International	2.99$	No

InstaRem	International	1%	No
MoneyGram	International	11to49$	No

This table can depict the way and work of these top apps in India. Every app in this table takes a minimum 2 days for a successful transaction.

C. Learn Ability

The client should be able to turn out how to utilize the e-wallet by investigating the interface. This is significant, as individuals don't care for spending quite a while figuring out how to utilize another framework, and two of the interviewees told that they don't peruse guidance manuals. Learn capacity is particularly significant for intelligent items proposed for regular use.

D. Features

Sending money home needs to be quick, affordable and secure. At our App, we have used the latest technology to give you payment options at the touch of a button, harnessing a world of information – from cost comparisons to ease of access evaluations and past customer choices – and putting it at your fingertips. It means you can be sure you are getting the best, most convenient deal, every time you need to transfer.

1) *Send Money*: We have streamlined the process of making instant payments. We look at where your recipient is based and pull together the top platforms to send money to, listed by cost, proximity and customer reviews, allowing you to transfer to a digital wallet or bank account, whichever is best

2) *Money requests and bills :*

Forget transfer fees. You can issue payment requests at the touch of a button so people can pay you quickly and easily, straight into your Our App account. Or simply use the app to pay bills abroad directly, without the stress of making international transfers.

3) *Pool money*

Consider it a savings club. With SUSU you can form a group of 2-10 people, pool money and help each other out. Each member pays in on a monthly or weekly basis and at set intervals a different member receives a lump sum until the whole group has collected the money. It's a smart way to save.

4) *Trust and security*

When dealing with international payments, you want to be in the driving seat. Our App lets you monitor and track all your transactions, using the safest and most reliable ways to pay, every time.

E. Usecase Diagrams

Use case diagrams are usually referred to as behavior diagrams used to describe a set of actions (use cases) that some system or systems (subject) should or can perform in collaboration with one or more external users of the system (actors).

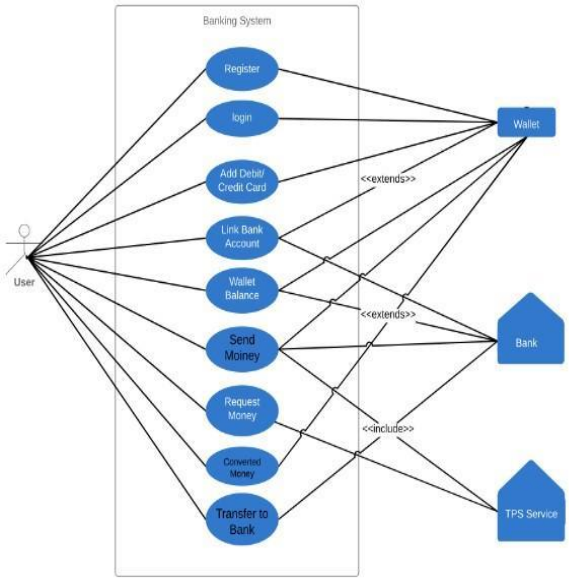
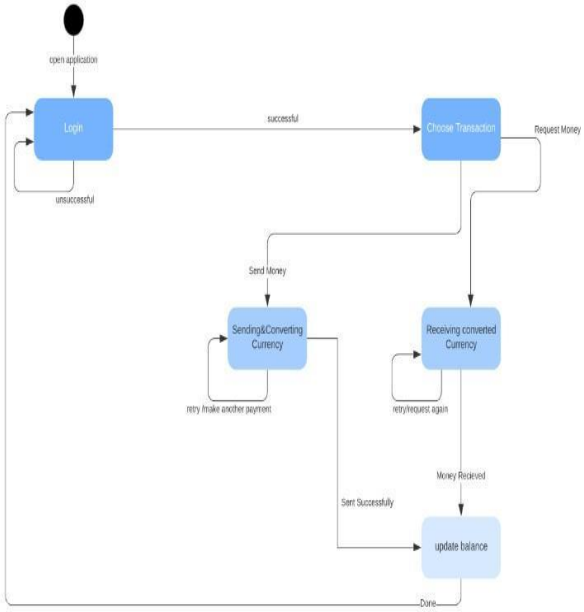


Figure: Usecase Diagram

F. Statechart Diagram:

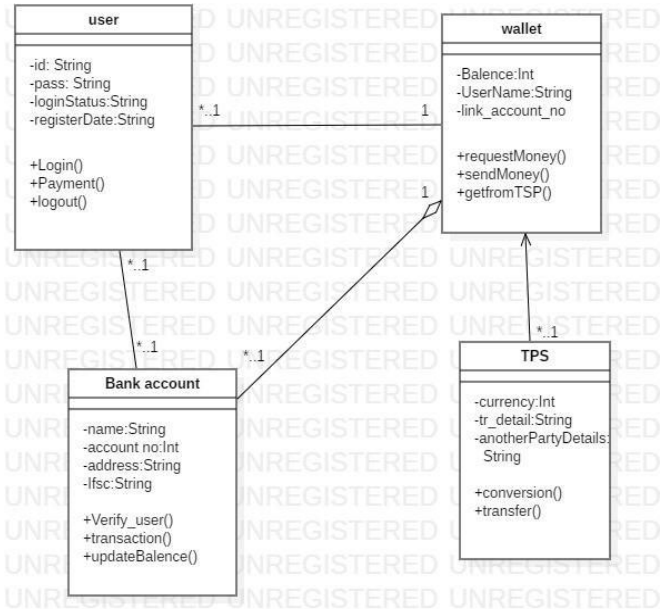
A state graph is a sort of outline utilized in software engineering and related fields to depict the conduct of frameworks. Statecharts necessitate that the framework depicted is made out of a limited number of states now and again; this is without a doubt the case, while at different occasions this is a sensible deliberation. Numerous types of state graphs exist, which vary marginally and have diverse semantics.



G. Class Diagram

H.

The class chart is the fundamental structure square of item situated displaying. It is utilized for general theoretical demonstrating of the efficiency of the application, and for itemized displaying making an interpretation of the models into programming code. Class charts can likewise be utilized for information displaying. The classes in a class outline speak to both the fundamental components, communications in the application, and the classes to be customized.



I. How it Works

Our App is your go-to app for all international payments. We are constantly crunching data and using the latest technology to find the best rates and user preferences. It ensures an easy, streamlined service that takes the hassle out of international payments.

With Our App you get instant international payments at great rates, can pay bills directly from abroad, save money with friends and family, request payments and manage your finances. All with one app.

IV. CONCLUSION

We know that when you live abroad you need quick, easy and secure ways to send money home. So we decided to do things differently, becoming a tech-first company to find the most forward-thinking solutions, rather than being just another money transfer outfit. Our tech whizzes have created an app that does it all, from sending and requesting payments, to paying bills directly and even helping you save with friends and family. We do all the hard work, finding the cheapest local mobile and digital wallets or bank accounts, using previous customer behavior and preferences, so you know your money is being sent the cheapest and most efficient way. It helps bring home that little bit closer.

V. REFERENCES

[1]. Personal Information e-Wallet. Author Name: Sabah S.Al-Fedagh and Mahmoud M. Taha Publish year: 2006

[2]. E-wallet Properties Author Name: Mia Olsen, Jonas Hedman and Ravi Vatrapu Publish year: 2011

[3]. A Study On Paytm Services In Promoting Cashless Economy After Demonetization In India And An Outline On Its Support Towards Making India Digital Author Name: S. NazimSha, Dr. M. Rajeswari Publish year: 2018

[4]. INDIA Sentiment Analysis of Digital Wallets and UPI Systems Using IBM Watson Author Name: Pallavi Maindola , Neetu Singhal , Akash D Dubey year:2018

[5]. Case studies of Paytm, phonepay, gpay and some other e-wallets

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A Fair Resource Allocation Approach in Cloud Computing Environments

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ABSTRACT

Sharing cloud resources between groups of users as well as network is a challenge. Cloud providers do not commonly support users in sharing their spare dedicated resources with others. Development of computer science and technology, application of network education has become more mature. The technology of network resource sharing has been promoted by computers. In developing countries, it is often too expensive for people to acquire a virtual machine (VM) of their own. Users may, therefore, wish to manage costs and increase computational resource usage by sharing their instances with others. This system presents a container based cloud resource sharing (CRS) model for sharing user's computational resources through a social network. In our approach, we have integrated a prototype users account with the computational cloud in localhost to enable tenants to share their unused cloud resources fragment with other users. The performance of the proposed prototype is evaluated under different workloads. Based on our experimental results we conclude that the proposed model using Task Scheduling & Resource Allocation in VM algorithms is well suited for the creation of a low-cost social cloud in developing countries.

Keywords : Cloud Resource Sharing (CRS) model, Virtual Machine (VM), Customize Cloud computing system in localhost, network, Task Scheduling, Resource Allocation

I. INTRODUCTION

In a Cloud Computing environment, cloud users compete for the same shared resources in order to run their applications or store their data. Indeed, Cloud providers try to provide the resources required according to users' requests, thus giving them the illusion of having endless amounts of resources. However, when these resources are insufficient to satisfy user requirements, conflicts may arise. Thus, it is important to design a resource allocation mechanism that shares resources among different Cloud users in a fair manner. Indeed, guaranteeing fair resource allocation consists in providing each user with a percentage or all of the resources requested without monopolizing them and thus penalizing the allocations of other users. An unfair resource allocation can lead to SLA violations.

In this case, users will constantly complain about the unavailability of service and the delays caused by the inefficient management of resources. In addition, it is also necessary to consider security in the process of sharing resources. Indeed, misconduct by one of the users may overload the shared resources leading to a denial of service (DoS) problem, loss of data, etc. Finally, we propose a reallocation mechanism to reduce task delays in accordance with the characteristics of the containers. Results showed that our proposed task scheduling algorithm and

reallocation scheme can effectively reduce task delays and improve the concurrency number of tasks in receiver nodes.

II. PROBLEM STATEMENT

Resource sharing in the cloud Computing environment is the major issues that limited application of the cloud computing. The research work comprises the issue handling of Resource sharing in the cloud Computing approach for online system and provide the flexible solution or environment for sharing their resources in computational cloud in localhost to enable tenants to share their unused cloud resources fragment with other users.

III. OBJECTIVES

1) To clustering cloud Resources and its implementation.
2) To provide resources on the basis of sharing in cloud computing.
3) To implement large scale with vast resources.
4) Available and its utilization on internet, and provides services.
5) Customer satisfaction in solving optimal configuration problem with resource utilization regarding cloud resources sharing on virtual resources.
6) Improve the service quality of service provider.

IV. RELATED WORK

Cloud computing is an emerging model of Business Computing. It distributes computing tasks in a resource pool which consists of many computers, so that various applications can access the cloud as they need. For example, computing ability, storage space and a variety of software services. Cloud computing is the product of grid computing, distributed computing, parallel computing, utility computing, network storage and load balancing traditional product development of computer technology and network technology. In the early 1960's, McCarthy (John McCarthy) proposed to make computing power the same needed as electricity and water utilities to the user. The concept of cloud concern about various areas, Amazon, IBM, Intel, Microsoft, Yahoo, SUN, EMC, Google and other large IT companies invest in the construction of cloud computing platform, provide the corresponding cloud computing services. Cloud computing is defined as a business-friendly operation mode in this mode, users can run their own applications in a shared data center, use these data-centric applications, simply by logging and customization.

Cloud providers do not commonly support users in sharing their spare dedicated resources with others. In developing countries, it is often too expensive for people to acquire a virtual machine (VM) of their own. Hence, we proposed a system for Resource sharing in the cloud Computing approach for online system and provide the flexible solution or environment for sharing their resources in computational cloud in localhost to enable tenants to share their unused cloud resources with other users.

V. PROPOSED WORK

In developing countries, it is often too expensive for people to acquire a virtual machine from public clouds. Users may, therefore, wish to manage costs and increase computational resource usage by sharing the virtual instances with others. This work provides a cloud resource sharing (bartering) platform to help users share their cloud resources through the localhost based social network, just like they would share other content (files). Based on this idea, this work presents a system to help users to share their dedicated resources without the need for money changing hands in different social communities, in a fair trust-based environment and pay cost as per

usage. The results provide a clear confirmation that under different workload conditions, cloud resources can be effectively shared within a social community. This indicates the successful resource sharing using the proposed CRS Model and confirms that the prototype shows great promise in terms of helping users in developing countries access resources which they couldn't otherwise afford. This may help users to save money whilst accessing the latest technology.

VI. CONCLUSION

In this paper, we investigated the influence of resource allocation on the service performance, and identified the resource that has a dominant effect on the service performance, among different resources. We tried to propose a resource allocation model in storage cloud environment that guarantees both fairness and security. Our first contribution consists in proposing a model for resources management based on user's data that guarantees a better availability of resources. In fact, we proposed a cooperative strategy between service providers which consists of forming coalitions. We showed that this strategy allows not only to maximize the cloud providers' gains but also to guarantee a better availability of the resources. Our second contribution consists of proposing an approach of fair and secure resource allocation Cloud Computing environment.

VII. ACKNOWLEDGEMENT

I would prefer to give thanks the researchers likewise publishers for creating their resources available. I'm conjointly grateful to guide, reviewer for their valuable suggestions and also thank the college authorities for providing the required infrastructure and support.

VIII. REFERENCES

[1]. Ashima, Vikramjit singh, A novel approach of job allocation using multiple parameters in cloud environment in International Journal of Computer Technology Jan 2017.

[2]. Mayanka Katyal, Atul Mishra, A Comparative Study of Load Balancing Algorithms in Cloud Computing Environment International Journal of Distributed and Cloud Computing Dec. 2013.

[3]. Sheenam Kamboj, Mr. Navtej Singh Ghumman, An Implementation of Load Balancing Algorithm in Cloud Environment In International Journal Of Computer Technology, July 2016.

[4]. Rajendra K, Jain, Dah-Ming W. Chiu, William R. Hawe, A Quantitative Measure of Fairness and Discrimination for Resource Allocation in Shared Computer Systems, ACM Transaction on Computer Systems, September 1984.

[5]. Shin, K.S., Park, M.-J., Jung, J.-Y., Dynamic task assignment and resource management in cloud services by using bargaining solution, Concurrency Computation: Practice and Experience, 2013.

[6]. Satish Penmatsa, Anthony T. Chronopoulos, Game-theoretic static load balancing for distributed systems, J. Parallel Distrib. Comput, Vol 7, issue 4, pp. 537-555, 2011.

[7]. Ghodsi, A., Zaharia, M, Hindman, B., Konwinski, A., Shenker, S., Stoica, I., Dominant resource fairness: fair allocation of multiple resource types, Proceedings of the 8th USENIX conference on Networked systems design and implementation, 2011.

[8]. Turki Al-Somani, Khalid Al-Zamil, Performance Evaluation of Three Encryption/Decryption Algorithms on the SunOS and Linux Operating Systems.

[9]. D. S. Abdul. Elminaam, H. M. Abdul. Kader and M. M. Hadhoud, Performance Evaluation of

Symmetric Encryption Algorithms, Communication of the IBIMA, Volume 8, 2009.

[10]. Hal R. Varian, Equity, Envy, and Efficiency, Journal of Economic Theory, Vol 9, Issue 1, pp. 63-91, 1974.

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International Journal of Scientific Research in Science, Engineering and Technology

Automatic Detection of Inorganic Substances in Vegetables and Fruits

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ABSTRACT

As the expectation for higher quality of life necessity increases, consumers have greater demands for quality food. Food authentication is the technical means of ensuring food is what it expresses on the labels. A popular approach to food authentication is based on spectroscopy method .This approach is non-destructive and efficient but not cost-effective. This paper presents a computer vision-based sensor system for food authentication, i.e., differentiating organic from non-organic Fruits. This sensor system consists of pattern recognition software and cost-effective Hardware. These diffraction images are then converted into a data matrix for classification by pattern recognition algorithms, including *k*-nearest neighbors (*k*-NN) and support vector machine (SVM) .In this methodology we carry out experiments on a reasonable collection of fruit and vegetable samples and employ a proper pre-processing, which results in a highest classification accuracy in class. Our studies conclude that this sensor system has the potential to provide a viable solution to empower consumers in fruits and vegetable authentication.

Keywords: Sensor System, Diffraction Grating, Computer Vision, Pattern Recognition, Organic Fruits

I. INTRODUCTION

In this paper, we present a low-cost sensor system based on computer vision techniques for authentication purposes, i.e., differentiating organic apples from non-organic ones. This sensor system consists of simple components which are consumer-friendly and do not require expert knowledge to operate. It aims to provide rapid and non-destructive way that can effectively reveal the relationship between fruits data and its categorical information. In particular, the data acquired by our sensor system exhibits strong nonlinearity when the categorical information is based on organic and non-organic. We use SVM, k-NN methodology to achieve classification capability that is comparable to portable NIR spectrometers in differentiating organic apples from non-organic ones. Since NIR spectrometers are costly and require knowledge to operate on them.

Sensor System

The given sensor system aims to acquire image data from diffraction images, i.e., organic and non-organic fruit samples, by coupling low-cost method with computer vision techniques. Using a simple flashlight to illuminate the subject, a diffraction image is generated and captured by a diffraction grating sheet and camera, respectively. Then we apply a series of computer vision techniques, including image pre-processing, segmentation and rainbow generation to convert the diffraction image into a sample vector for analysis, given is the main Architecture of this model.

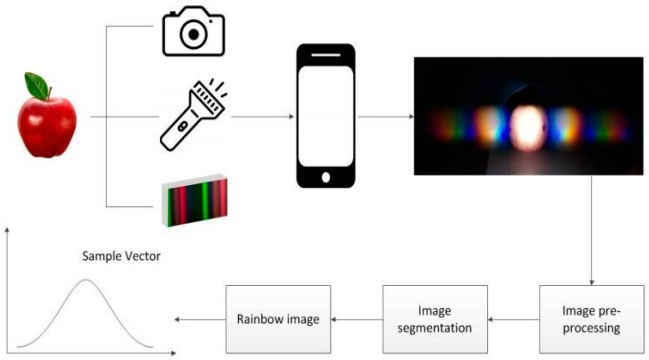

Fig-1: System Architecture

A pattern recognition framework for classifying organic and non-organic data.

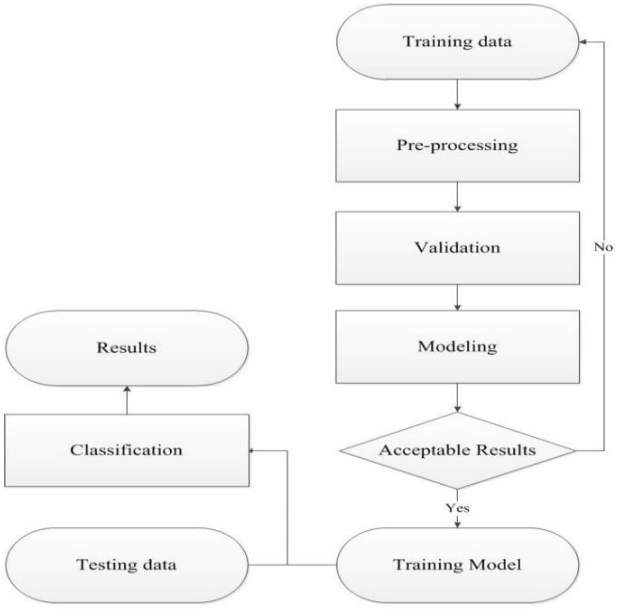

Fig-2: System work flow

II. LITERATURE SURVEY

The table given below shows various existing system or models used so for in the context of fruit classifications.

TABLE I: LITERATURE SURVEY

Sr. No.	Methodology	Advantages	Limitations
1.	Gas Chromatography (GC) with ECD(Electron capture detector)	High Resolution Quick analysis Small sample needed	During injection of sample proper attention required Fixed gas analysis
2.	Reaching High Performance Liquid Chromatography (HPLC) along with Mass Spectrometry (MS)	High accuracy High speed Good sensitivity	High Cost Complex Method
4.	Field scout chlorophyll meter 1000	Portable Easily available online	Costly(approximately 20,000rs per unit) Needs information about software

III. TAXONOMY CHART

TABLE II: TAXONOMY CHART

	Portable	Cost effective	No prior Knowledge	No Lab Setup	Accuracy
Gas Chromatography (GC) with ECD	✗	✗	✗	✗	✓
HPLC with Mass Spectrometry (MS	✗	✗	✗	✗	✓
Field scout chlorop	✓	✗	✗	✓	✓

hyll meter 1000					
PROPOSED SYSTEM	✓	✓	✓	✓	✓

IV. ALGORITHM

A. Diffraction Grating and image Acquisition

Input: Placed Fruit.

Output: Raw unprocessed Rainbow images on Diffraction Grating.

Steps:

1. Place the fruit and click picture with diffraction grating.
2. Use the rainbow Images for further Processing.

.

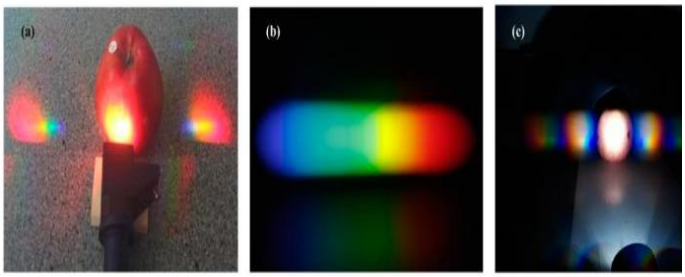

Fig-3: Static Pictures of Setup

B. Rainbow Images Segmentation

Input: capture the image.

Output: Rainbow image file

Steps:

1.Use the Diffracted Image.

2. Process using Otsu, Grey Scale method.

3.Extract the Rainbow Image.

Framework of extracted Rainbow Images:

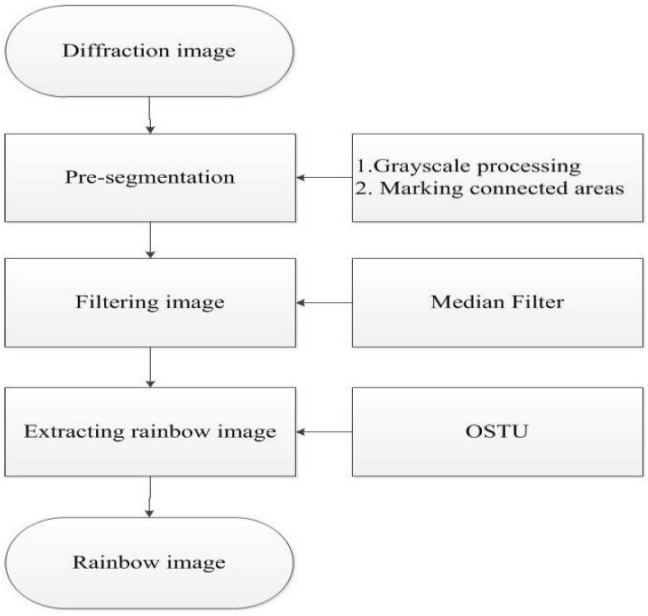

Fig-4: Framework For extracting Rainbow Images

Framework of Extracted Rainbow Images

By using OTSU (Nobuyuki Otsu) method, a single rainbow image is extracted from the original image and converted into colour histogram vectors in RGB colour space. Figure shows the original and processed images by the above procedures

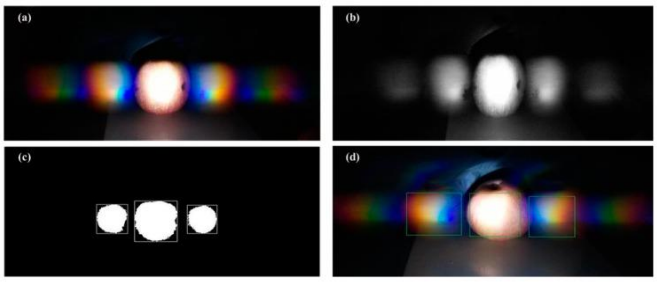

Fig-5: (**a**) The original image; (**b**) gray scale processed image; (**c**) binary image; (**d**) the resulted image.

C. Feature Vector Representation

Input: Rainbow Images.

Output: Feature vectors of Given Image.(RGB)

$F = W1 \cdot R + W2 \cdot G + W3 \cdot B,$

Following image shows the image patterns on organic and inorganic apple respectively.

$$F = W1 \cdot R + W2 \cdot G + W3 \cdot B$$

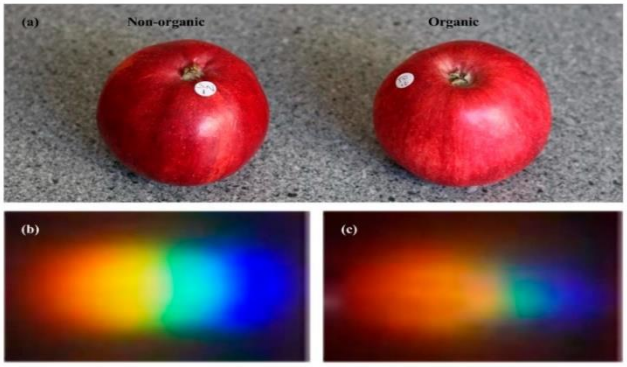

Fig-6: Non-Organic Image(left),Organic Image(right)

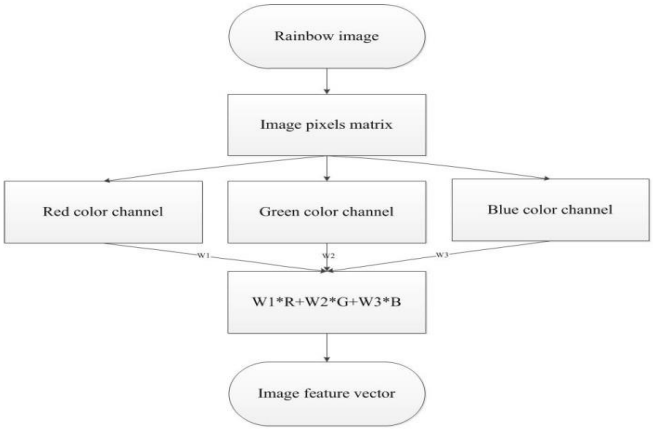

Fig-7: The framework of converting the rainbow image into the image feature vector in RGB colour histogram.

D. Pre-processing

Input: Processed Image Vectors.

Output: Smooth Noise free Data Format.

Steps:

1. Convert the Raw Data vectors into Smooth data points.

2. Represent the Normalized points.

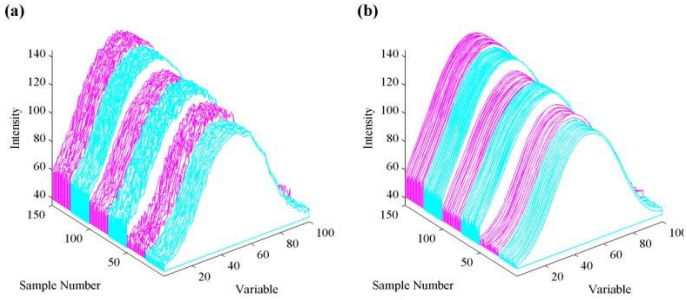

Fig-8: Raw(left) and Preprocessed data(right)

E. Data Analysis

Input: Processed data

Output: Classification into Organic or Inorganic Data using PCA

Steps:

1.Use the sample to Distinct between Organic and Inorganic.

2.Perform Given Algorithms on the data

V. RESULT

Now we compare the given output if the used Algorithms and determine the best and Most Accurate method.

TABLE III: RESULT

Algorithm	Raw	PP	Overall	Non-org.	Org.	Parameter
Knn	72	91	84	75	90	NN-1
SVM	80	89	92	92.7	86.5	C-4

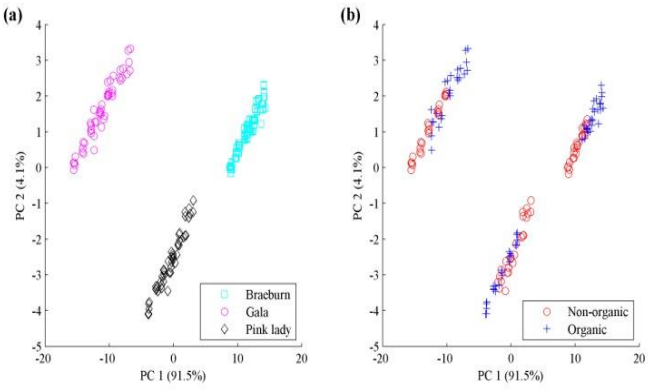

Fig-9: Score plots of the first two dimensions of PCA of apple data

VI. ADVANTAGES

1. Accurate results.

2. Easy to Implement.
3. All Individuals including Buyer and Seller of fruits and vegetables.

VII. LIMITATIONS

Requires a dark environment to capture the Rainbow picture.

VIII. FUTURE WORK

1. To Increase the amount of fruits and vegetable samples in database, which would give a better scope for all specifications of fruits and vegetables.
2. To apply more of the Future algorithms on the data to get even better accuracy in prediction.

IX. CONCLUSION

Based on all the data that have been explained in the earlier sections we can understand that Automatic detection of inorganic substances in vegetables and fruits is profitable for the shop owners and reliable way for customers as there is no such system developed to determine the organic terms of fruits and vegetables.

X. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "Automatic detection of inorganic substances in vegetables and fruits". We would like to thank Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. Ashok Kasnale, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

V. REFERENCES

[1]. Moncayo S., Manzoor S., Navarro-Villoslada F., Caceres J.O. Evaluation of supervised chemometric methods for sample classification by Laser Induced Breakdown Spectroscopy. Chemom. Intell. Lab. Syst. 2015;146:354–364. doi: 10.1016/j.chemolab.2015.06.004.

[2]. Laghi L., Picone G., Capozzi F. Nuclear magnetic resonance for foodomics beyond food analysis. TrAC Trends Anal. Chem. 2014;59:93–102. doi: 10.1016/j.trac.2014.04.009. [

[3]. Nicolai B.M., Beullens K., Bobelyn E., Peirs A., Saeys W., Theron K.I., Lammertyn J. Nondestructive measurement of fruit and vegetable quality by means of NIR spectroscopy: A review. Postharvest Biol. Technol. 2007;46:99–118. doi: 10.1016/j.postharvbio.2007.06.024.

[4]. Wu X., Zhu J., Wu B., Sun J., Dai C. Discrimination of tea varieties using FTIR spectroscopy and allied Gustafson-Kessel clustering. Comput. Electron. Agric. 2018;147:64–69. doi: 10.1016/j.compag.2018.02.014.

[5]. González-Martín M.I., Revilla I., Vivar-Quintana A.M., Betances Salcedo E.V. Pesticide residues in propolis from Spain and Chile. An approach using near infrared spectroscopy. Talanta. 2017;165:533–539. doi: 10.1016/j.talanta.2016.12.061.

[6]. Otsu N. A Threshold Selection Method from Gray-Level Histograms. IEEE Trans. Syst. Man Cybern. 1979;9:62–66. doi: 10.1109/TSMC.1979.4310076.

[7]. Narendra P.M. A Separable Median Filter for Image Noise Smoothing. IEEE Trans. Pattern Anal. Mach. Intell. 1981;PAMI-3:20–29. doi: 10.1109/TPAMI.1981.4767047.

[8]. Soleimanizadeh S., Mohamad D., Saba T., Rehman A. Recognition of Partially Occluded Objects Based on the Three Different Color

Spaces (RGB, YCbCr, HSV) 3D Res. 2015;6:22. doi: 10.1007/s13319-015-0052-9.

[9]. Beyer K., Goldstein J., Ramakrishnan R., Shaft U. Database Theory—ICDT'99. Volume 1540. Springer; New York, NY, USA: 1999. When Is "Nearest Neighbor" Meaningful? Database Theory—ICDT'99; pp. 217–235

[10]. Vapnik V.N. The Nature of Statistical Learning Theory. Volume 8. Springer; Berlin, Germany: 1995. p. 188.

[11]. Barker M., Rayens W. Partial least squares for discrimination. J. Chemom. 2003;17:166–173. doi: 10.1002/cem.785.

[12]. Snee R.D. Validation of Regression Models: Methods and Examples. Technometrics. 1977;19:415–428. doi: 10.1080/00401706.1977.10489581.

[13]. Savitzky A., Golay M.J.E. Smoothing and Differentiation of Data by Simplified Least Squares Procedures. Anal. Chem. 1964;36:1627–1639. doi: 10.1021/ac60214a047.

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Autonomous vehicle controls using Reinforcement Learning

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ABSTRACT

In this paper, we explore a reinforcement learning algorithm to train an agent to drive a vehicle in the OpenAI Gym environment called CarRacing-v0. Gym is an open-source repository created by OpenAI which provides a toolkit for developing and comparing various Reinforcement learning algorithms. The gym library is a collection of environments that can be used to work out reinforcement learning algorithms. Learning to drive in the CarRacing-v0 environment is challenging since it requires the agent to finish the continuous control task by learning from pixels. To tackle this challenging problem, we explored an approach called Deep Q Learning. In this paper we further demonstrate a method to train the agent which learns from raw pixels without providing any hand-crafted features. Some minor environment specific changes were made but the base agent was not provided any knowledge regarding car racing.

Keywords : OpenAI Gym, Reinforcement Learning, CarRacing-v0

I. INTRODUCTION

Now-a-days self driving cars are more and more popular for quick transportation, safety and economic advantages but these cars would only follow orders about destination and route, and may only adopt some lane-tracking or car-following guidance whereas in order to make autonomous driving a truly ubiquitous technology, paper advocates for agents that can learn the ability to drive and navigate in absence of maps and explicit rules, relying just like humans, on a comprehensive understanding of the immediate environment and the various objects in the environment, predict their possible future behaviors and interactions, and then plan how to control it in order to safely move closer to their desired destination while obeying the rules of the environment. This is a difficult challenge for machines that humans solve well, contributing to knowledge. Thus making reinforcement learning a promising approach. Reinforcement Learning is an area of machine learning, aiming at learning the optimal behaviour in an environment by maximizing the cumulative reward. The concept of deep reinforcement learning was introduced recently and was tested with success in games like Go [1] or Atari 2600 [2], proving the capability to learn and understand a good representation of the environment. Reinforcement Learning allows the agent to learn its behaviour based on feedback that is received from the environment. This behaviour can be learnt at the beginning once and for all, or keep on adapting as time goes by. If the problem is modelled properly, some Reinforcement Learning algorithms can perform remarkably well and converge to the global optimum; this is the ideal behaviour that maximises the reward. This automated learning scheme implies that there is no or little need for a human. The time spent on designing a solution will be less, since there is no requirement for hand crafting complex sets of

rules as with Expert Systems. The motive of this paper is to train an agent using the Deep Q Learning algorithm, which can drive in the OpenAI Gym CarRacing-v0 environment. The environment consists of a randomly generated two-dimensional world of racetrack with grass and boundaries. The goal here is to reach the end of the track in as little time as possible.

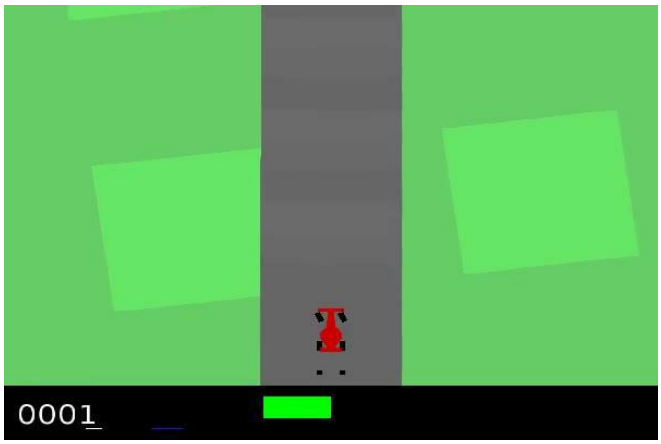


Figure 1 : OpenAI Gym CarRacing-v0 Environment

II. METHODOLOGY

Papers like Playing Atari with Deep Reinforcement Learning on NIPS in 2013 [2] and Human-level control through deep reinforcement learning on Nature in 2015 [4] introduced the concept of Deep Q Networks. DQN is inspired from Q-Learning, where Q-Learning is a model free reinforcement learning algorithm. The main task of a Q-Learning is to learn a policy, which guides an agent to take the best action under any circumstances. Model of the environment isn't required. Thus, the connotation of "model-free". Q-Learning finds an optimal action-selection policy, it maximizes the expected value of the total reward over any and all successive steps, starting from the current state. Before learning begins, Q-table is initialized, Q-Table is just a simple lookup table where we calculate the maximum expected future rewards for action at each state. Basically, the agents will be guided to the best action at each state by the table.

To solve a real-world problem, Q-table is not a feasible solution, owing to continuous state and action spaces. Moreover, a Q-table is environment-specific and not generalized. Therefore, there is a requirement for a model which can map the state information provided as input to Q-values of the possible set of actions.

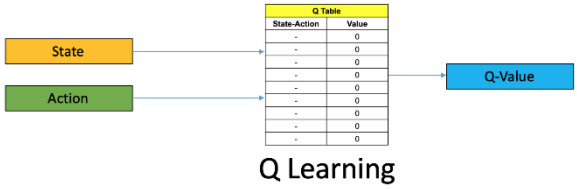


Figure 2 : Q-Learning

This is where a neural network comes to play the role of a function approximator, which can take state information input in the form of a vector, and learn to map them to Q-values for all possible actions.

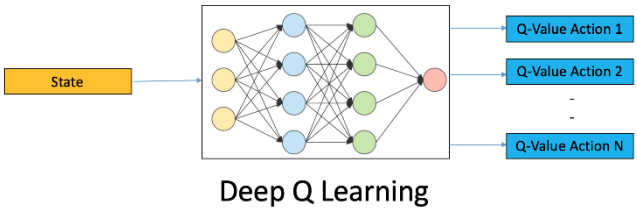


Figure 3 : Deep Q-Learning

Well, all the environments like CarRacing-v0 have one thing in common and that is, all are made of pixels. If the pixels can be provided to a model that can be mapped to actions then it can be generalized across all games [5]. DeepMind's implementation of convolutional neural networks had game image frames, where the inputs and the outputs were the Q-values for each possible action in that environment. Therefore, for our environment or any other gaming environment, a deep Q-network (DQN) consists of consecutive frames as the input to capture the motion and outputs Q-values for all possible actions in the

game. Since a deep neural network is being used as a function approximator of the Q-function, this process is called deep-Q learning.

Originally, the observations obtained from the environment were colored RGB images with a black bar at the bottom to display score number. Since these observation images are the training inputs for the neural network, they were pre-processed to remove unwanted information and improve the training results.

The three channel image was converted to a single channel grayscale.

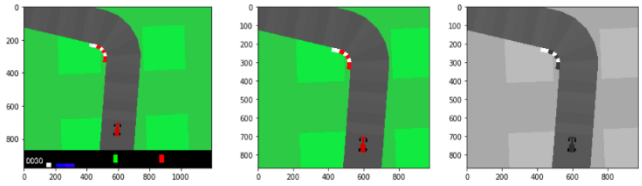


Figure 4 : Image Transformations

The essence of deep Q-learning is the estimation of Q∗ (s, a) using the neural network parametrized by a vector θ.

In RL, the policy or value functions play a vital role in sampling actions. However, this changes frequently as we know better what to explore. As we play out the game, we know better about the ground truth values of states and actions. So our target outputs are changing also. Now, we try to learn a mapping f for a constantly changing input and output. Luckily, both input and output can converge. So if in both input and output, we slow down the changes enough, we may have a chance to model f while allowing it to evolve.

Experience replay: For instance, last million transitions are put (or video frames) into a buffer and sample a mini-batch of samples of size 32 from this buffer to train the deep network. An input dataset is formed which is stable enough for training. As we randomly sample from the replay buffer, the data is more independent of one another. RL training is sensitive to optimization methods. Changes in input during the training cannot be handled as the Simple learning rate schedule is not dynamic enough. Many RL training uses RMSProp or Adam optimizer. This DQN is trained with Adam.

Algorithm 1: deep Q-learning with experience replay.

Initialize replay memory D to capacity N
Initialize action-value function Q with random weights θ
Initialize target action-value function $\hat{Q}$ with weights $\theta^{-} = \theta$
For episode = 1, M **do**
  Initialize sequence $s_1 = \{x_1\}$ and preprocessed sequence $\phi_1 = \phi(s_1)$
  For t = 1,T **do**
    With probability ε select a random action a_t
    otherwise select $a_t = \text{argmax}_a Q(\phi(s_t), a; \theta)$
    Execute action a_t in emulator and observe reward r_t and image x_{t+1}
    Set $s_{t+1} = s_t, a_t, x_{t+1}$ and preprocess $\phi_{t+1} = \phi(s_{t+1})$
    Store transition $(\phi_t, a_t, r_t, \phi_{t+1})$ in D
    Sample random minibatch of transitions $(\phi_j, a_j, r_j, \phi_{j+1})$ from D
    Set $y_j = \begin{cases} r_j & \text{if episode terminates at step j+1} \\ r_j + \gamma \max_{a'} \hat{Q}(\phi_{j+1}, a'; \theta^{-}) & \text{otherwise} \end{cases}$
    Perform a gradient descent step on $\left(y_j - Q(\phi_j, a_j; \theta)\right)^2$ with respect to the network parameters θ
    Every C steps reset $\hat{Q} = Q$
  End For
End For

Figure 5 : DQN Pseudocode

where ϕ preprocess lasts 4 image frames to represent the state. To capture motion, we use four frames to represent a state. At training iteration i we write the network parameters as θi . The loss at this step is given by the temporal difference error.

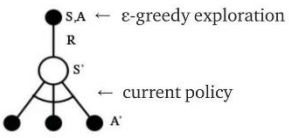
$$\mathcal{L}_i(\theta_i) = \mathbb{E}_{s'}\left[\left(R(s,a) + \gamma \max_{a'} Q(s', a'; \theta_{i-1}) - Q(s, a; \theta_i)\right)^2\right].$$

Differentiating with respect to θi , we find that loss is minimized when the Bellman equation is satisfied, i.e.

$$Q(s, a; \theta_i) = \mathbb{E}_{s'}\left[R(s,a) + \gamma \max_{a'} Q(s', a'; \theta_{i-1})\right]$$

This in conjunction with the fact that neural networks are universal function approximators implies that, given sufficient training data, a DQN will learn the optimal values of Q.

DQN uses ϵ-greedy to select the first action.



In our implementation of DQN we use a simple fully connected architecture where the first layer has 512 nodes. The first layer was fully connected to the second layer which consisted of 11 nodes . We used the ReLU and Linear activation function. We used an

exploration rate of $\gamma = 0.1$ and a learning rate of $\lambda = 0.01$.

III. MODEL EVALUATION

We evaluated our model using conventional CPUs and training 200 episodes took about 12 hours.

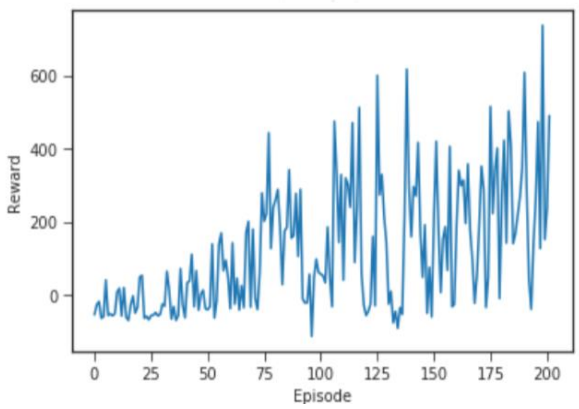


Figure 6 : Episode and Reward Graph - I

It seemed that the initial training didn't actually train at all. When we looked at the actual gameplay, we could see that the car drove only straight and in corners didn't even try to turn. We investigated things further and in several cases, when we restarted the whole learning process, it got stuck by always turning left. So we most probably experienced the explore exploit dilemma. In order to reduce that, we tried to increase the batch size.

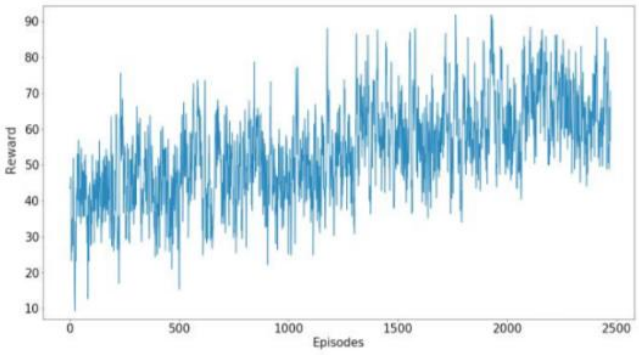


Figure 7 : Episode and Rewards Graph - II

It seemed to be a little bit better, but not by a big factor. And the scores went up and down always very rapidly (a little bit less than in our initial model though). The actual gameplay was improved a little bit - now before the left turns, the car slightly turned to left and the same thing with right corners (only to the right), but after that the car went straight to the grass and the episode restarted. The performance of our models are not appreciable. However, it must be recognized that reinforcement learners require many epochs to reach a decent solution, and we believe that we were an order of magnitude off in the number of necessary simulations that we ran on each of our models. What we are happy about is the clear upward trend in our rewards as the epochs rolled by. Knowing this, we are confident that our best model would have reached a reasonable solution given ample time and computational power.

IV. CONCLUSION

None of us had experience in implementing reinforcement learning algorithms prior to this project, and unfortunately much of our research time was spent trying to make up for this. Of course we would have preferred to use this time to improve our methodology to achieve more convincing results. Though the results didn't live up to our expectations, we learned a lot in the process. Our original proposal for this project was to train the model using multiple RL algorithms like DDPG, DDQN and PPO. It wasn't until the status update when we found out our problem was much harder than we first expected. This forced us to do a lot of our own research on DQNs and be able to somewhat successfully.

V. REFERENCES

[1] Silver, D., Huang, A., Maddison, C. et al. Mastering the game of Go with deep neural networks and tree search. Nature 529, 484–489 (2016). https://doi.org/10.1038/nature16961

[2] Volodymyr Mnih, Koray Kavukcuoglu, David Silver, Alex Graves, Ioannis Antonoglou,

Daan Wierstra, Martin Riedmiller. arXiv:1312.5602. https://arxiv.org/abs/1312.5602

[3] Mnih, V., Kavukcuoglu, K., Silver, D. et al. Human-level control through deep reinforcement learning. Nature 518, 529–533 (2015). https://doi.org/10.1038/nature14236

[4] Shashank Kotyan, Danilo Vasconcellos Vargas, Venkanna U. Self Training Autonomous Driving https://arxiv.org/abs/1904.12738

[5] Wal, Douwe van der and Wenling Shang. "Advantage Actor-Critic Methods for CarRacing." (2018). https://esc.fnwi.uva.nl/thesis/centraal/files/f285129090.pdf

[6] Simon Kardell, Mattias Kuosku, "Autonomous vehicle control via deep reinforcement learning", 2017

[7] Alex Kendall, Jeffrey Hawke, David Janz, Przemyslaw Mazur, Daniele Reda, John-Mark Allen, Vinh-Dieu Lam, "Alex Bewley, Amar Shah "Learning to Drive in a Day", September 2018

[8] Mayank Bansal, Alex Krizhevsky, Abhijit Ogale, "ChauffeurNet: Learning to Drive by Imitating the Best and Synthesizing the Worst", December 2018

[9] Nihal Altunas, Erkan Imal, Nahit Emanet, Ceyda Nur Ozturk, "Reinforcement learning-based mobile robot navigation", March 2016.

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Mobile Rescue Robot

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ABSTRACT

In this modern era, technological development lead the creation of sky scraper buildings and dwellings which increase risks of losing life due to natural and manmade disasters. Many people died by trapping under debris as their presence cannot detect by the rescue team. Sometimes, it is impossible to reach in certain points of the disasters in such calamity hit zones. The situation is worst for developing country like Bangladesh because of low quality design and construction. Hence in this project, we focus on a system named as **"mobile rescue robot"** which will work in disaster environments of manmade structures like collapsed buildings, war fields etc. It can be assisted for firemen, police, and disaster agencies with appropriate reconnaissance, site evaluation, human detection etc.

In the existing technology a wireless Zigbee technology interfaced with micro controller 8051 is used. The main aim of this project was to propose the multipurpose Robot which can be controlled through PC using Zigbee interface and navigates around the disaster areas and tries to find the humans who need help. This method is very cost effective.

In the proposed technology a human body detection Embedded system using reliable

Specific set of sensors like IR, Fire and Ultrasonic sensor to know the distance between human and robot and a camera to acquire a video and image of scene of the environment in which the set of sensors trigger the camera to show live scene. The video is then displayed on pc or laptop which is enhanced by Android programming. This proposed system is less cost effective than the existing technology

Keywords : Body Detection, Natural Calamity, IR Sensor, Ultrasonic Sensor, Robot.

I. INTRODUCTION

Disaster sites may be complex and hazardous to be reached for rescue and there are a great threat and risk linked to rescue workers and survivors trapped in such accidental sites. Natural disasters include floods, storms, cyclones, bush fire earthquakes etc. whereas human induced disasters include transportation accidents, industrial accidents, major fires etc. Hence in this project, we focus on a system named as “human detection robot” which will work in disaster environments of manmade structures like collapsed buildings, war fields etc. It can be assisted for firemen, police, and disaster agencies with appropriate reconnaissance, site evaluation, human detection etc.
In the existing technology a wireless Zigbee technology interfaced with microcontroller 8051 is used. The main aim of this project was to propose the multipurpose Robot which can be controlled through PC using Zigbee interface and navigates around the disaster areas and tries to find the humans who need help. This method is very cost effective.

In the proposed technology a human body detection Embedded system using reliable specific set of sensors like IR, Fire and Ultrasonic sensor to know the distance between human and robot and a camera to acquire a video and image of scene of the environment in which the set of sensors trigger the camera to show live scene. The video is then displayed on pc or laptop which is enhanced by Android programming. This proposed system is less cost effective than the existing technology.

II. LITERATURE SURVEY

In [1], this paper, we proposed an edge matching algorithm for human edge segmentation from 2D images by means of the histogram of oriented gradients technique and SVM classification. The algorithm having four steps, namely image sequence acquisition, human detection, edge segmentation and human edge segmentation, were carried out in this work. Data was collected from 710 full body human image.

In [2], this context, they proposed a new method for human body detection using extended PCA namely bidirectional PCA. There are two advantages of bidirectional Principal component analysis. The first one is preserving the shape structure of objects and the second one is effective computation mechanism.
In [3], this study, human detection is generated by using Face Detection for the first mechanism and for the second mechanism is Head and Shoulders Detection. Both mechanisms are formed in master/slave. Thus, if the master function which is the Face Detection cannot recognize the object as a human, then the Head and Shoulders detection is going to be shown. To minimize the detection failure, the night vision feature is also presented in this study for the surveillance camera prototyping.

In [4], the main objective of this work is to compare the performance of two different human detection algorithms. One is the human detection based on shape and another one is human detection based on Daubechies wavelet Transform. The shape based detection uses the shape information of human body to classify the moving objects. Daubechies wavelet transform is shift invariant in nature. Thus, the algorithm is able to detect even small hand or head movements.

In [5], they proposed a human object identification by using a simplified fast region-based convolutional network (RCNN). Human identification is a problem of considerable practical interest. Here, we propose the state-of-the art method which is tested for major pedestrian datasets. Human detection consists of the body part detectors which detect head and shoulder, torso, and pair of legs, with three, two and four different appearances respectively.

In [6], this describes, body parts detection for pose estimation is implemented. During foreground silhouettes detection, the proposed method have used segmentation techniques to obtained salient region areas and skin tone detection. After successful silhouettes extraction, body parts estimation is applied by using body parts model.

In [7], it presents a human detection method based on HOG features. The method uses a depth map instead of visible light image. We have additional information about the scene through the comprehensive distance information analysis. During the experiment, we used maps of depth received from the Kinect v2 visual sensor.

III. SYSTEM DESIGN

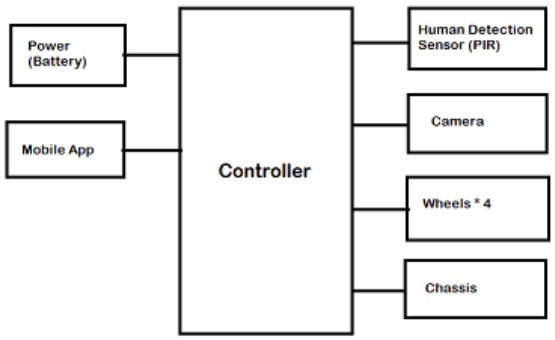

Fig 1 : System Architecture

IV. RESULT

Fig: Mobile Rescue Robot

- Controller is used for over all controlling of robot. It takes input and gives output.
- PIR sensor will keep sensing for human in disaster area. PIR sensor will keep on detecting and if any human is detected it will send the notification.
- Camera module is used to provide images and real time video streaming on the mobile application.

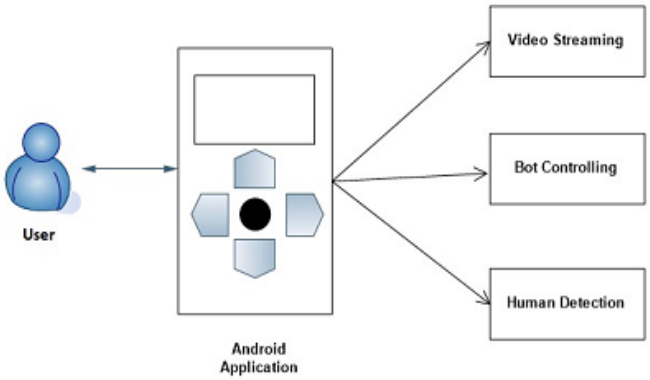

Fig : Working Principle

- We can control the movement of robot and also it will be used to get the view of that area.
- Wheel is used to move the robot and chassis is nothing but the base of robot on which bot is been built.

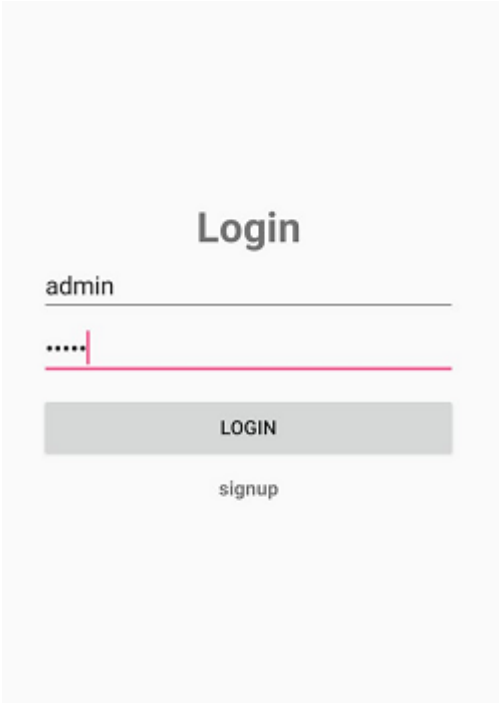

Fig : Login System

- This module is used for login into the system to provide access to authorized user.

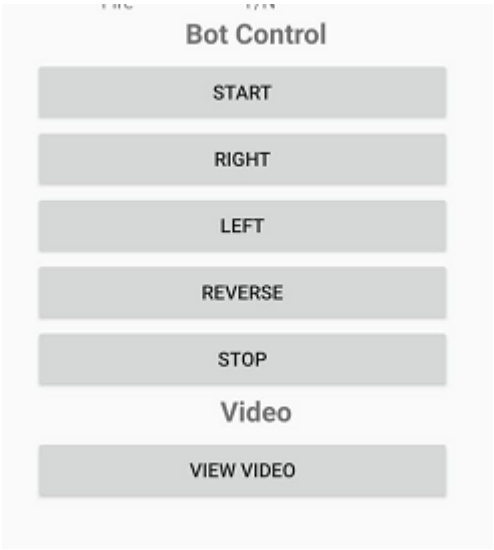

Fig: Remote Control

- This is the remote for controlling the movement of robot.

V. SYSTEM REQUIREMENT

Hardware Requirements:

1. System : Intel I3 Processor and above.
2. Hard Disk : 200 GB.
3. Monitor : 15 VGA Color.
4. RAM : 4GB.
5. Mobile : Android

Software Requirements:

1. Operating System: Windows 7 and above.
2. Coding Language : Java 1.8 Python, PHP
3. Tool Kit : Android 2.3 and above
4. IDE : Android Studio, Python

VI. ADVANTAGES

- This system is an effective and a safe system to ensure that there are no humans left behind in a rescue operation.
- To reduce human resources and time.
- This system can also be used in places which are unreachable to humans.
- The system provides high reliability.
- The system is safe even for the user because of the use of robotics.
- The design of this robot is simpler to understand.

VII. CONCLUSION AND FUTURE SCOPE:

The application of wireless sensor network will improve the saving of many lives by using Mobile Rescue Robot in disaster. This system can detect the existence of human, temperature, humidity, visibility in order to trace the location of victim in disaster areas. The application of wireless sensor network can realize the real time monitoring of affected areas by the natural calamities.

For future work, by adding voice command it helps to communicate with receiver end designated officers with the field war troops.

VIII. ACKNOWLEDGEMENT

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IX. REFERENCES

[1]. N. Dalal, B. Triggs, “Histograms of oriented gradients for human detection.” Proceedings of IEEE Conference on Computer Vision and Pattern Recognition. – San Diego, CA, USA, pp.886-893, 2005.

[2]. V.N. Vapnik, “The nature of statistical Learning theory.” Spring Press. New York, USA, 1995.

[3]. Xx1Microsoft, “Microsoft kinect.” http://www.xbox.com/en-US/xboxone/ accessories/kinect-for-xbox-one [Accessed: 2016-01-06].

[4]. Medina, Antonio. "Three Dimensional Camera and Rangefinder". January 1992. United States Patent 5081530.

[5]. Xx2J. Sell and P. O’Connor, “The Xbox One system on a chip and Kinect sensor,” IEEE Micro, no. 2, pp. 44–53, 2014.

[6]. S. Shah, S. H. Srinivasan, S. Sanyal. Fast object detection using local feature-based SVMs, In MDM, pp. 1-5, 2007.

[7]. N. Cristianini, J. Shawe-Taylor. An Introduction to Support Vector Machines and other kernel-based learning methods, Cambridge University Press, 2000.

[8]. M. Enzweiler, D.M. Gavrila, “Monocular Pedestrian Detection: Survey and Experiments” Pattern Analysis and Machine Intelligence. V. 31, № 12, pp. 2179-2195, 2009.

[9]. A. Memar and E. T. Esfahani, “Human Performance in a Mixed HumanRobot Team: Design of a Collaborative Framework,” in ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. Charlote, NC: ASME, 2016, pp. V01BT02A056–13.

[10]. D. A. Sanders, H. M. Sanders, A. Gegov, and D. Ndzi, “Rule-based system to assist a tele-operator with driving a mobile robot,” in Proceedings of SAI Intelligent Systems Conference. Springer, 2016, pp. 599–615.

[11]. S. Shah, S. H. Srinivasan, S. Sanyal. Fast object detection using local feature-based SVMs, In MDM, pp. 1-5, 2007.

[12]. V.N. Vapnik, “The nature of statistical Learning theory.” Spring Press. New York, USA, 1995.

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Machine Learning Based - Efficient and Automated Online Recruitment System

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ABSTRACT

The hitch with screening and selection of graduated and graduating candidates along with working experience candidates is to occupy right job according to their skills and qualifications. And this is the vital challenge faced by recruitment team from small scale industries to very large scale industries of any domain. To overcome and minimize this problem, we agree to challenge this hitch and aim to build a new system, named as – Efficient and Automated Online Recruitment System. This system will generate fair decisions via CV / Resume analysis and it also aims to screen Job Recommendation for shortlisted candidates to HR (Human Resource) department as well as recruitment team.

Keywords : CV/Resume Ranking, Job Recommendation, Back Propagation Algorithm, Personality Prediction, Neural Network, Machine Learning, Organisation Specific

I. INTRODUCTION

The prior goal of recruitment team is to determine quick, easy and accurate way to computerized candidate shortlisting. Shortlisting is habitually the most challenging and time-consuming step in recruitment process.

The traditional "General Recruitment Process" consists of following rounds-

1. Written Round
2. Coding / Technical Quiz Round
3. Technical Interviews Round
4. Managerial Round and HR Round.

Efficient and Automated Online Recruitment System focuses on CV Sourcing, Screening, Job Recommendation, Personality Prediction and Background Checks. It can also be helpful for ATS, that is, Application Tracking System. It is an intelligent shortlisting method.

For the purposed system **Problem Statement** can be defined as - "The process of short-listing the candidates according to their CV / Resume along with Online Aptitude Test and Psychometric Test".

It enhance the recruitment process with the concept of Machine Learning in following manner -

1. It scans through a plethora of resumes to come up with best possible candidates.
2. It provides understanding of candidate's performance levels.
3. It removes the need for an HR executive to communicate with the candidates directly.

It is an innovative (Intelligent Shortlisting) method which uses concept of Machine Learning (ML) to shortlist candidates on the basis of consistent and fair resume ranking policy. This system will help Human Resource (HR) department and its recruitment team to select the best candidate from the pool of candidates based on resume ranking policy.

II. LITERATURE SURVEY

Here we are discussing few points about why it is necessary to use trending ML technology to develop Efficient and Automated Online Recruitment System.

1. Most companies fail to find top talent.
2. 56% recruiters who say they can make good hires because of lengthy hiring procedures.
3. 82% Fortune 500 executives who don't believe that their companies recruit highly talented people.
4. 23% Managers and senior executives who believe their current acquisition and retention strategies will work.
5. 76% hiring managers who say that attracting top talent is their greatest challenge.
6. 54% employers who currently have open positions for which they can't find qualified candidates.
7. 35% employers who have positions that stays open of 12 weeks or even longer.
8. 46% of recruiters and hiring managers have identified "finding the right candidate" as the biggest hurdle in hiring today.
9. 80% of executives believe that AI can help make processes likes the ones found in recruiting more effective.
10. 52% of talent acquisition leaders say the hardest part of recruitment is screening candidates from a large pool of candidates.
11. 74% of managers and managers believe that they've hired the wrong person for the job before.

Table I: Taxonomy Chart of Existing System versus Purposed System

	Job Recommendation	Aptitude Test	Psychometric Test	CV / Resume Analysis	Short-listing Of CV / Resume
Machine Learning Algorithms In Resume Recommendation System	YES	NO	NO	YES	NO
The applicability of Back-propagation Neural Network for Recruitment Data Mining	NO	NO	NO	YES	YES
The Back Propagation Algorithm For Computerized Pape Evaluation using Neural Network	NO	NO	YES	NO	NO
An E-Recruitment Process With Use of BPM	NO	NO	NO	YES	YES
Our Purposed System	YES	YES	YES	YES	YES

III. Efficient And Automated Online Recruitment System Design

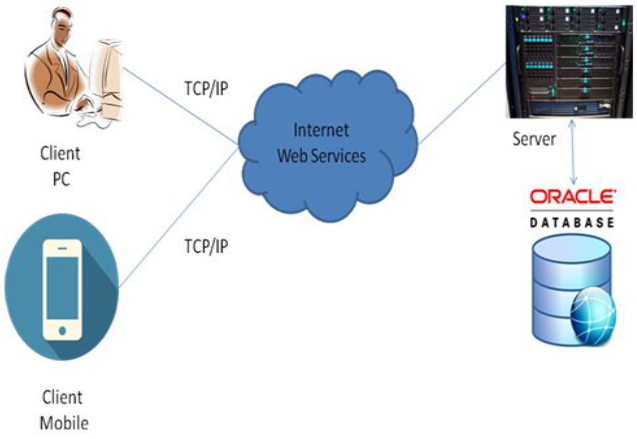

Figure 1: Proposed System Architecture

As shown in figure 1, Client must require a PC / Desktop / Mobile and Internet Web Services with good connectivity to communicate with the system.

Client can be an Admin / User. Admin is allowed for appropriate actions allowed by the organisation to select the candidate on the basis of their test score and resume rank.

User is allowed to register and log-in into the online job portal. After that, he/she can appear for the test. During the test, user must have good internet connection and a web-camera.

The system's database will store the data of each user and it will store CV/Resume of only those candidates whose score is more than or equal to threshold score in the test.

Each user will be assigned a enrolment ID to appear in the test after they register themselves to appear for the test.

IV. Algorithm

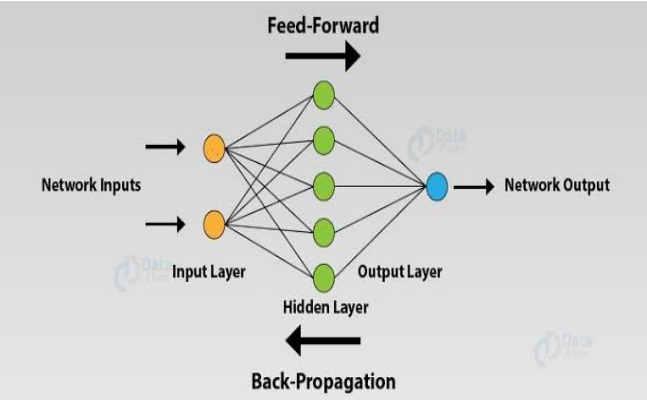

Figure 2: Back Propagation Neural Network Work Flow Diagram

1) Network Inputs via CSV file.

2) Multiplies the inputs with respect to set of weights (w). The weights are usually randomly selected.

3) Apply an activation function.

4) Calculate the output for every neuron from the input layer, to the hidden layers, to the output layer.

5) Error is calculated by taking the difference from the desired output from the data and the predicted output. Mathematically,

$$Error_B = \text{Actual Output} - \text{Desired Output}$$

6) Travel back from the output layer to the hidden layer to adjust the weights such that error is decreased. The weights are then altered slightly as per the error.

7) To train, this process is repeated n times, that is, 1000+ or 2000+ or any positive value. The more the data is trained upon, the more accurate outputs will be generated by the system.

V. Results and Explanation

A. Experimental Setup

The system is built using Django framework using Windows platform. The Visual Code IDE is used as a development tool. The system doesn't require any specific hardware to run; any standard machine is capable of running this application.

B. Dataset

It is a collection of data.

It may be accessed individually or in any combination or managed as a complete data.

Our dataset differs with respect to our proposed model. The best fit dataset to the model results in more accurate results.

C. CNN Working

i.Algorithm 1: Neural Network Algorithm

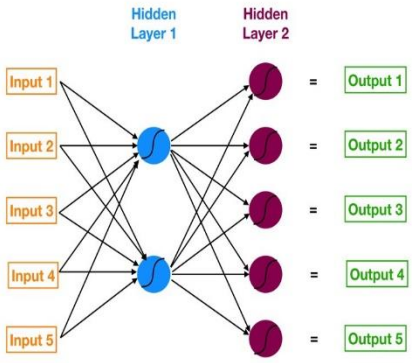

Figure 3: Neural Network Architecture

Working methodology of NN is as follows-

i.Input layer of our model in orange.

ii.Hidden layer 1 of neurons is represented with blue.

iii.Hidden layer 2 of neurons is represented with magenta.

iv.Output layer, that is, the prediction of our model is represented with green.

As shown in figure, arrows that connect the dots resemble how all the neurons are interconnected and how data travels from the input layer all the way through to the output layer.

ii.Algorithm 2: Feed Forward Algorithm

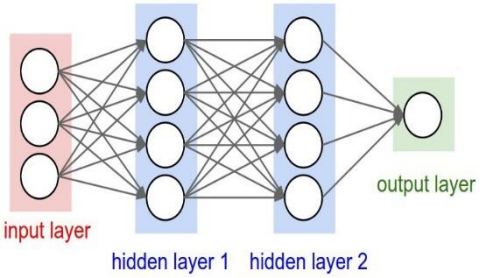

Figure 4: Neural Network with 2 hidden layers

Here, as shown in the figure, the input layer distributes the initial data that then multiply to the hidden units at each layer and at last generates the output layer.

iii.Activation Function

It is a "Hit and Trial" (or Trial and Error) process, where one should try different set of functions and observe which works excellent on the problem dataset.

a) Sigmoid Function

It is a mathematical function having a characteristic Sigmoid Curve, that is, "S" - shaped curve. It is recommended to be used only on the output layer so that we can easily interpret the output as probabilities since it has restricted output between 0 and 1. Mathematically,

$$g(z) = 1/1+e^{-z}$$

iv.Algorithm 3: Back-Propagation Algorithm

It is a widely used algorithm in training feed-forward neural networks for supervised learning. It allows the data to traverse back from the cost backward through the network in order to compute the gradient.

D. Experimental Result

Figure 5: Index Page Design

This is the index page of the purposed system.

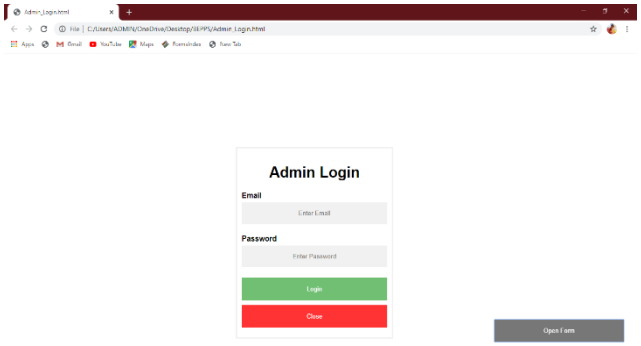

Figure 6: Admin Login Page

This is the admin login prototype. Admin need to verify its credentials in order to perform various operations such as – screening of CV's / Resume, Add / Delete / Modify the aptitude questions etc.

Figure 7: Admin Page Design

After the admin has logged in to the system, he/she can perform various operations such as - Adding Aptitude Question, Adding Personality Question etc.

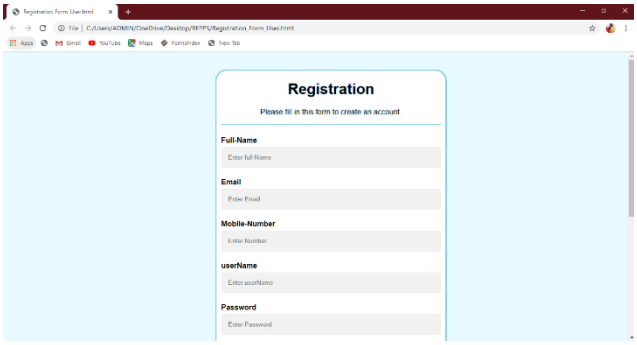

Figure 8: User's Registration Form Design

This is the Registration form for candidate. Here the candidate will register and submit the necessary details to appear for the test.

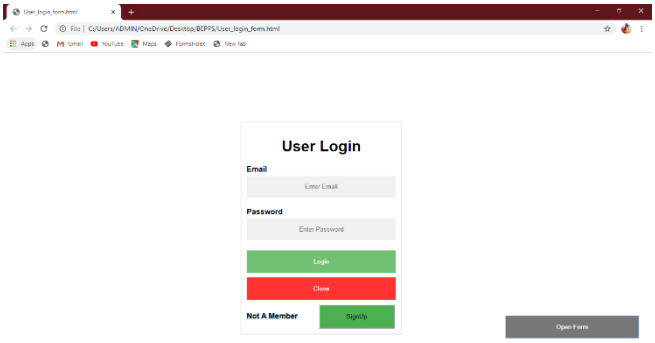

Figure 9: User Page Design

This is the user login prototype. Here, after creating the account (one per student) he/she can check the job details and can appear for the test, if applicable.

VI. Advantages and Limitations

Following are the advantages and limitations of the Efficient and Automated Online Recruitment System-

Advantages	Limitations
This system is organization specific.	This system requires high performance database server as it stores data related to CV's.
This system can be used from small scale	It requires an active internet connection.

industries to very large scale industries.	
It will reduce the workload of the HR department.	May provide inaccurate results, if data not entered in correct manner.
It will help HR department and his/her recruitment team to select the right candidate for specific job profile, which in turn provide expert workforce for the organisation.	The system will require high maintenance as it is a web-based application.

VII. FUTURE WORK

Although in the research one of the most feasible way to evaluate a CV/ Resume was detailed, the domain was kept restricted to the CVs/ Resumes of only engineering students and the amount of training data compared to the amount of test data was relatively small. In addition to that, CVs/ Resumes with some varied layout design are out of the scope of this paper. For the future scope of this research, the methodologies can be used for the data from CVs/ Resumes of other job departments or the whole research can be done in a much larger scope. Additionally, algorithms such as BPNN can be performed to see if it improves the result. Therefore, the future scope is very broad.

VIII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on Efficient and Automated Online Recruitment System. We would like to thank Dr. Sunil Rathod, In-charge, R&D Cell of Computer Engineering Department, DYPSOE (SPPU-PUNE), for giving us all the help and support we needed during course of the Paper writing work. We are really grateful to him.

IX. CONCLUSION

In this paper, we have discussed the issues solved by the purposed system compare to other existing systems. Detailed discussion is shown in the taxonomy chart, that is, table I of Literature Survey.

The purposed system uses the concept of Back Propagation Neural Network Algorithm which helps to

- Simplify the network structure by elements weighted links that have the least effect on the trained network.
- You need to study a group of input and activation values to develop the relationship between the input and hidden unit layers.
- It is fast, simple and easy to program.
- A feed-forward neural network is an Artificial Neural Network.
- Often known as, “Backward Propagation of Errors”.
- It is a standard process to train ANN.

X. REFERENCES

[1]. Rayland E.K and Rosen B “Personnel Professionals Reactions to Chronological and Functional Résumé Formats”, 1987

[2]. Malamitsa, Kokkotas, and Kasoctas, “Graph/Chart Interpretation and Reading Comprehension as Critical Thinking Skills”, 2008

[3]. Kleinbaum and Klein - “Analysis of matched data using Logistic Regression”, 2010

[4]. Callum and Nigam - “A comparison of event models for Naive Bayes text classification”, 1998

[5]. F Evanthia and T Athanasios - "An integrated Recruitment System for automated personality mining and Applicant ranking", 2012

[6]. L D. van der and Nijenhuis - "The General Factor of Personality: A meta-analysis of Big Five intercorrelations and a criterion-related validity study", 2010

[7]. F. Safia and N Asha - "the Impact of Person Organization Fit on Job Satisfaction and Performance of the Employees", 2004

[8]. I Ilke and W Peter - "Personality and Job Engagement", 2011

[9]. D Tantam - "The machine as psychotherapist: impersonal communication with a machine", 2017

[10]. Shen, Brdiczka, and O Liu "Understanding Email Writers: Personality Prediction from Email Messages", 2013

[11]. Allan Robey, Kaushik Shukla, Kashish Agarwal, Keval Joshi, Professor Shalmali Joshi "Personality Prediction System through CV Analysis",2019

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Personalized Smart Mirror

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Department of Computer Engineering, Dr. D. Y. Patil School of Engineering, Lohegoan, Savitribai Phule Pune University, Pune, Maharashtra, India

ABSTRACT

The smart mirror discussed in this paper is mainly for home environment. The paper idea highlights some of the smart mirrors from different companies. These smart mirrors are not widely used due to cost or high requirements of hardware. The proposed smart mirror which addresses the problem of earlier smart mirrors will be operated by Linux OS and will be connected to real world through internet.
The smart mirror will consist of Linux OS, LED monitor, speakers, camera, microphone with two-way mirror and acrylic glass. With the help of voice recognition API, the mirror will communicate with the user through voice commands and responds them accordingly. The mirror could also support human movements. The mirror will highlight some basic amenities like time, local news, and weather. The mirror will also perform some advance functions such as playing music, face recognition, etc. This mirror with artificial intelligence can provide an extraordinary experience to the user which is kept as future development of the proposed work.
Keywords : Linux OS, Web-cam, Smart Mirror, Voice assistance

I. INTRODUCTION

The Future of Mirrors is here Smart mirror which is based on innovation of technology. Smart Mirror consist of a simple LED display which sits behind the mirror and hidden with a Two-Way Mirror and displays white UI elements with a black background. When the Smart Mirror is on, we can see both our reflection and the white elements, allowing software to present relevant information while you get ready for the day. Effective time management is an essential factor in increasing the production of day-to-day life. Integration of technology into people's daily lives has made that time management possible. The use of products such as tablets, PCs, and smartphones have given people access to the tools needed to be productive.

Such a device is expected to have a beneficial effect on society. It will streamline the lives of the users by allowing them to view information important to them and provide easy access to important services they may require. Furthermore, being able to control various household electronic systems from a single device will remove the need for a separate control for each device.

In this paper, we present a personalized mirror that is meant to serve as both decoration and information source. With just one look at the mirror, one will have the basic information on what's going on like news, weather forecast for that day.

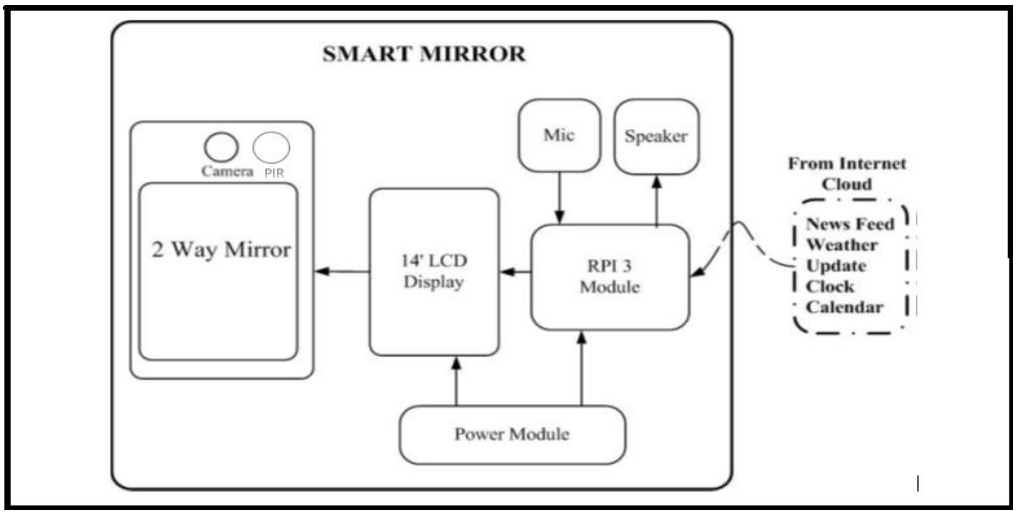

Figure 1: System Architecture

II. LITERATURE REVIEW

Here we discuss the literature review of existing Systems

TABLE-1: TAXONOMY CHART

	Live Streaming	Alert Generation	Network	Music Player	Security
Smart Mirror	NO	NO	YES	YES	NO
Smart Mirror with Voice Assistance	NO	NO	YES	YES	YES
Smart Mirror Virtual Assistance	YES	YES	YES	YES	NO

TABLE-2: LITERATURE SURVEY CHART

Sr. No.	Paper Name	Author	Method Proposed	Limitations
1.	A Comparative Study and New Model for Smart Mirror	Mittal, V. Verma, R. Rastogi	Voice Assistance	Energy Consumption No Authentication.

2.	Smart Mirror Integrated with Smart Assistant	Prof. Sheetal Patil, Prathamesh More, Ritali Rajput.	Sending Notifications via Email Net Streaming	Internet Connection Database to store photos
3.	Smart Mirror using Virtual Voice Assistant	Amit Dhavle, Saurabh Chavan,	Music Player Pocket Friendly	Security Power Supply
4.	Design of Smart Mirror Based on Raspberry Pi	S. L. Herman and C. G. Garrard	Big Data	Security Issues
5.	Smart Mirror for ambient home environment	A. Korkin and F. Rosei	Home Automation System	Not Reliable Data Transfer

III. PROPOSED APPROACH

A. Problem Statement

The goal of the smart mirror is to provide an access point for a person to receive all the information that could affect how they plan for the day. For getting weather updates, a person will always have to switch on the television which is time consuming.

B. Proposed System Overview

For this System we are planning to design and develop kind of mirror which provides a whole new experience to the user hence called Smart. Our proposed smart mirror consists a two-way mirror, acrylic glass, monitor (LED), Linux OS, Node js Modules, Webcam. A wooden frame will be prepared with LED attached behind the glass with all the sensors and the Processor. The power supply is attached to the LED.

Once the mirror is activated, it will connect to the Server which contains all api and software needed to run the mirror. This will require internet access which will be provided by the wi-fi module (LAN can be also used) on the laptop. The virtual layout that will be prepared using HTML and CSS will be displayed on the mirror when it is turned on and will show calendar, weather and news headlines. The script will contain the api of Google (virtual voice assistant from Google) that will respond to the user's voice.

In this system architecture we have following modules:

1) Weather

This module works on openweather api which gives all the information about weather for any location along with date and time module alongside.

2) News

This module specifically designed to extract all the latest updates about current affairs which uses free

news api to access the news and then passes it to the server.

3) Face Detection Module
This module is to be executed at the start of the system which initiates the mirror based on presence of the person in front of the mirror.

4) Date and Time
This module is used for getting date and time on the user display.

5) Entertainment
This field contains various modules which will provide content like Jokes, which can comment on your attire etc.

6) Reminders
This modules is used to store the reminders on calendar for specific date or time which will give user a reminder on that time or when user asks for the data.

C. Algorithm

S = Face Recognition.

∑ = set of input symbols = {Video File, image, character information}

F = set of output symbol = {Match Found then notification to user, Not Found}

δ = 1. Start
2. Read training set of images
3. Resize image dimensions to
4. Select training set of Dimensions,
M: number of sample images
5. Find average face, subtract from the faces in the training set, create matrix A
Where,
Ψ= average image,
M= number of images, and
Γi= image vector.
Gi = Γi – Ψ
Where, i = 1, 2, 3, …, M.
A = [Φ1, Φ2, Φ3…ΦM]
6. Calculate covariance matrix: AA'
7. Calculate eigenvectors of the c covariance matrix.
8. Calculate eigenfaces = No. of training images –no. of classes (total number of people) of eigenvectors.
9. Create reduced eigenface space the selected set of eigenvectors are multiplied by the A matrix to create a reduced eigenface
10. Calculate eigenface of image in question.
11. Calculate Euclidian distances between the image and the eigenfaces.
12. Find the minimum Euclidian distance.

Output: image with the minimum Euclidian distance or image unrecognizable

C = {the system will not process the audio data, Eigenfaces will generate the grayscale images, the algorithm will run only on key frames.}

IV. RESULT

As per the prototype of the model the hardware is built around the LED screen of the laptop which are mirror and frame, webcam etc. the hardware setup of the system looks like the figure below.

Figure 1: Hardware Architecture

when the instance is launched the following results are given by the system.

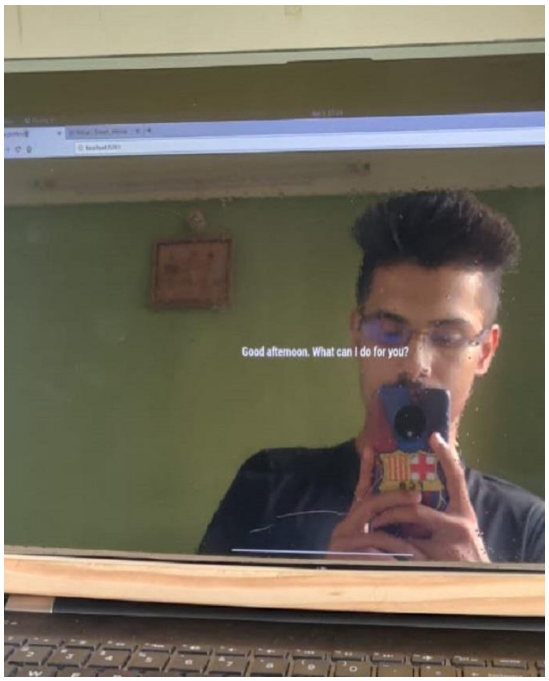

Figure 2: initial interface of mirror

When webcam at the top detects the presence it initiates the mirror and one of many gui pops on screen as shown in fig.1. and when you say “okay mirror” it starts taking commands from the user.

Figure 3: Mirror Showing a Joke

In fig.2 when user asks mirror “tell me a joke” mirror prompts joke on to the screen and read it for the user that's why the speakers are attached to system.

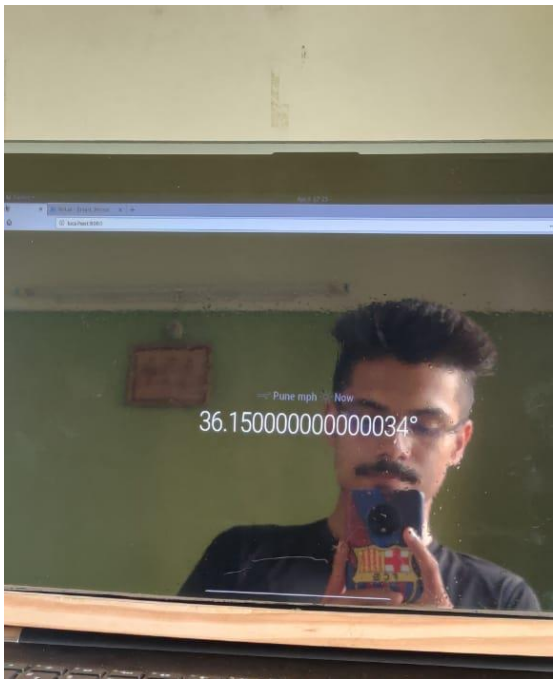

Figure 4: Weather Updates

In fig 3 the weather module is executed when user asks about any specific place, weather for that specific place is shown onto the mirror. Weather is shown along with the wind speed and temperature.

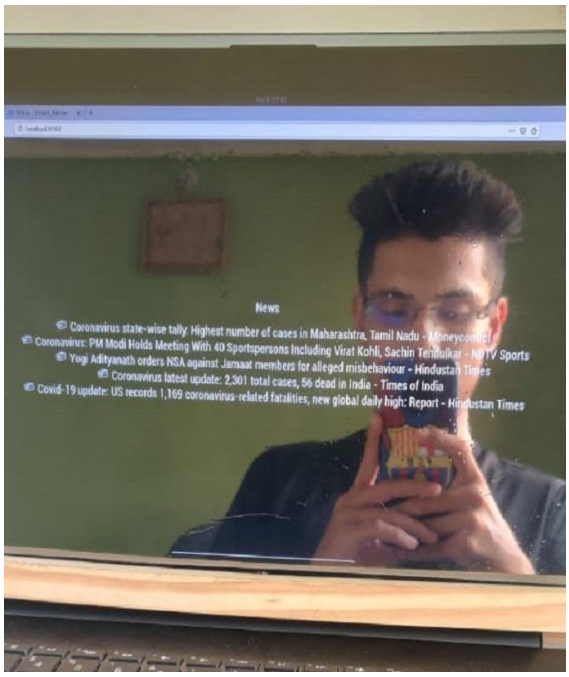

Figure 5: News feed

In the above figure the mirror is showing news feed. On asking the mirror “what's latest” it shows all the latest news feed on to the screen. Mirror can also perform tasks like giving complement showing calendar etc.

V. ADVANTAGES

1. User Friendly interfaces.
2. Home automation.
3. Raises standard of living.

VI. LIMITATIONS

1. More Power Consumption.
2. Strong Network Connection.

VII. CONCLUSION AND FUTURE SCOPE

The main goals of the smart mirror were to aim to reduce time needed in a user's daily routine and provide a merger of user and technology that becomes an enhancement, not a new burden. Apps like their calendar, music, news, to-do lists and weather will be available. The user didn't even have to worry about turning on and off the system because the mirror will detect motion and do the work for them. This will help us reduce power consumption.

VIII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "**PERSONALIZED SMART MIRROR**" and we would like to take this opportunity to thank Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We would also like to thank our Principal Dr Ashok Kasnale for creating a motivating environment and encouraging us towards achieving greater excellence. We are really grateful to him. We also thank all the staff members of our college for their support and guidance.

IX. REFERENCES

[1]. Smart mirror using Virtual Voice Assistance, Datta Meghe College of Engineering, Navi Mumbai, Maharashtra, India, April 2019

[2]. Smart Mirror Integrated with Smart Assistance, Bharati Vidyapeeth, College of Engineering. Pune, Maharashtra, May 2018

[3]. A Comparative Study and New Model for Smart Mirror, Department of CSE, Gelgotias University, Greater Noida, India, December 2017

[4]. C. Lampton, Internet of Things Global Standards Initiative, ITU Retrieved 26 April 2016.

[5]. J. W. Smither, Maker Culture (chapter in Innovating Pedagogy 2013) (PDF). The Open University. Retrieved 20 April 2016.

[6]. S. L. Herman and C. G. Garrard, How Can I Get Started with Home Automation? (2013) Retrieved 20 April 2016.

[7]. A. Korkin and F. Rosei, Magic Mirror (2014) Retrieved 20 April 2016. https://www.raspberrypi.org/blog/magicmirror

[8]. L. J. Slater, GitHub//MichMich/MagicMirror (2016) Retrieved 20 April 2016.

[9]. E. Strickland, H. Hatrie, GitHub/HannahMitt/HomeMirror (2016) Retrieved 20 April 2016, https://github.com/HannahMitt/HomeMirror Smart Mirror Retrieved 20 April 2016. http://smartmirror. io

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Survey on Automatic Quality Assessment of Echocardiograms Using Convolutional Neural Networks

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ABSTRACT

Neural network has been evolving day by day with many features. The core of the neural network lies in the interaction between the neurons in the hidden layer. The neurons interact with each other by considering the weights between them. This results in the output of the system. There are many applications in which neural network can be practiced. This paper proposes Convolutional Neural Networks in medical science. It focuses on echocardiography. The term echocardiography means that the internal structure of a patient's heart is studied through the images. The ultrasound waves create these images. The abnormalities in these images are found through echo.

Keywords : Arduino, Wi-Fi (ESP 8266), Load Cell, Database System

I. INTRODUCTION

Data mining has been gaining number of eye consideration in the past decades. Data mining has proved to be very effective in many fields. This paper focuses on a very popular field i.e. healthcare field where data mining has served many applications. One of the applications in healthcare field is predicting the disease through some parameters which will be useful in decision making before diagnosis. This can save a good amount of life since the decision to be taken for diagnosis should be fast. But what if the decision in incorrect and contain some error? This kind of false decision for diagnosis can take a life out of a person. To avoid such kind of risk it is need to make a system which can be reliable and in which the doctor can easily trust. This paper has focused on echocardiography where the decision is to detect the defect in the four chambers of heart quick and this paper proposes Convolutional Neural Network.

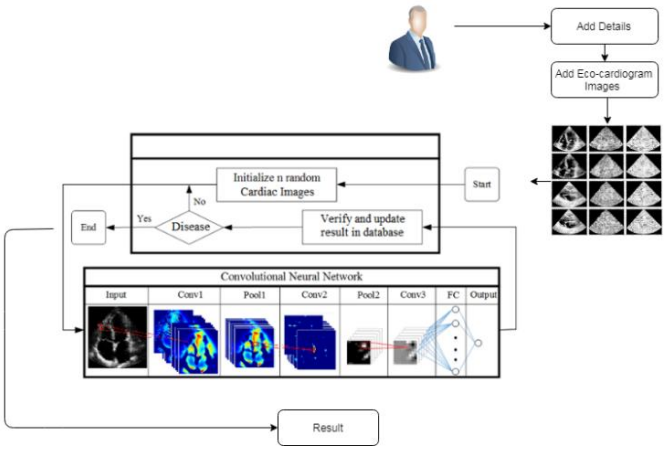


Figure 01 : Architecture

II. LITERATURE SURVEY

Lasse Løvstakken and Fredrik Orderud have proposed, a method for the visualization of the effective aperture of phased-array transducers is described. The method operates in real-time during acquisition, and can indicate if a contiguous part of an aperture does

not contribute in the image formation. They believe the method can be help ensure that a good image quality is obtained in contexts where the acoustic contact or window is likely to be reduced.

The method is based on the k-space formulation of the ultrasound imaging system, which has proven useful for investigating imaging system performance. [1]

J. H. Park1, S. K. Zhou proposed cardiac view classification of echocardiogram using a fully automatic system . After providing an echo study video sequence, the system provides an output as a view label among the pre-defined standard views. The built system is based on machine learning that extracts knowledge from an annotated database. It provides three features: 1) integrating local as well as global evidence, 2) utilizing view specific knowledge, and 3) employing a multi-class Logit-boost algorithm. In this system, the classification is done on standard cardiac views: apical four chamber and apical two chamber, parasternal long axis and parasternal short axis (at mid cavity). Proposed method helps to achieve a classification accuracy over 96% both of training and test data sets and the system runs in a second in the environment of Pentium 4 PC with 3.4GHz CPU and 1.5G RAM. [2].

Xavier Glorot Antoine Bordes Yoshua Bengio have proposed a technique, that shows rectifying neurons are an even better model of biological neurons and yield equal or better performance than hyperbolic tangent networks ,creating sparse representations with true zeros, which seem remarkably suitable for naturally sparse data. Deep rectifier networks reach their best performance without requirement of any unsupervised pre-training on purely supervised tasks . Hence, these results can be seen as a new milestone in the attempts at understanding the difficulty in training deep but purely supervised neural networks, and closing the performance gap between neural networks learnt with and without unsupervised pre-training. [3]

Geoffrey E. Hinton and Vinod Nair have shown how to create a more powerful type of hidden unit for an RBM by tying the weights and biases of an infinite set of binary units, then approximated these stepped sigmoid units with noisy rectified linear units and showed that they work better than binary hidden units for recognizing objects and comparing faces. They also showed that they can deal with large intensity variations much more naturally than binary units. [4]

Sten Roar Snare, Hans Torp, Fredrik Orderud, Bjorn Olav Haugen have proposed a novel method for assisting no expert users in capturing the apical 4-chamber view in echocardiography has been presented. A Wilcoxon signed pair rank test yielded a statistically significant improvement quality. [5]

Sr. No	Publication	Author Name	Paper Name	Year	Objective	Limitation
1.	IEEE	Eva Cavero, A´ lvaro Alesanco, and Jose´ Garc´ıa, *Member, IEEE*	Real-Time Echocardiogram Transmission Protocol Based on Regions and Visualization Modes	2014	Provide system for no expert users in capturing apical 4-chamber views (A4CH) during echocardiography.	Need to improve the detection of foreshortening/oblique cuts.
2	IEEE	Ronak Guptaz Santanu Chaudhuryz Navneeth Subramanian? Satish Govindy z Indian Institute of Technology Delhi, New Delhi, India ? GE Global Research, Bangalore, India y Narayana Institute of Cardiac Sciences, Bangalore, India	ECHOCARDIOGRAM VIEW CLASSIFICATION WITH APPEARANCE AND SPATIAL DISTRIBUTIONS	2015	Provides a single exclusive prediction for each image.	Need to Improve different loss function and used multiple objects per image.

Sr. No	Publication	Author Name	Paper Name	Year	Objective	Limitation
3	IEEE	*R. Mahmood1, T. Syeda-Mahmood2* 1Monta Vista High School, Cupertino 2IBM Research – Almaden, San Jose, CA	Automatic Detection of Left Ventricular Aneurysms in Echocardiograms	2015	Provide strong evidence that dropout is a useful technique for improving neural networks.	Need to improve the quality of features by reducing co-adaptations.
4	IEEE	Beatriz González, Patricia Melin and Fevrier Valdez Tijuana Institute of Technology Tijuana, Mexico	Interval type-2 fuzzy logic gravitational search algorithm for the optimization of modular neural networks in echocardiogram recognition Beatriz	2016	This system Present Caffe, a fully open source framework that affords clear access to deep architectures.	Current system improved by users in speech recognition, robotics, neuroscience, and astronomy.
5	IEEE	Amir H. Abdi, Student Member, IEEE	Automatic Quality Assessment of Echocardiograms Using Convolutional Neural Networks: Feasibility on the Apical Four-chamber View	2017	This paper explores sequential optimization strategies for hyper-parameter optimization for these two datasets	This research would lead to widespread use of echo at any point-of-care

Sr. No	Publication	Name	Paper	Year	Objective	Limitation
6	IEEE	Deyu Sun, PhD *Philips Research North America* Cambridge, MA, USA	Extracting Key Findings Compared In an Echocardiogram Report	2018	Improve the accuracy by incorporating more search patterns, expecially for detecting the statement of current findings written in free text.	Quality of a historical collection of finalized echocardiographic reports.
7	IEEE	Xin Wang Philips Research North America Cambridge, MA	Representation Learning of Finding Codes in Structured Echocardiogram Reporting	2018	accurately detect comparisons in LV size, RV systolic functions, aortic regurgitation, and aortic stenosis (gradient), with 100% of precision, recall, and F-score.	Testing the proposed algorithm on more clinical sites and evaluating a potential mapping strategy between FCs used in different institutes.

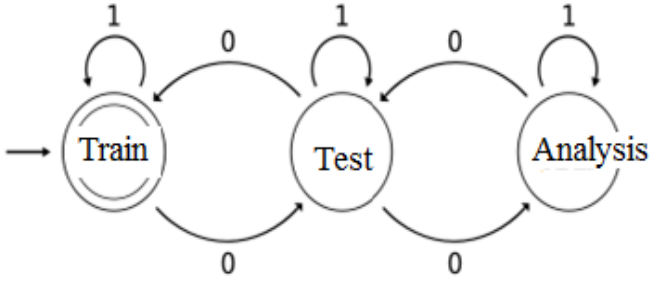
III. MATHEMATICAL MODEL

A System has represented by a 5-different phases, each phase works with own dependency System S = (Q, ∑, δ, q_0, F) where –

- **Q** is a finite set of states.
- **∑** is a finite set of symbols called the alphabet.
- **Δ** is the transition function where δ : Q × ∑ → Q
- **q_0** is the initial state from where any input is processed (q_0 ∈ Q).
- **F** is a set of final state/states of Q (F ⊆ Q).

All t(n) policies will return 1 then from training patterns and it generate the similarity weight of fitness function of specific rules.

Q = {VaiSet[i=0…….n]} set of generated attribute of various images as initial set
∑ = {data conversion, saveinDB}
Δ = {_CorrecltyclassifiedInstnaces*100 / SumF(x)}
q_0 = {First event generated by sensor function ∑ i=0 }
F = {Generated report according to class [a,b,c…n]}



State Transition Diagram

IV. ALGORITHM

Disease Prediction using Machine Learning

The proposed system predicts the disease according to training policies, the input has given for proposed Q-Learning algorithm to generate image score from CNN module.

Q- Learning Algorithm

Input: Image score which is generated from CNN module, Desired Threshold Th.

Output: Trigger executed for output as lable.

Step 1 : Read all records from database (R into DB)

Step 2: Parts [] ← Split(R)

Step 3:

$$CVal = \sum_{k=0}^{n} \mathbf{Parts[k]}$$

Step 4: check (Cval with Respective threshold of TMin[1…n] and TMax[1…n])

Step 5: T← get current state with timestamp

Step 6 : if(T.time > Defined Time)

Read all measure of for penalty TP and reward FN

Else continue. Tot++

Step 7: calculate penalty score = (TP *100 / Tot)

Step 8 : if (score >= Th)

Generate event

end for

V. RESULT

Dataset:

The dataset is fed into the system. This dataset contains echocardiography images of patients who are previously diagnosed i.e. their decision tend to be true. Dataset is divided into three set i.e. trainset, tuneset and testset.

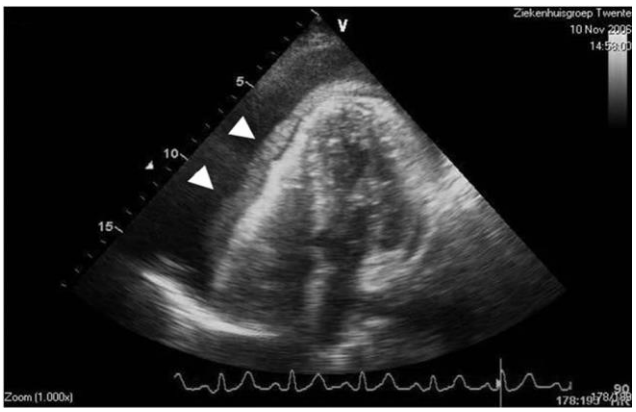


Figure 02 : Example images of Dataset.

Convolutional Neural Network, Training and Result

System uses CNN algorithm to detect the disease from given ECG image. System has used three layers of the CNN these are Convolutional Layer, Pooling Layer and fully connected layer. CNN algorithm first extracts the features from the images then it generates the patterns and finally it classifies the images.

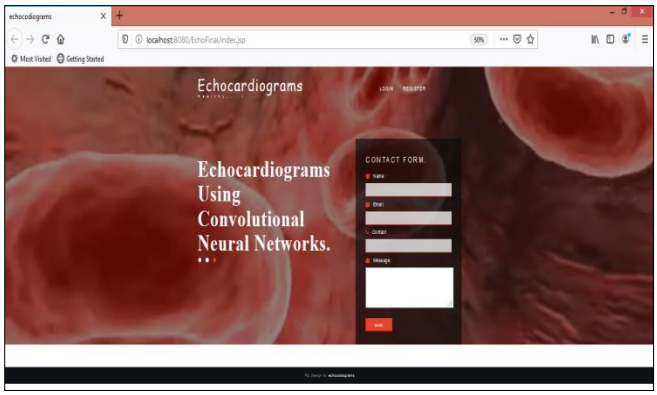


Figure 03 : Home Page (Registration)

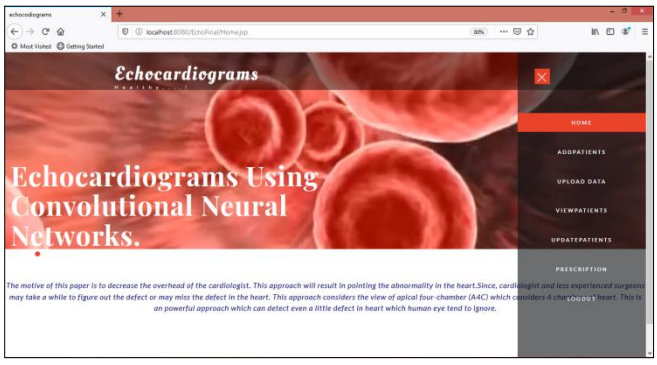


Figure 04 : After successful login

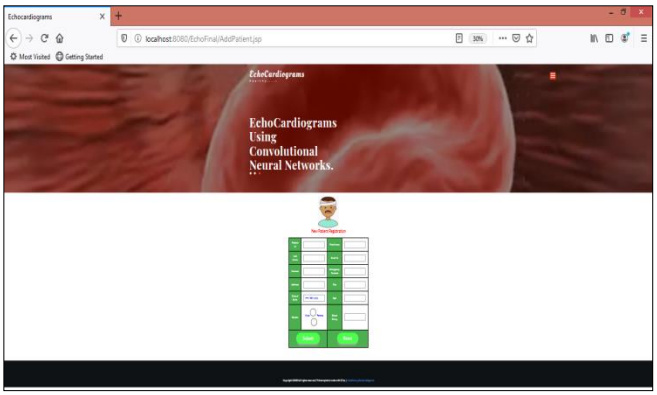


Figure 05 : Adding Patients Data.

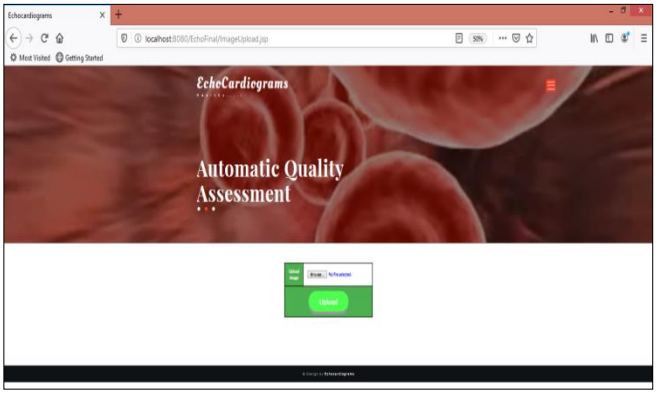


Figure 06 : Upload Image

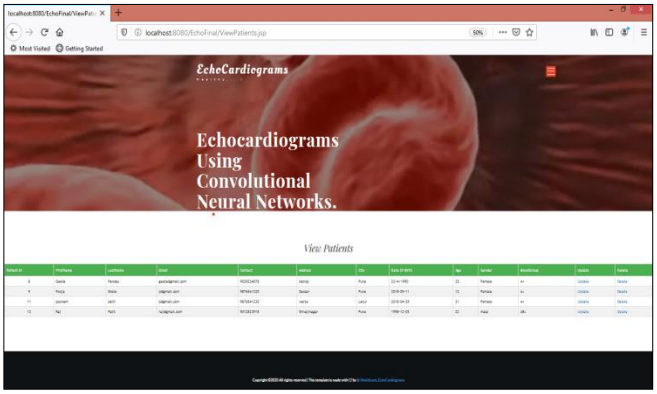


Figure 07 : Patient Details

Here, convolutional layer and pooling layer, both layer work together. First it represents the image into three-dimension vector space then applies filters to convert that image into 2 dimensions. Again fully connected layer applies the filters to recognize the image. After training the system when we pass the

image to test it, as per the specified categories it classifies the image and detects the disease accurately. After disease detection system suggests the medicine on the detected disease.

VI. CONCLUSION

Propose approach provides framework for automatic quality assessment of echo data using deep neural network model. The goal of proposed technique is to improve echo by reducing observer variability in data acquisition using a real-time feedback mechanism that helps the operator to read just the probe and acquire an optimal echo. By minimizing operator dependency, this research can lead to widespread use of echo at any point-of-care, hence it would enable early diagnosis and treatment of patients having high-risk, with improved accuracy, quality assurance, workflow, and throughput.

VII. FUTURE WORK

As per the existing system that analyses images from database to detect the disease from four chambers. In our proposed system for enhancement, CNN is used as a technique which will locate the defect in the four chambers of heart, like Left Ventricle (LV), Right Ventricle (RV), Left Atrium (LA) and Right Atrium (RA). after that suggestions or recommendation will be provided in the form of medicines to the patients as per the respective disease that occurs in part.

VIII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "Survey On Automatic Quality Assessment of Echocardiograms Using Convolutional Neural Networks". We would like to take this opportunity to thank Prof.Nilesh Mali for giving us all the help and support. We need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr.Ashok Kasnale,Principal DYPTC who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

IX. REFERENCES

[1]. Amir H. Abdi, Christina Luong, Teresa Tsang, Gregory Allan, Saman Nouranian, John Jue, Dale Hawley, Sarah Fleming, Ken Gin, Jody Swift, Robert Rohling, and Purang Abolmaesumi, "Automatic Quality Assessment of Echocardiograms Using Convolutional Neural Networks: Feasibility on the Apical Four-chamber View". TMI.2017, IEEE Transactions on Medical Imaging.

[2]. L. Løvstakken, F. Ordernd, and H. Torp, "Real-time indication of acoustic window for phased-array transducers in ultrasound imaging," Proceedings of IEEE Ultrasonics Symposium, pp. 1549-1552, 2007.

[3]. J. H. Park1, S. K. Zhou, "Automatic cardiac view classification of echocardiogram," Proceedings of the IEEE International Conference on Computer Vision, pp. 0-7, 2007.

[4]. X. Glorot, A. Bordes, and Y. Bengio, "Deep Sparse Rectifier Neural Networks," Aistats, vol. 15, pp. 315-323, 2011.

[5]. V. Nair and G. E. Hinton, "Rectified Linear Units Improve Restricted Boltzmann Machines," 27th International Conference on Machine Learning, pp. 807-814, 2010.

[6]. S. R. Snare, H. Torp, F. Orderud, and B. O. Haugen, "Real-time scan assistant for echocardiography," IEEE Trans. Ultrasonics, Ferroelectrics, and Frequency Control, vol. 59, no. 3, pp. 583-589, 2012.

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Traffic Management System for Emergency Vehicles in City

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ABSTRACT

Many people lose their life due to Emergency Vehicle unable to reach hospital because of blocked roads by traffic jams and number of these scenarios are getting increased day by day. In smart emergency vehicles different sensors like temperature sensor, heart rate sensor will be judging status of patient values, the status of these health values will be received by hospital's database simultaneously traffic signals will be operated by using RFID technology. After getting status of patient values, hospital authorities will plan accordingly. As the smart ambulance will reach within range some meter, signal will be turned to green if it is red, the communication between smart ambulances will be done by Wi-Fi network through cloud.
Keywords : Smart traffic, smart ambulance, RFID reader, ESP8266.

I. INTRODUCTION

By considering the current traffic conditions in India, ambulance service gets highly affected. People loses their life due to not getting timely and proper treatment which is a serious issue. In emergency situations time is a very important factor, so we have proposed a system to encounter this problem.

Our system i.e. 'smart traffic with ambulance', for ambulance gives a special path in which all the red signals will be turned to green for the ambulance which helps the ambulance in reaching its destination within time. Generally, the ambulances pick up the patients and take him to the hospital, after reaching the hospital, the actual treatment starts. In this so much time is wasted and the patient might lose his life. Our system continuously analyse vital health parameters of the patient like blood pressure, heart rate, body temperature in the ambulance itself and send it to the hospital's database while reaching the hospital, so the hospital authorities will know what Type of treatment to be given to the patient, saving so much time which ensures to save patient's life.

In this system, we are implementing smart ambulance system web Based Medical System. This system was implemented based on present criteria that tracking patient health records and another one is making traffic monitoring during the emergency ambulance using IoT.

II. LITERATURE SURVEY

Sr.No.	Paper Name	Method Proposed	Limitation
1.	Smart Ambulance Approach Alarm System Using Smartphone	Using Mobile alarm for another vehicle to get alert.	Unnecessary complex design of mobile siren.

2.	A Novel Approach to Implement Green Wave system and Detection of Stolen Vehicles	Clearing the path of ambulance till hospital	Managing traffic with much more hardware than required.
3.	Smart Ambulance System using IoT	Sending patient data from ambulance to hospital cloud	Costly because of the equipment's presence in ambulance
4.	RFID-Based Smart Traffic Control Framework for Emergency Vehicles	Changing traffic with RFID tags and reader	Only traffic is cleared no other facility.
5.	Intelligent Traffic Management System for Prioritizing Emergency Vehicles in a Smart City	Using IOT devices for traffic management	Centralized database management system and more vulnerable.

III. SYSTEM ARCHITECTURE

We have implemented smart system. In implemented system we are making smart traffic signals which identify the emergency vehicles by reading the RFID tag placed on emergency vehicle, the tag will be read by RFID Reader which will be placed at certain distance from traffic signal according to traffic density in particular area. All the emergency vehicle containing RFID tag unique number and other vehicle details will be stored in the database, so that only emergency vehicle will be able to change the traffic signal by identifying its identity in database.

Our system also helps to analyse the patient's health, we have used heart beat sensor to measure heart beat and temperature sensor to measure temperature which will be send to hospitals for pre-preparation.

Below diagram shows system architecture.

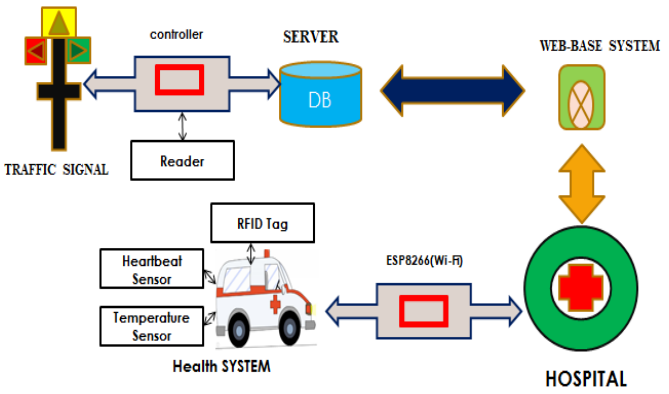

Fig 1. System Architecture

A. System Flow

This system consists of health analysis and traffic control system in an ambulance, signal, and a cloud server (Fig.1). The ambulance application is used for sending the patient health records based on the heartbeat sensor and temperature sensor during traveling one position to another and information continuously send to the cloud server. We designed the RFID based technology to detect the ambulance

before traffic signal for clear the signal to fast reach at the hospital.

B. The general Ambulance Vehicle application

We developed this application as a Web application. After Admin authentication, it displays the patient health values from the ambulance vehicle, here admin check the patient heartbeat values, temperature values from the cloud server (Fig.1).

C. The cloud server application

After getting the request from ambulance vehicle using the ESP8266 for Wi-Fi network, it replies to the server patient records to hospital admin for analysis.

D. RFID Tag detection and Ambulance verification

RFID tag will be placed on top of the ambulance for convenient tag detection. Details of Ambulance (EMv) places with RFID tag will be stored in database so that no other vehicle other than Ambulance (EMv) will not be able to change the Traffic signal.

E. Traffic Signal Control

Traffic signal will be placed with Arduino Uno which will be connected to database. So, when the RFID reader reads the tag the signal will be send from RFID reader to Arduino Uno then the Arduino will check for ambulance details in database and when it matches the requirement the Arduino will change the signal

Hardware Component:

1. ESP8266

Fig 2. Wi-Fi model

Feature:

- Voltage:3.3V.
- Wi-Fi Direct (P2P), soft-AP.
- Current consumption: 10uA~170mA.
- Flash memory attachable: 16MB max (512K normal).
- Integrated TCP/IP protocol stack.
- Processor: Tensilica L106 32-bit.
- Processor speed: 80~160MHz.
- RAM: 32K + 80K. · GPIOs: 17 (multiplexed with other functions).
- Analog to Digital: 1 input with 1024 step resolution.

2. RFID Reader

Fig 3. EM-18 Reader

Feature:

- Voltage: 5VDC
- Current: <50mA
- Operating Frequency: 125Khz
- Read Distance: 10cm
- Size: 32mm(length) * 32mm(width) * 8mm(height)

3. RFID Tag

Fig 4. RFID card

Feature:

- Highly efficient
- Stringently tested for their quality
- Highly reliable

4. Heart beat Sensor

Fig 5. Heartbeat sensor

Feature:

- Use IR LED and an optical transistor to detect pulsation in fingers
- Small and Compact module
- Easy to use.

5. Temperature Sensor

Fig 6. Temperature sensor

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. Since it has Linear + 10.0 mV/°C scale factor it is very easy to calculate temperature value.

IV. ALGORITHMS

A. Health prediction for heartbeat and temperature calculation-

Input:
Sensor attached to patient.
Output:
Patient Heartbeat and temperature.

Algorithm:
Step 1: Start

Step 2: Microcontroller configuration.

Step 3: Temperature sensor initialization.

Step 4: Heart pulse rate configuration.

Step 5: Check temperature and heartbeat threshold value

Step 6: if (heartbeat > threshold(ie.required) value) OR if (temperature > threshold value)

else, buzzer will active.

if (heartbeat < threshold value) OR if (temperature < threshold value)

else, buzzer will active.

Step 7: Stop

B. RFID Verification -

Input:
Detecting RFID Tag placed in emergency vehicle.
Output:
Vehicle Details and changing traffic signal.

Algorithm:
Step 1: - If any ambulance comes near signal.
Step 2: - Capture the ambulance TAG Number.
Step 3: - Send the number to Server.
Step 4: - TAG Number of ambulances is input to the system.
Step 5:- Check details of Ambulance.
Step 6:- Retrieve the vehicle's details from the database matching with the TAG number.
Step 7:- Send the signal notification when verified from server.
Step 8:- Automatically signal changed and clear the ambulance road.
Step 9:- Repeat steps 1-8 for each time.
Step 10:- Stop

V. RESULTS

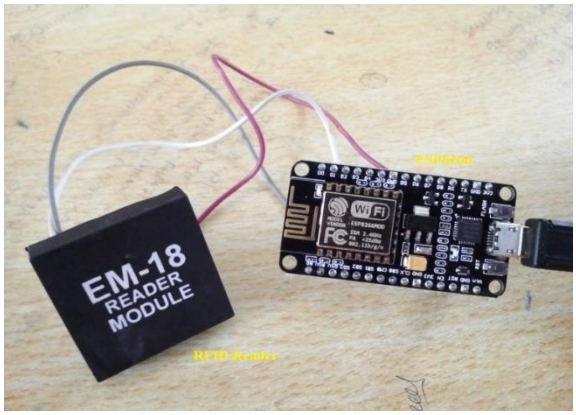

Figure 1: RFID reader with esp8266

In the above fig.1, we have used EM-18 RFID reader to read tag placed in ambulance.

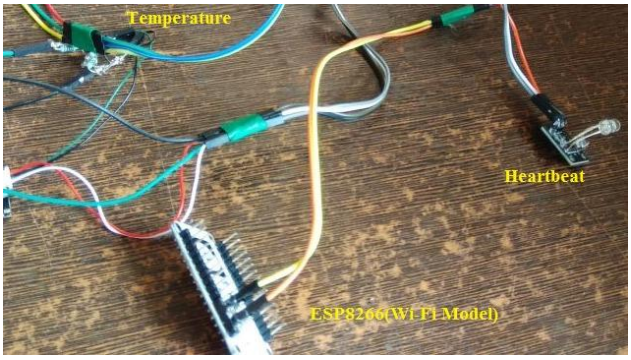

Figure 2: Heartbeat sensor and temperature sensor are connection to ESP8266 WIFI module.

In the fig.2 Heartbeat sensor and temperature sensor will send data to hospital portal with the help of ESP8266 Wi-Fi module.

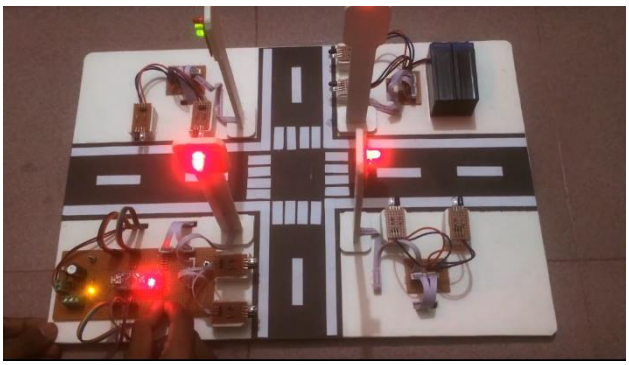

Figure 3: Arduino Uno controlling signals

In the fig.3 when the emergency vehicle is detected by RFID reader then reader send signal to Arduino uno which then checks details of emergency vehicle and changes the signal accordingly.

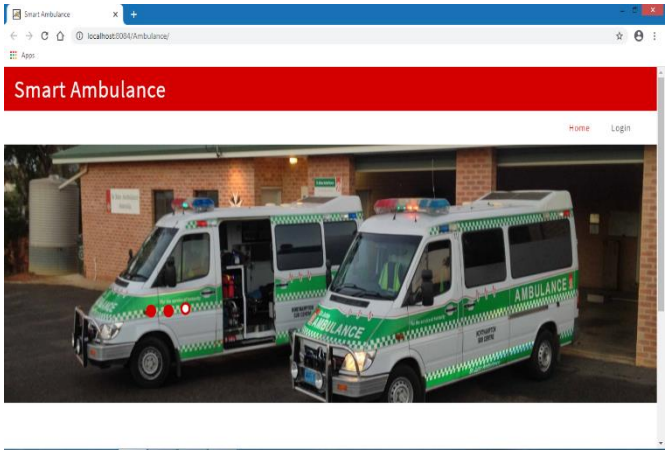

Figure 4: Hospital web portal

In the fig.4 the web portals will be used in hospitals to identify ambulance patient condition and prepare accordingly.

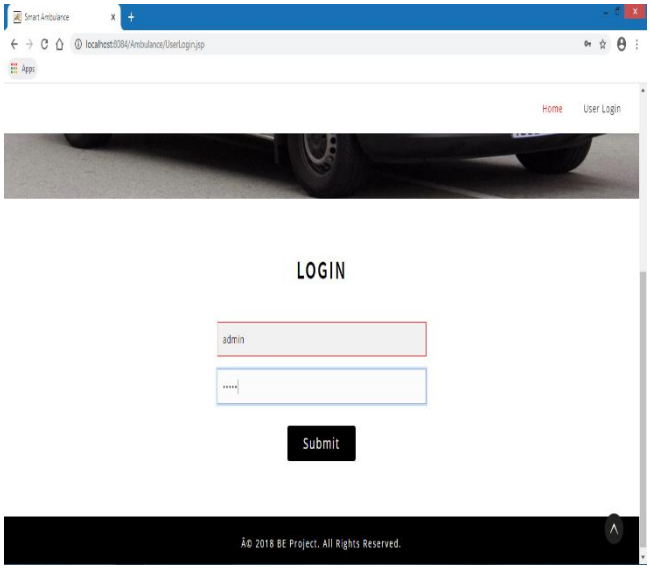

Figure 5: login page

In fig.5 screen only after login hospital staff will be able to see patient details for security purpose.

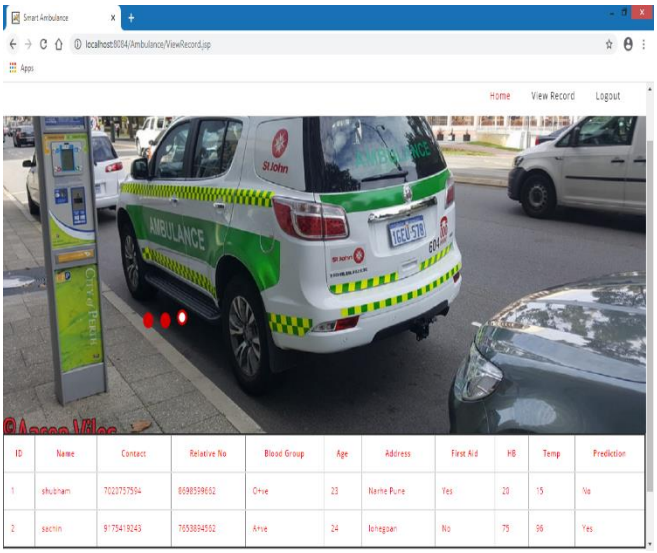

Figure 6: Details of patient

In fig.6 screen all the details of the patient and previous history are been displayed on the web portal.

VI. ADVANTAGES

1. Easy to access and design to all.
2. Cost Effective with better output.
3. Patient heath calculate during traveling critical condition and send data to hospital.

VII. LIMITATIONS

If Sensor fails then patient values does not send to the hospital.

VIII. FUTURE WORK

The system is more manual than automatic. In the future scope, this system could be made completely automated as it could automatically set the change in traffic signal by knowing the path followed by the ambulance and system will share the updated information to the traffic police device which are in the path of ambulance. This saves the patient and less time is taken to reach the hospital.

Also by putting RFID tags in all vehicles we can also make a system which can identify the stolen vehicle as the RFID tag has unique number so when the stolen vehicle passed by the traffic signal the RFID reader will read the signal and informs the last identified area of the stolen vehicle.

IX. CONCLUSION

Main intension behind developing this work was saving the life of a person. The traffic is cleared for fast running of the emergency vehicles. And at the same time, the patient's condition inside the ambulance is monitored frequently and the information is updated to the hospital server, which could be viewed by the doctor at the hospital and make the necessary arrangements.

X. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "Traffic Management System for Emergency Vehicles in City". We would like to thank Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. Ashok Kasnale, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

XI. REFERENCES

[1]. G. Beri, P. Ganjare, A. Gate,A. Channawar, Vijay Gaikwad, "Intelligent Ambulnce with Traffic Control", in International Jour. of Elect, Electronics and Comp Systems, vol. 4 , pp 43-46, Feb. 2016.

[2]. R. Sundar, S. Hebbar, and V. Golla, "Implementing Intelligent Traffic Control Syst for Congestion Control, Ambulance Clearence, and Stolen Vehicle Detectioning", in IEEE

SENSORS JOURNAL, vol. 15, pp 1109-1113, Feb. 2015.

[3]. W. Kang, G. Xiong, Y. Lv, X. Dong, F. Zhu, Q. Kong, "Traffic Signal Coordination for Emergency Veh.", in IEEE 17th International Confrence on Intelligent Transprtation System (ITSC), pp 157-161, 2014.

[4]. Joshua, S. Rao, N. Rao. "An Intelligant Ambulence Traffic Signal Control System" in International Jour of Engg. and Computing, ISSN-2321 -3361, pp 10131018, Dec. 2014

[5]. T. Mickus, P. Mitchell, T. Clarke, "The Emergence MAC (E-MAC) protocol for wireless sensor networks", in Engg. Applications of Artificial Intelligence, vol. 62, pp. 17-25, 2017.

[6]. M. A Kumaar, G. A Kumar and S.M. Shyni, Advanced Traffic Light Control System Using Barrier Gate and GSM, In the proceedings of 2016 International Conference, Computation of Power, Energy Information and Communication (ICCPEIC), 2016.

[7]. SK Riyazhussain, Riyazhussain, C.R.S. Lokesh, P.Vamsikrishna and G Rohan, Raspberry Pi Controlled Traffic Density Monitoring System, In proceedings of 2016 International Conference, Wireless Communications, Signal Processing and Networking (WiSPNET), 2016.

[8]. P Maheshwari, D Suneja, P Singh and Y Mutneja, Smart traffic optimization using image processing, in proceedings of 2015 IEEE 3rd International Conference, MOOCs, Innovation and Technology in Education (MITE), 2015].

[9]. L Bhaskar, A Sahai, D Sinha, G Varshney and T Jain, Intelligent Traffic Light Controller Using Inductive Loops for Vehicle Detection, in proceeding of 2015 1st International Conference, Next Generation Computing Technologies (NGCT), 2015.

[10]. E Shaghaghi, A Jalooli and R Aboki, Intelligent traffic signal control for urban central using Vehicular Ad-Hoc Network , in proceedings of 2014 IEEE Asia Pacific Conference, Wireless and Mobile, 2014.

[11]. Prof. Deepali Ahir1, Saurabh Bharade2, Pradnya Botre3, Sayali Nagane4, Mihir Shah5 Intelligent Traffic Control System for Smart Ambulance IRJET 2018.

[12]. Niketa Chellani, Chirag Tahilyani Student, Electronics and Telecommunication Dept., TSEC, Mumbai University " Traffic Congestion Detection and Control using RFID Technology

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Security for Mobile Applications using Mobile Sensors

Amey Shimpi, Sanket Sakore, Charudatta Pawar, Sejwal Lad, Prof. Jayashree Chaudhari
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ABSTRACT

In todays growing world of technology more and more mobile applications are getting developed day by day and with the increased growth of application the threats for user's accounts present in the applications being hacked by hackers is also increasing at a great rate. The proposed system focuses on increasing the privacy of mobile application when the user forgets the password by asking security questions based on user's daily activity and even at the time of password generation it provides newly introduced advance feature to set new password. Security questions asked by the system to user are based on the inbuilt mobile sensors which trace the user's location and call logs and deals with many other sensors present in the android mobile devices to authenticate the answers given by the user for the questions asked by system.

Keywords : Mobile Sensors, Android Application, Security Questions, Password Generation

I. INTRODUCTION

Every mobile application which are used to provide access for the user to it's personal details like online banking app, Gmail account, yahoo, msn etc. consist of password for login purpose and this passwords are tricky consisting combination of alphanumeric and special symbols to remember such tricky password is very inconvenient job. If the user forgets the password due to some reason or mistype it then he/she can't access their accounts. To get the access of account user must answer some security questions which along with the answer are recorded at the time of user registration.

After a long time, interval it becomes difficult for the individual to remember answer of questions and at the same time in a world of social media it's very easy for hacker or malicious user to guess the answer. To avoid these problems, we propose a system that can overcome all threats from existing system by using smart phone sensors.

The security questions in the proposed system will be asked to the user by the system itself and those security questions will not be the one which are present in the existing system (e.g., "Who is your favourite movie actor?"). The questions will be based on user activity in short time period which will be generated using mobile sensors and answers to such type of questions need not to be memorized by the user and this questions provides a high-level security to the mobile application and after the user succesfully answer all the security question during the new password generation phase an entirely unique password generation scheme can be applied which will be based upon the location co-ordinates as per the user's dream location.

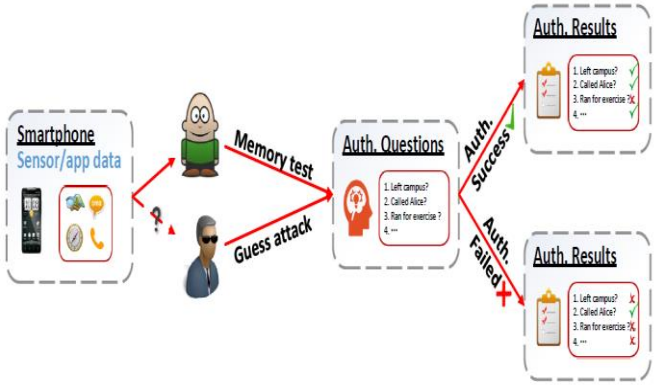

Fig 1 : System Architecture of the proposed system

The proposed architecture consists of smartphone which has sensors and the system records the data present in the sensors and ask security questions to the user based upon his/her daily activities. The system authenticates the answer given by the user and if the answers are incorrect it results into authentication failed which will generally happen if any guest user tries to hack the application.

II. LITERATURE SURVEY

Peng Zhao, Kaigui Bian, Tong Zhao, Xintong Song, Jung-Min "Jerry" Park, Xiaoming Li, Fan Ye, Wei Yan [1] the related work simply shows the overall idea related to design the security questions likely called as "secret question based authentication system"(Secret-QA) the authors simply designed a prototype on android smartphones and evaluate the security of the secret questions. The secret questions are those based on the smartphone sensors data. Authors evaluated the reliability and security of question mainly of type (multiple choice, yes/no) by involving 88 participants in the survey and found the result that "The Secret-QA is easier to use then the existing system which consist of security questions based on user's long-term data". Basically, this work only consists of analysis how the smartphone sensors will be useful to design the security questions.

M. Oner, J. A. Pulcifer-Stump, P. Seeling, and T. Kaya [2] This paper describes Walk Compass, a system that exploits smartphone sensors to estimate the direction in which a user is walking. This work mainly focus on predicting the falling accidents of the senior citizens though accelerometers and gyroscope can be combined together to detect the fall event but accelerometers are used in different locations and individual find it very difficult and impractical to wear many such sensors on particular location so the author proposed to use mobile smartphone to detect fall event using mobile inbuilt sensors. The initial work is presented on pedometer mobile application component that is used to notify the user's family member about any medical issue through e-mail. The author also developed algorithm which counts the steps and identify type of activity. This work consists of application built with the use of mobile sensors which is like our proposed system which generated security questions using sensors.

R. Reeder and S. Schechter [3] The primary means of authenticating user is password. Though there is always a risk of password getting lost, stolen in technical language to say password being hack, most websites also provide secondary authentication through which user can get the correct password to gain access to account again but if the secondary authentication is user's last resort a false attempt may lead to permanent account loss if secondary authentication mechanism's vulnerability to false attempt is not as strong as that of passwords then such mechanism becomes a weakest link for user friendly environment. The authors highlight results of prior work on secondary authentication mechanisms, emphasizing the larger problem of assembling an arsenal of mechanism that can be customized to fit each user's security and reliability needs.

S. Schechter, A. B. Brush, and S. Egelman [4] Mainly authors performed a case study in this paper by taking four most popular webmail providers- AOL, Google,

Microsoft and Yahoo! into consideration and found that the authentication based on the secret question mainly requires only one question in order to reset an account's password. They perform a user study to measure the reliability and security of the questions by asking some individuals to answer the questions and then %-22% participants forgot their answers. Accordingly, asked their acquaintances to guess their answers and found that the acquaintances were able to guess 17% of answers which the participants were unwilling to share and also found that nearly about 20% of participants forgot their answers within six months. And even suggests that according to the survey done in 1996 with the inclusion of participants and their close friends or family members nearly about 33%-39% were able to guess correct answer and 20the author found that security questions which more likely are said as secret questions don't have any higher level of security.

III. COMPARISON

According to the literature survey the work of mobile sensors and secondary authentication using security questions says that existing system doesn't use any type of mobile sensors for security purpose it only consists of security questions for authentication purpose which consist of answers depend on the long term history and even the hackers can easily guess the answer of such questions using social media or any other techniques and also in the real time user find it very difficult to remember answer of such questions. In our proposed system we are trying to overcome such problem which occurs at the time of authentication. As we are using mobile sensors so user itself find it very safe and easy way to understand the overall mechanism and the proposed system even overcomes the threats or any attack as the questions will the based on the user's daily activity by using the technique of Secret Question based authentication (Secret-QA).

Proposed system also provides a newly introduced feature of password generation by allowing the user to select his/her dream location and with the help of location co-ordinates set the password which is a completely new concept in the field of password generation. So, the comparison between the existing and proposed system clearly defines that we are trying to build such an environment in the field of user's account privacy so that the only person who can smoothly take the advantage of this features will be the user itself without any worry.

IV. ALGORITHM

Algorithm for generating secret questions and authenticating the same

Let S be the entire system consisting of
S= {IP, Pro, OP}

Where,

A. IP being the input of system
B. Pro being the procedure applied to system for processing given input
C. OP being the output of system

A. Input:

IP = {L, cl}
Where,
L is the user's location
cl is the call logs
U = User of the system
A = Answers submitted by user in T
T = Time for current instance
D = Current date
Q = {Q1, Q2, Q3}
An = set of answers for question Q

B. Process:

1. Record L with T, D.
2. Record cl for current day.
3. Extract Q from (L, cl).

4. When user clicks on forget password system asks Q to U and then U submits A to Q.
5. If A= An then U authenticate successfully else U will be unauthenticated.
6. If answer is correct reset password otherwise control goes to home page.

C. Output:

1. OP = {srp, lc}
2. srp = successfully reset password
3. lc = take location co-ordinates and its annotation as a password

V. RESULT

fig.1

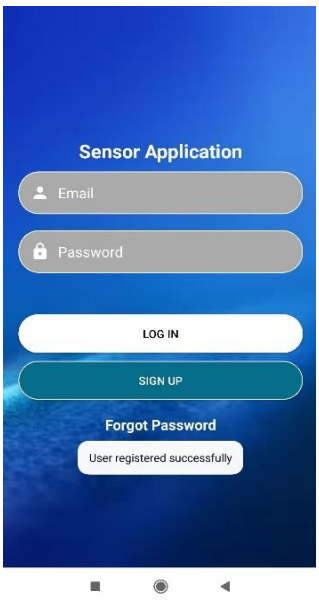

fig.2

fig.1 Shows the registration page of sensor app.
fig.2 Shows the log in page where we can enter user id and password to get logged in.

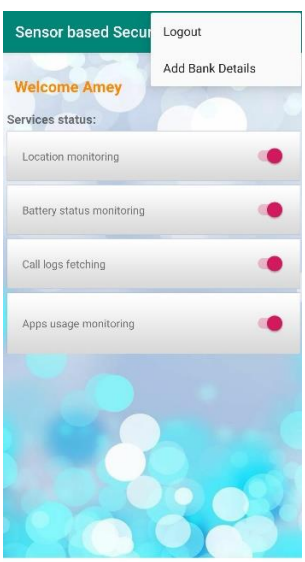

fig.3

fig.4

fig.3 Shows the page after log in where we have to allow all the permissions of required sensors to get the required sensor data.

fig.4 This page comes after clicking on forget password after that we have to click on next.

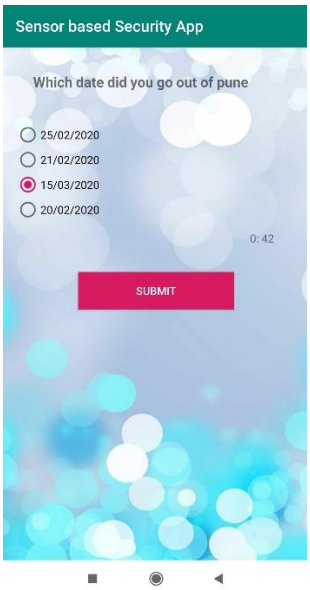

fig.5

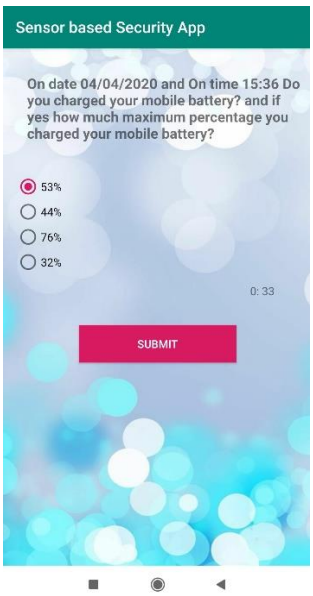

fig.6

fig.5& 6 Shows the sample questions , like these we have more questions in our app which are asked for verification to provide security if we give all the answers right then we get the permission to change the password or if we are wrong in any question then

we will comes to our login page again and we cannot change the password.

Fig.7

Fig.6 This page comes after all the answers are right, here we can set a new password like our dream location or any location which you want and this location will be your new password.

VI. ADVANTAGES

1. No need to memorize password.
2. High level security provided.
3. User's privacy is protected.
4. Makes difficult for hacker to guess the answers.

VII. LIMITATION

Requires internet connection.

VIII. FUTURE WORK

Future work in the system includes providing more accuracy in capturing the data from sensor and keeping the secret questions quite simpler so that they can be easily remembered by user and the hackers or attackers cannot crack them easily.

IX. CONCLUSION

Based on the secret questions designed in the system user find it very simple to access the data after they forget the password as they don't need to remember answer of questions as they are based on user's daily activity and it also makes difficult for attackers to guess the answer because attacker finds it difficult to keep watch on each and every user daily.

X. ACKNOWLEDGEMENT

We would like to thank Dr. D. Y. Patil School of Engineering for providing us with all the required amenities. We would thank our guide Prof. Jayashree Chaudhari madam for giving us all the help and guidance we needed. We are also grateful to Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Lohegaon, Pune for their indispensable support, suggestions and motivation.

XI. REFERENCES

[1]. Peng Zhao, Kaigui Bian, Tong Zhao, Xintong Song, Jung-Min "Jerry" Park, Xiaoming Li, Fan Ye, Wei Yan, Understanding Smartphone Sensor and App Data for Enhancing the Security of Secret Questions, pp.99, 2016.

[2]. M. Oner, J. A. Pulcifer-Stump, P. Seeling, and T. Kaya, Towards the run and walk activity classification through step detection-an android application, in EMBC. IEEE, 2012, pp. 1980–1983.

[3]. R. Reeder and S. Schechter, When the password doesn't work: Secondary authentication for websites, S & P., IEEE, vol. 9, no. 2, pp. 43–49, March 2011.

[4]. S. Schechter, A. B. Brush, and S. Egelman, It's no secret. Measuring the security and reliability of authentication via secret questions, in S & P., IEEE. IEEE, 2009, pp. 375–390.

[5]. H. Kim, J. Tang, and R. Anderson, Social authentication: harder than it looks, in Financial Cryptography and Data Security. Springer, 2012, pp. 1–15.

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Smart Speed Breaker

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ABSTRACT

The purpose of this paper is to build a smart speed breaker which can adapt according to the environment. Which means if there is no requirement of a speed breaker on the road it automatically disappears, which in turns make the road flat again. Which will ensure road safety and will not cause any unnecessary harm to the vehicles. The speed breaker only comes over the road when it is absolutely necessary for the smart speed breaker. It does a great job when it comes to slowing down the vehicles without causing them any harm. This project is made keeping in mind the safety of the vehicle and the person sitting in the vehicle. For the purpose of making the smart speed breaker we are using a hemi-cylindrical speed breaker which is capable of going up and down according to the condition. Once initiated it will come on the road and stay there till the countdown becomes zero. In the embedded system, we can write code to analyze the speed of the coming vehicle if the vehicle's speed is above the threshold limit, the embedded system then sends a warning to slow down via displaying alert on the display board about 100-200 meters from the smart speed breaker. This project mainly focuses on safety on the highways.

Keywords: Speed Breaker, Raspberry Pi, IR Speed Sensor, Passive IR Sensor, IoT.

I. INTRODUCTION

In a rapidly changing world, speed has become a very important aspect of our lives, everyone wants to be fast and want to do thing faster than others.

The two major aspects of speed are, one to be in speed with control and other to be in speed with keeping in mind the safety of the itself.

For safety purpose, to keep the speed of the vehicles in control there is conventional method which is made of concrete and can also be called bumps on the road.

In the case of the conventional speed breaker, the speed of the vehicle is not taken into consideration the conventional speed breaker is the firm which can even damage a vehicle if the vehicle is at great speed.

We came up with this innovative idea to make a smart speed breaker to keep the safety of the people. This idea can be used in front of organizations, highways, etc. The conventional speed breaker is there hindering the traffic even when there is no need for them. This can be overcome by using the smart speed breaker which flattens when not required.

To develop a system for automatic identification of vehicle and moving objects on the roads and rises

the speed bumps above the road surface and giving the physical remainder to drivers to slow down the vehicle.

The system comprises of software module embedded in raspberry pie, which monitors and display the Alert Message on the display board ahead at a particular distance.

The message would be displayed on the alert board to the rider with the help of our sensors and programming in raspberry pi.

II. LITERATURE SURVEY

PAPER NO.	PAPER NAME	AUTHOR	METHOD PROPOSED	LIMITATIONS
1.	**Automatic Speed Breaker on Time Demand Using Embedded Systems.**	Sanchit Vashistha and Rekha Agarwal	It's a very crude model of speed breaker which is heavy on vehicles	Not smart enough
2	**Eco Friendly Power Generation from Speed Breakers.**	Amal Abaraham Cibin Geeevarghese Jacob, Glen martin Thomas, Jobby George, Jose Tom	Uses speed to create energy.	Can't handle traffic. Can't make decisions
3.	**Road Power Generation by Speed Breaker .**	Ch.Bhanu A.V.Ramana Rao, P.Srinu vas	Uses speed breaker to create energy	make smart decision

III. SYSTEM DESIGN

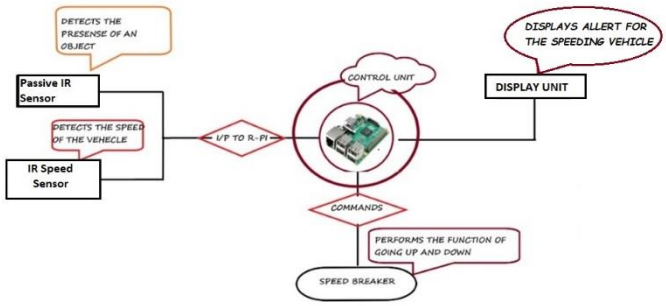

Fig-1:System architecture.

Module 1: Raspberry Pi

Raspberry Pi does all the computations. Takes inputs from the sensors, gives command as an output to the mechanical module.

It acts as the brain of the project.

Module 2: Sensors

Sensors contain all the data they gather from the Environment. The data gathered in sent to the Rasp Pi for computation. The sensors used are PIR and IR Speed Sensors.

PIR Sensor: A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors. PIR sensors are commonly used in security alarms and automatic lighting applications. PIR sensors detect general movement, but do not give information on who or what moved. For that purpose, an active IR sensor is required.

IR Speed Sensor: IR Speed Sensor be used to count

RPM or detect objects passing through. You can use it with a disc encoder to make an RPM counter. There is an on board LED that will show the trigger status of the sensor. When the sensor is blocked, digital output will become high and LED will turn ON, vice versa when the sensor is not blocked, digital output will be low and LED will turn OFF.

The Sensors are used to detect human presence and speed of the vehicle.

The Warning message is displayed on LED display board.

Module 3: Mechanical model

This model is the actuator that's work according to the commands from the Rasp Pi. It is a rack and pinon model which helps in moving the speed bump up or down.

IV. ALGORITHM

❖ **IR SPEED SENSOR**

```
import necessary files
import time
Set GPIO pins

while true:
        i1=time recorded at IR sensor 1
        i2=time recorded at IR sensor 2
        #distance is finite
        distance=15 #in centimetres
        speed=distance/(i2-i1)

#set threshold as per required
if speed > threshold:
        print "warning on display board"
else:
        do nothing
```

❖ **PIR SENSOR**

```
import necessary files
import time
Set GPIO pins
while true:
    i=value from the pir sensor
    if i==0
            print "No Intruder"
    elif i==1
            print "Intruder detected"
            print "warning on display board"
```

❖ **SERVO MOTOR**

```
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BOARD)

GPIO.setup(12, GPIO.OUT)

s= GPIO.PWM(12, 50) # pin 12 for s, pulse 50Hz

s.start(2.5)

try:
  while (speed > threshold) or (i==1):
    s.ChangeDutyCycle(12.5) # turn towards 180 degree
    time.sleep(3) # sleep 3 second
    s.ChangeDutyCycle(2.5)  # turn towards 0 degree
    time.sleep(1) # sleep 1 second
```

```
finally:
    s.stop()
    GPIO.cleanup()
```

V. RESULTS

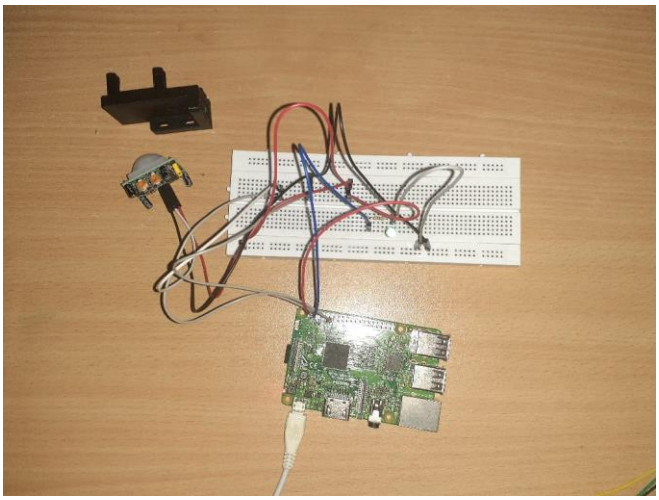

Fig-2:Raspberry Pi with PIR Sensor.

If the PIR Sensor detects the radiant object, the Rasp Pi gives the command to turn 'ON' the LED and display alert message on LED display board.

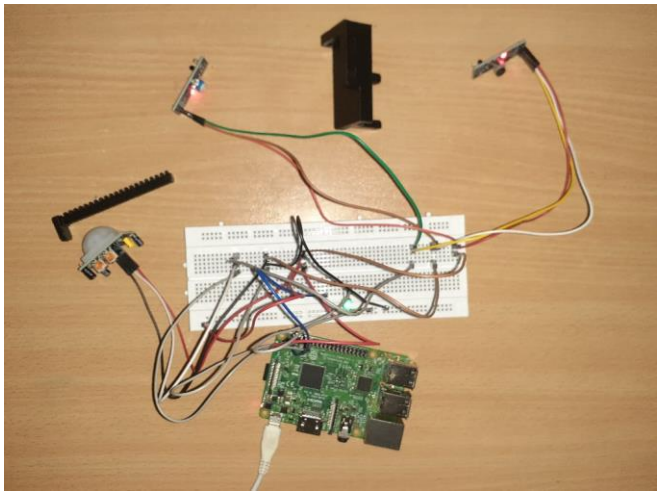

Fig-3:Raspberry Pi with PIR and IR Sensor.

If the Speedy vehicle passes by the road, the IR Sensor detects it and Rasp Pi gives command to display alert message on LED display board.

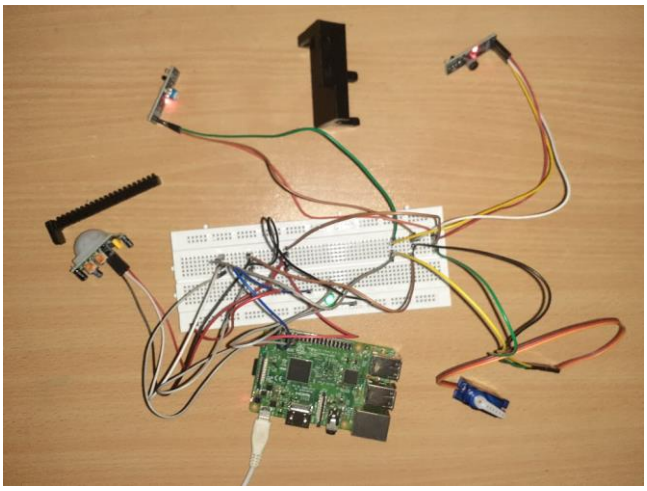

Fig-4:Raspberry Pi with PIR Sensor, IR Sensor and Servo motor.

If PIR and IR Sensor detects the object, the Rasp Pi gives command to the Servo Motor to move the Speed Bump up/down with the help of Rack and Pinon.

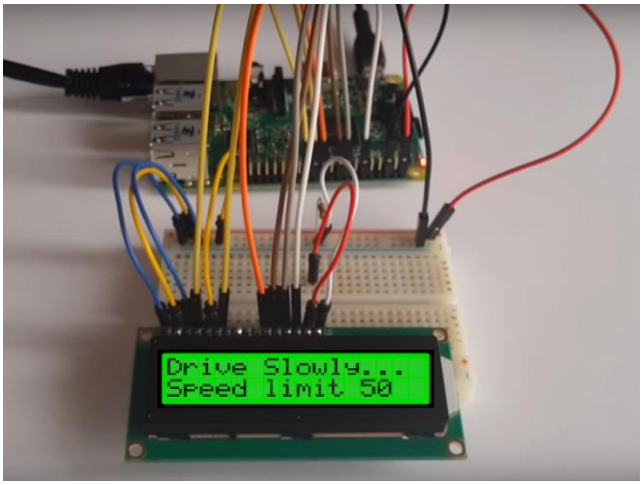

Fig-5:Raspberry Pi with LED Display board.

An Alert message will be displayed when the Sensors detect the object and the speed bump is up, with the help of Rasp Pi.

VI. ADVANTAGES

1) The smart speed breaker aims towards safe and easy accessibility of the on-going vehicle by only affecting the vehicles who's exceeding a speed limit.
2) It creates even traffic flow with less missions.
3) Easy Working.

4) Less Power Consumption.
5) Cost efficient.

VII. LIMITATION

1) Infrared frequencies are affected by hard objects like walls, smoke, dust, fog, sunlight etc.
2) PIR sensor can't detect low radiant object.

VIII. FUTURE WORK

In future modification can be also done to allows full access for emergency vehicles like police van, ambulance etc.

IX. CONCLUSION

On completion the concept of having a Smart Speed Breaker on using Embedded System tool be seen that can be seen that the idea is very innovative and useful for the requirements of today's fast life. The concept of the mentioned idea is to give the performance to vehicles as well as to make them slow.

This idea to have such a speed breaker in practical life, helps to reduce the speed of vehicles; maintaining the performance as far as possible. So, it becomes a very descriptive research work for the details of the practical one.

This project is made keeping in mind the safety of the people and the vehicle. The real working demo of the research work is very realistic and charming. This can be a very us.

X. REFERENCES

[1]. Automatic speed breaker on Time demand Using Embedded System Made by Sanchit Vashistha (M. Tech student) and Rekha Agarwal (Asst. Prf., Department of ECE School of Engineering and Technology).

[2]. Eco Friendly Power Generation from Speed Breaker This project was proposed and made by project, amal Abaraham Cibin Geeevarghese Jacob, Glen martin Thomas, Jobby George , Jose Tom.

[3]. Road power generation by Speed Generation Created by Ch.Bhanu A.V.Ramana Rao, P.Srinuvas.

[4]. Ioannou P.A., Chien C.C. Autonomous Intelligent Cruise Control. IEEE Trans. Veh. Technol. 1993;42:657–672.

[5]. Milanés V., Onieva E., Pérez J., de Pedro T., González C. Control de Velocidad Adaptativo para Entornos Urbanos Congestionados. Rev. Iberoam. Automát. Informát. Ind. 2009;6:66–73.

[6]. Lusetti B., Nouveliere L., Glaser S., Mammar S. Experimental Strategy for A System Based Curve Warning System for A Safe Governed Speed of A Vehicle. Proceedings of IEEE Intelligent Vehicles Symposium; Eindhoven, The Netherlands. June 2008; pp. 660–665.

[7]. Van Nes N., Houtenbos M., Van Schagen I. Improving Speed Behaviour: The Potential of In-Car Speed Assistance and Speed Limit Credibility. IET Intell. Transp. Syst. 2008;2:323–330.

[8]. Fan X.H., Zhang Y.L. A Design of bi-verification vehicle access intelligent control system based on RFID. Proceedings of the Ninth International Conference on Electronic Measurement & Instruments (ICEMI'2009); Beijing, China. August 16–19, 2009.

[9]. Hsieh W.H., Ho C.J., Jong G.J. Vehicle Information Communication Safety Combined with Mobile RFID. Proceedings of International Conference on Intelligent Information Hiding and Multimedia Signal Processing; Harbin, China. August 15–17, 2008.

[10]. Zhou Z.G., Li W.Y., Deng C.Y., Li T., Li Y.W. Secure Design of RFID Tags in the New Type License Plates Automatic Identification System. Proceedings of International Symposium on

Computer Sciences and Computational Technology; TBD, Shanghai, China. December 20–22, 2008; pp. 694–697.

[11]. Chon H.D., Jun S.B., Jung H.J., An S.W. Using RFID for Accurate Positioning. J. Global Positioning Syst. 2004;3:32–39 All Rights.

[12]. IJECCT Research Paper on Automatic Speed Breaker on Time Demand Using Embedded Systems ISSN:2249- 7838.

[13]. Design of Machine Element by V.B.Bhandari.

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IOT Railway Track Crack Detection Robot Using GSM-GPS

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ABSTRACT

The Backbone of transport system is Railway in India. Other than collision or fire in trains rail accidents occur more due to derailments. In railway tracks the cracks are due to derailments. Hence due to this there is an immense neccesity of crack detection and security system. The crack detection system in the rail tracks is proposed by this paper. By the latest communication technologies is used to avoid rail accidents. The GSM communication Protocols are used to convey the message of crack detection via sms in this project . This system also alerts the railway authorities facilitating the security system for the detection of cracks.

Keywords : Crack detection, Eddy current loss, Security system, GSM

I. INTRODUCTION

Safety and reliability are highly considered in transport systems, particularly in case of railways. The current regulatory framework does not provide full det of tools to effectively to deal with accidents and main track derailments. There is also a view that the current framework needs to be modernized and better aligned with safety legislation that applies to other modes of transport in India. The development of railways in recent years, the capability of trains is constantly improving. A GSM module is used. Railway is one of the most conventional methods of travelling and is the most commonly used means of transport. India is considered to have world's seventh largest railway system . The GSM (Global System for Mobile Communications), GPS (Global Positioning System) and microcontroller based broken railway track detection when implemented is an efficient method of a detection on cracks is present in the tracks and thus avoiding derailment of the trains.

In present times the fast growing technology, the implementation of IOT is used, for smart survelliance. This system is used in-between two stations are detect the cracks presents on the track using ultrasonic sensors which transmit sine waves for an ideal track. Once the ultrasonic sensor sends a signal to the controller, the controller will initiate the webcam.

II. LITERATURE SURVEY

Comprising of 115, 000 km of railway tracks, india has the fourth largest rail network in the world. 90% rail accidents are due to crack problems and 60% of rail accidents are due to derailments. [1]The safety Act of Indian Railway, Which came into effect in 1989 January, was designed to improve safety of railway by managing safety of railway regulatory frame work, together with streamlined regulation development and process, and providing railway companies with greater freedom. From 2002, there has been railway accidents mainly due to train derailments which has beeen increased. In December 2006, government announced the safety railway act review to improve safety of railway in india and to

promote a safety culture within industry of railway, while strengthening and preserving the vital role this industry plays in the economy of india . Long range ultrasonic techniques along with radiography technique are the methods used for crack detection[2]. Wireless sensor network method [3] and electromagnetic system [4] are also used in detecting rail cracks. Different types of equipments viz single rail tester and double rail tester, due to this ultrasonic rail flow detection is carried out. The Ultrasonic rail flow detection is carried out with different two types of equipments viz., In Ultrasonic testing technique long range is proposed as a complementary inspection technique to examine the rails. especially in track regions where corrosion and associated fatigue cracks are likely to happen.

An array of suitable transducers is developed that is able to generate selected guided wave modes in railway which allows a reliable long range railway inspection. [5]The new possiblities and advantages offfered by Digital X-ray in rail-wield evaluation over traditional film radiography based on gamma rays.

The traditional weak link is rail wields in the rail network which has been very difficult to evaluate accurately. The information regarding the actual state of suspect rail wields is given by Portable Digital X-ray Equipment. [6]. In wireless sensor networks method the detection of cracks can be identified using infrared rays with the IR transmitter & receiver. (CAN)Control Area Network controller is attached to main node and it sends the detailed information via global system for mobile communications and transmit the message to railway engine and to the nearest railway station. [3]. An electromagnetic system for rail detection and traction enhancement comprises, in a preferred embodiment, wheel axles. It also consists of a power source coupled to the wiring coils for supplying power to produce electromagnetic flux. [4].

The provision for monitoring the flow pattern for locating the position where the crack pattern is detected as open this system consists.

The flaws related to missing bolts or loosening of the fixtures at the railway track are inspectedThe existing systems are more time consuming and more complicated . However, this paper proposes a more reliable and less time-consuming mode of crack detection in the railway tracks. This application is real time which can be performed easily.

III. EXISTING SYSTEM

Resulted in the formation of cracks in the rails and other similar problems caused by antisocial elements which is the security of operation of rail transport. In the past, this problem has lead to a number of crack resulting in a heavy loss of life and property. Cracks in rails have been identified to be the main, yet there have been no cheap automated solutions available for testing purposes.

IV. PROPOSED SYSTEM

In this system we developed for reduce railway accident and reduce the human power in this system Internet of Things (IoT) is implemented to give an up to date update on the railway system. In this model IR sensor is used to detect crack on the railway track ultrasonic is used to detect distance between cracks and GPS receiver is used to track the location of the crack. A GSM module is used for sending a messages to notify the authorities about the fracture. A camera is fixed to provide the image data to analyze the rupture from base stations

V. ALGORITHM

AES Algorithm Steps: The encryption process is a set of derived keys. These are applied, along with other

operation so on one block of data. The data to be encrypted. This array we call the state array.

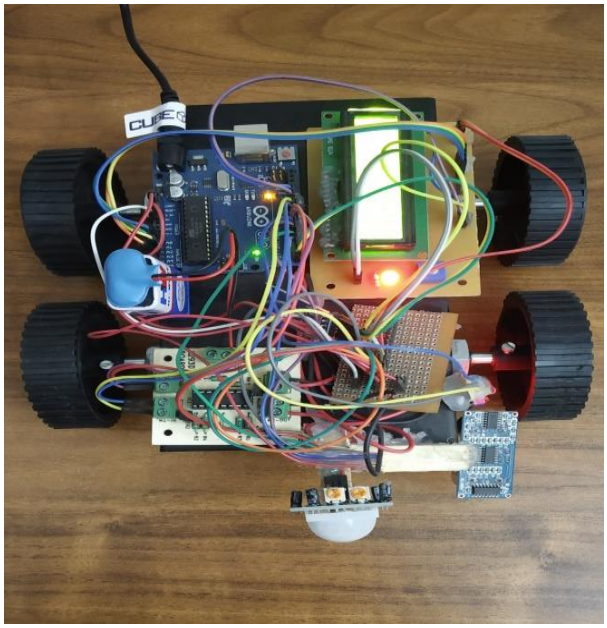
You take the following AES steps of encryption for a 128-bit block:

1. Derive set of round keys from the cipher key.
2. Initialize state array with the block data (plaintext).
3. Initial round key is added to the starting array state.
4. Perform nine rounds of state manipulation.
5. Perform tenth and final round of state manipulation.
6. Copy final state array out as the encrypted data (cipher text). The reason have been listed as "nine followed by a final tenth round over" is because the tenth round.

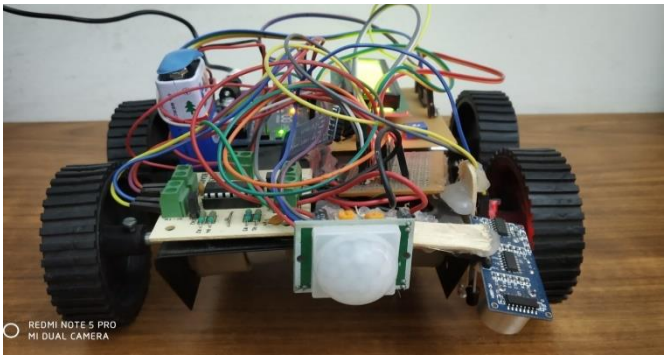
Note: AES is a non cipher that encrypts and decrypts a data block of 128 bits. It use 10, 12, or 16 rounds. The key size has been 128, 192, or 256 bits, depends on the number of rounds.

VI. RESULTS (OUTPUT SCREENSHOTS)

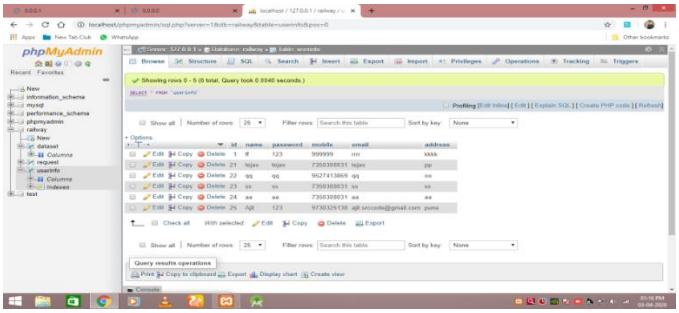
1. Output 1



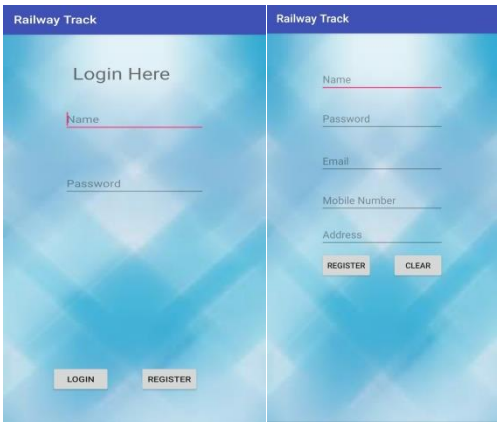
2. Output 2



3. Output 3



4. Output 4



VII. ADVANTAGES

1. Compared to existing system its costing is very low.
2. Very accurate in detection.
3. It checks surface and near surface of the cracking position.
4. Transmitting signals are immmediately transfered.
5. Accidents reduced .

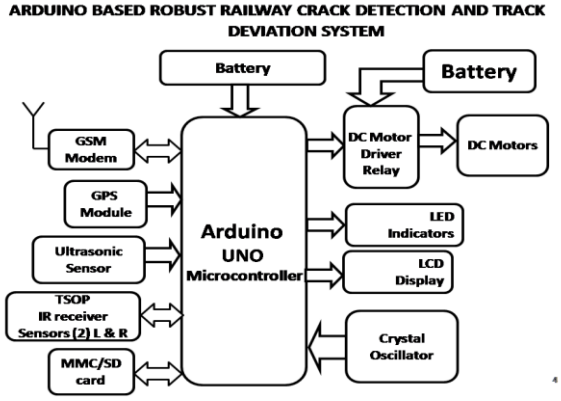
VIII. LIMITATION

Limited dataset is used.

IX. IX. FUTURE WORK

1. We are using Ultrasonic sensors for detecting the cracks and obstacles in track in this project.
2. we will also use in future, the cctv systems with IP based camera for monitoring the visual videos captured from the track.
3. How we can make use of wireless network efficiently for Railway Track Crack Detection, this system sets an example for it .
4. It will also increase the security for the both rails and passengers from terrorism, crime.
5. For Domestic purpose and commmercial places this technology is very helpfull with the future vision.
6. Instead of the manual methodof crack detection a more advanced acccelerometer sensor are compatible technology can be used.

BLOCK DEIAGRAM OF SYSTEM



X. CONCLUSION

The most commonly used mode of transportation is railway by the people and for goods. An amalgamation of the conventional method of crack detection and the method which is innovative of live video streaming and IOT in Proposed system. The whole system is placed on four wheeler robot which travels along the rails. The IR sensor transmitter and reciever used by existing system as compared, the proposed system is an technique which is innovative which lowers the burden of the authorities and increases the accuracy of the crack detection

XI. REFERENCES

[1]. Ch. Muneedra Rao and B.R. Bala Jaswanth, “Crack sensing scheme in rail tracking system”, January 2014.

[2]. “Inspection of defects in rails using ultrasonic probe”, Samuel Tony Vipparthy.

[3]. Avinash Vanimireddy and D.Aruna Kumari, “Automatic broken track detection using led-ldr assembly”, July 2013.

[4]. Shanthini. M, Charanya.V, and S.Sneha Chowdary, “Electromagnetic system for railroad track crack detection”.

[5]. “The rail inspection technology's future and the interail fp7 project”, M. Papaelias, S. Kerkyras.

[6]. John R. Smith and Shih-Fu Chang, “Tools and Techniques for Color Image Retrieval,” Proceedings of Storage and Retrieval for Image and Video Databases, 1996, John R. Smith .

[7]. “Performance Analysis of a Novel Reduced Switch Cascaded inverter multilevel ,” Journal of Power Electronics, Jan.2014, R Nagarajan.

[8]. Crack Detection System for Railway Track by Using PIR and Ultrasonic Sensor” , 2014, Navaraja.

[9]. “ Avoidance System for Detection of Cracks and Railway Collision ,” .

[10]. “ By Creating Mutual Communication Using Embedded System Collision Avoidance of Trains can be implemented,” 2014 , Umamaheswari.

[11]. Selah-Ajmer train derailment Dec 2016www.hindustantimes.com/india-news/live-sealdahajmer-express-derails-near-kanpur.

[12]. “Fully convolution networks for semantic segmentation,” in 2015,J. Long, E.Shelhamer, and T. Darrell.

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मPL : Marathi Programming Language

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Department Computer Engineering, DR. D. Y. Patil school of Engineering, Lohegaon, Pune, Maharashtra, India

ABSTRACT

The main or primary motivation of our project is that there are subjects like Mathematics, Science etc. likewise computing is also concept which can be introduce through native language so our motivation is toward creating a language to introduce children to computing. Once they know to think in these logical modes (enumeration, recursion and procedural) then writing any program is an aggregation of ideas in some order. Marathi keywords and grammar are chosen to make the native Marathi speaker write programs in the Marathi Programming Language which allows easy representation of computer program closer to the Marathi language logical constructs equivalent to the conditional, branch and loop statements in modern English based programming languages.

Keywords : Regional Programming Language, Compiler Design.

I. INTRODUCTION

We are developing a new language for programming in the category of regional programming language which is similar to general programming languages like c, c++, python which are high level programming languages.

The structure of our programming language is similar to python but main difference between these two are python uses English keywords, variables but our language uses keywords , variables of native regional language which is Marathi.

The primary motivation behind this is like mathematics is concept and it can be introduced to children in their native language we want to introduce programming as concept to children in their native language . To introduce computing towards children we want to create programming language and this is reason behind our project.

There are various programming languages present in the market. this are made for various special purposes. but majority of them are English based programming languages. such as keywords present in these languages are English base. very few languages present in the market which are non-English based. means that the keywords used in these languages are non-English keywords . these keywords are taken from their respective regional languages such as Chinese, Hindi, Tamil etc.

The different non-English based programming languages are Hindawi, Ezhil etc. Hindawi programming system is language proposed by Abhishek Chaudhary and Dr, Shweta Chaudhary which is based on Hindi language. Ezhil programming

language is proposed by Muthiah Annamalai which is based on Tamil language.

In china Chinese people use their own language for programming they are not using English programming language, so why not us?.

II. LITERATURE SURVEY

TABLE I. LITERATURE SURVEY TABLE

Sr.NO.	PAPER NAME	AUTHOR	METHOD PROPOSED	LIMITATIONS
1.	Ezhil (எழில்): A Tamil Programming Language	Muthiah Annamalai	Proposed Programming language which allows only Tamil keywords by prototyping it in python	Limited for Tamil language only.
2.	Hindawi Programming System	Abhishek Chaudhary, Dr. Shweta Chaudhary	A suite of open source Indic-text programming languages	Limited for Hindi language only.
3	Lieutenant	Mr. Zhongli	Chinese programming language based on Python language with support of internal Chinese character encoding	Limited to Chinese language only

III. TAXONOMY CHART

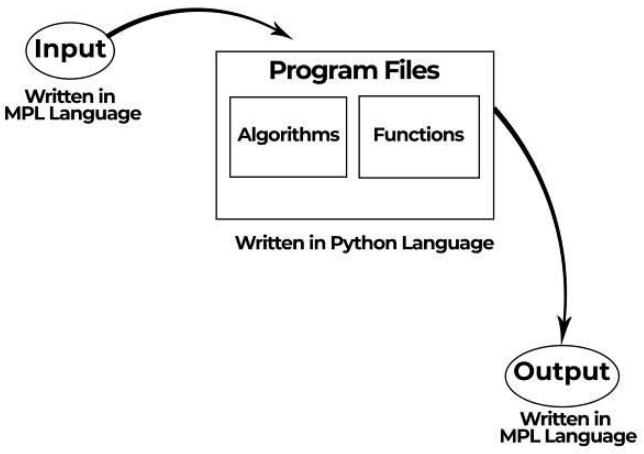
TABLE III. TAXONOMY CHART

	Procedural	Object Oriented (OOP)	Language Restriction	Scope to use external libraries
Ezhil Programming language	✓	✗	✓	✓
Hindawi programming system	✗	✓	✗	✗
Lieutenant	✗	✓	✓	✓

IV. SYSTEM DESIGN

We write our program files in python which contains functions and algorithms which can compile our input which is written in Marathi and able to generate output according to it.

DIAGRAM III. SYSTEM DESIGN



V. ALGORITHM

A: START
Get Set of Instructions(Marathi Input Code) from User.

B: Lexing-Conversion of sequence of characters into sequence of tokens.

Input :**१+२**
Output : [INT:**१** , PLUS , INT:**२**]

C: Parsing-Sequence of tokens is converted into syntax tree.

Input : -**१+२*३**
Output : ((MINUS, INT:**१**) , PLUS , (INT:**२** , MUL ,INT:**३**))

D: Interpreting- Execution of set of Instructions(Marathi Input Code) written in High Level Language or Scripting Language.

Input :१+२*३
Output :७

E: Creation of Variable(चल)

चल अ = **५**
चल ->var
अ ->variable_name
= -> equals
५ ->expr

F: Addition of Logical Operators and Comparison Operators

Input:१>२&&१<२
Output :०

G: Creation of "if(जर), then(तर), else(अथवा), while(जेव्हा), for(च्यासाठी)" statements

Input :जर ७ = = ७तर १२३ अथवा २३४
Output :१२३

H: Creation of Functions(कार्य)

कार्यबेरीज(अ,आ) ->अ + आ
<कार्यबेरीज>

Input :बेरीज(१,२)
Output :३

I: Creation of Strings(वाक्य)

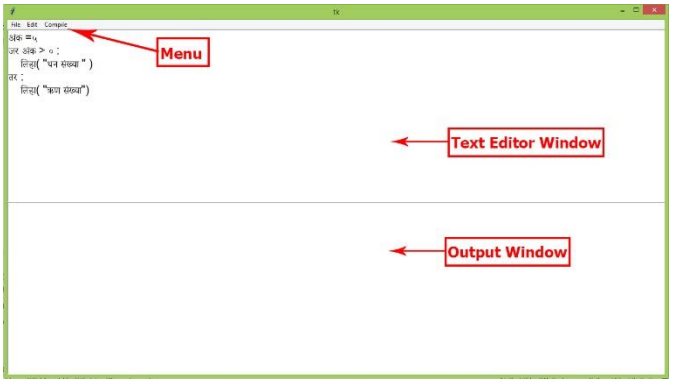
Input :वाक्य अ = **"नमस्ते"**
Output :नमस्ते

J: Creation of Built-In Functions: "print(लिहा), scan(वाचा), return(परत), continue(सुरु), break(तोड), run(चालवा)"

L: STOP

VI. OUTPUT

A: GUI Interface
Divide Into 3 Parts
-Menu
-Text Editor Window
-Output Window

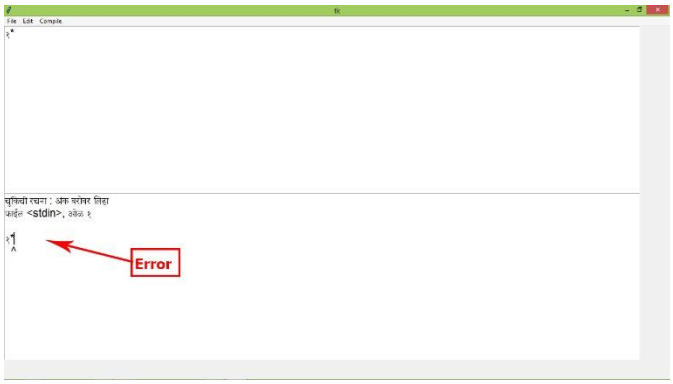


B : Writing Program Sample Program

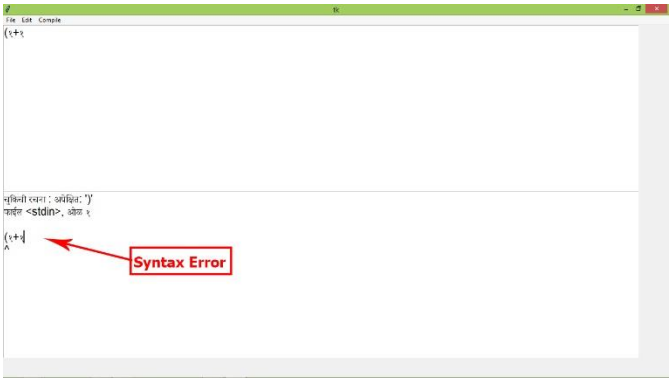
Writing Simple If Else Program In **MPL** Which Check Given Number is positive(धन संख्या) or negative (ऋण संख्या)

C: Output of Sample Program

D:Error



E: Syntax Error



VII. ADVANTAGES

1. Easy to use

2. Native Language Programming

3. Easy to learn coding

4. No other language is present similar to this

5. Scope to use external libraries

VIII. LIMITATIONS

1. Limited concepts only

2. Concepts like Exception-handling, Multithreading are not included

IX. FUTURE SCOPE

1.To Expand language to its greater extent and make it fully fledged to support variety of libraries.

2.Devlop Library for GUI Programming in MPL

3.To make MPL fully functional for daily uses.

X. CONCLUSION

Our proposed System is designed to develop programming language which allows to write the programs in Marathi language. And it also have additional functionalities as compared to other existing non-English based programming languages and purposed system justifies the comparison as shown in taxonomy chart above. After surveying and studying some other non-English based programming languages, we can conclude that the purposed system is feasible with respect to all three formats, these are Market Feasibility, Technical Feasibility and Financial Feasibility.

XI. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on Efficient and Automated Online Recruitment System. We would like to thank Dr. Sunil Rathod,

assistant professor, Department of Computer Engineering, for giving us all the help and support we needed during course of the Paper writing work. We are really grateful to him.

Our special thanks to Dr. M.Z. Shaikh, Principal of DYPSOE (SPPU-PUNE), who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

XII.REFERENCES

[1]. Ezhil (எழில்): A Tamil Programming Language- "https://www.researchgate.net/publication/45864706_Ezhil_A_Tamil_Programming_Language"

[2]. Non-English based programming languages- "https://en.wikipedia.org/wiki/Non-English based_programming_languages"

[3]. Lieutenant chienese programming language- "http://www.chienesepython.org/home.html"

[4]. Stian haklev- "Chienese Python:Translating a programming language", November 21, 2008

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Digital In-store Merchandising

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ABSTRACT

Location Based Advertising is one of the ways of advertising in which a person passing by a store get advertising messages by using his/her location. So for that, we need to turn on location access permission which lead to privacy issues. In Bluetooth Based Advertising a person can communicate with the store and get advertisements via Bluetooth again for this, one need to enable the Bluetooth in phone. Digital In-store Merchandising has came with solutions. A person doesn't need to carry any phone or enable Bluetooth in phone. A person will walk into the mall a camera will capture the image and attributes will be collected such as age, gender based on that ads will be predict and display on the screen of that mall.

Keywords : IOT, Image Processing, Merchandising, Mall, Data Set

I. INTRODUCTION

We are developing a system called Digital In-store Merchandising basically it deals with advertising of available products inside a store or mall based on the customer via a display device. There will be a camera at the entrance of the mall or store, camera will capture the customer's image while entering the store or mall, captured customer's image will be then processed by CNN algorithm with the help of Raspberry pi processor. At the end of image processing we will be getting the attributes of customer like man,woman,man with specs each attribute will be unique based on the customer. After this, products which will be best suited for each customer displayed on the display device inside the mall along with customer's image.

In order to process image we are using Deep learning techniques, we are using CNN (Convolutional Neural Networks).

Our main aim is to boost the sales of the mall or shop wherever this system will work.

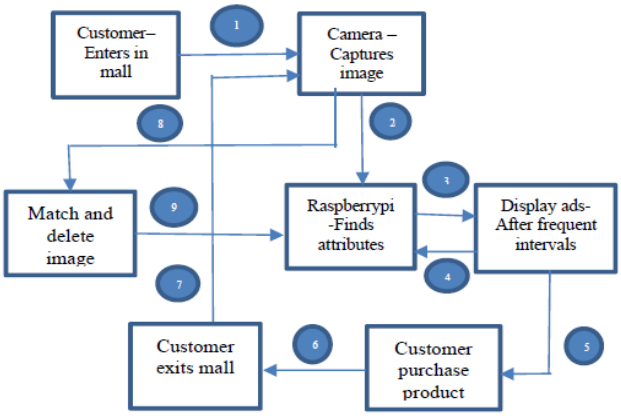

Figure 1:System Architecture

A. CNN(Convolution Neural Network)

Face recognition can be done by using Convolution neural network algorithm[5].CNN consists of two layers feature extraction layer and feature map layer . In feature extraction layer each neuron is connected

to local receptive fields of previous layer and extracts the local feature. After local feature is obtained relationship between them and other features are gathered. CNN needs to be trained prior to the testing, images of each individual with various poses are first given to the model, but it takes huge amount of time for training and once trained the output is accurate.

B. Effect of Recommender Systems on sales

Recommendation of products increase the sales of a store and customer saves time in selecting the products[11]. Recommendation helps the customer to select products that are best suited for him or her by analyzing the present outfit. Customer can find all the products at one place.

II. LITERATURE SURVEY

TABLE I
LITERATURE SURVEY TABLE

Sr. No.	Paper Name	Author	Method Proposed	Limitations
1.	BlueTech:A Bluetooth-based Advertisement System for Mall	Onkar Ghate, Gurunath Chavan, Krutika Dongare, Snehal Mangale	Advertisement using Android app using Bluetooth connectivity	Customer need to carry Mobile Phone, Short range of Blueto oth
2.	Reaching Consumers Individually at the Right Place: A Literature Analysis of Location-based Advertising on Mobile Devices	Christine Bauer and Christine Strauss	Advertisement using mobile location of customer	Customer need to carry Mobile Phone, Privacy issue
4.	ARTIFICIAL INTELLIGENCE MARKETING	T. Thiraviyam	Using Artificial Intelligence to analyse customer behavior and predict Advertisement	System should have some prior knowledge of customer
5.	Face Recognition: From Traditional to Deep Learning Methods	Daniel S´aez Trigueros	Recognition of face using CNN	Collecting large amounts of labeled face images is expensive

III. TAXONOMY CHART

TABLE III
TAXONOMY CHART

	Blueto oth Conne ctivity	**Mobile Locati on**	**Mobile Data**	**Need Phone**	**Prior kno wled ge of Cust omer**
Blueto oth Based System	✓	✗	✗	✓	✗
Locati on Based System	✗	✓	✓	✓	✗
Machi ne Learni ng Appro ach	✗	✗	✓	✓	✓
Artific ial Intelli gence Appro ach	✗	✗	✓	✓	✓
Digital In-Store Merch andisi ng	✗	✗	✗	✗	✗

IV. Algorithm

A. Algorithm for Image capturing and identification -

Input : Image
Output : Attributes in image

Steps:

1. Capture Images of customers.
2. Processing the captured image.
3. Matching the image with the images in the dataset to find the attributes.
4. Store the customers image.

B. Algorithm for displaying of ads -

Input : Attributes from captured image
Output : Ads to display device

Steps:

1. Fetch the ads.
2. Display the ads for different person in regular interval.

C. Algorithm for image matching-

Input : Captured Image at entry and exit point.
Output : Delete the captured image of entry point.

Steps:

1. Capture image at exit point.
2. Matching the image with the images of entry point.
3. Delete the matching image from both the Camera storage.

V. RESULT

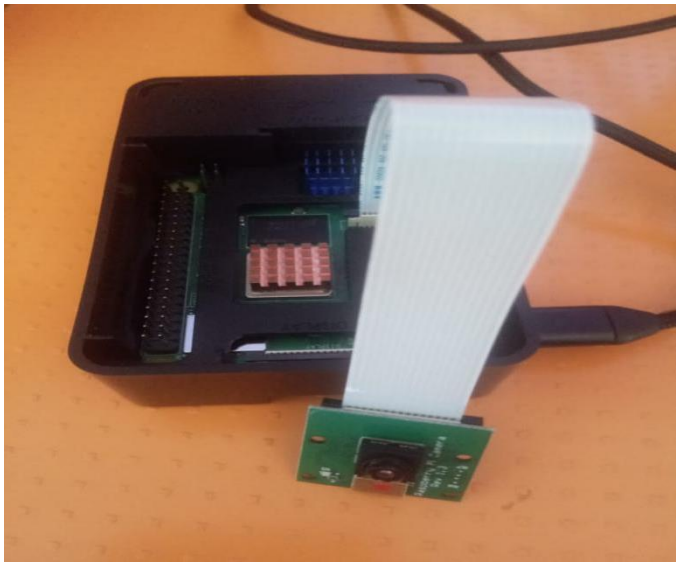

Figure 2: Raspberry pi with camera

We have used Raspberry pi and 5MP Raspberry pi camera to capture the image of the customer entering and exiting the mall.

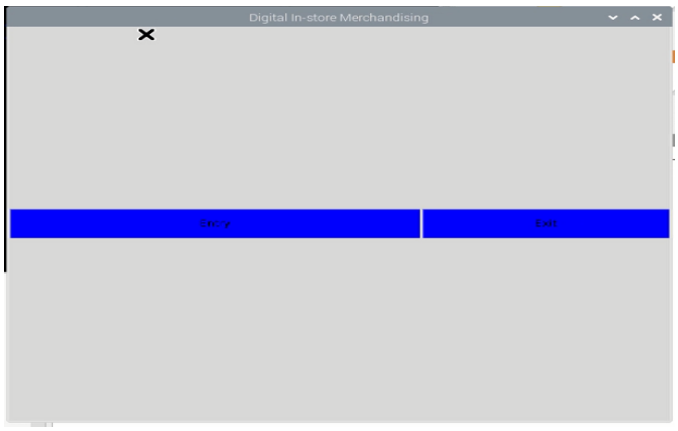

Figure 3: Tkinter window displaying button for entry and exit

For demonstration purpose we have used a single camera for both entry and exit, so we have used Tkinter for displaying the options for entry and exit.

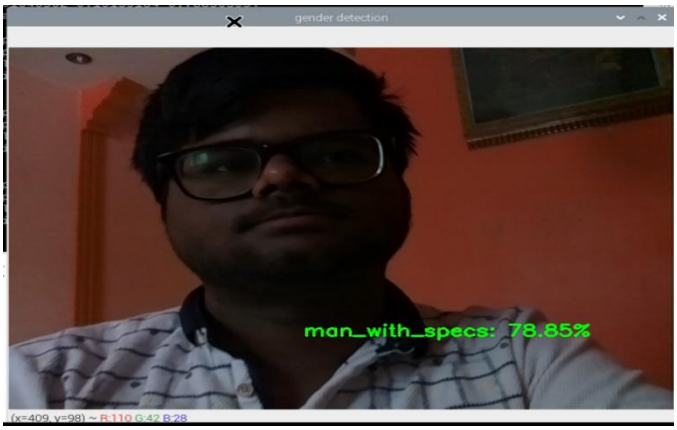

Figure 4: System identifies the customer as "Man with specs"

In the above screen the system identifies the customer as"Man with specs" using CNN algorithm.The system will store the image captured inside the folder "/Inside_Mall/Man_with_specs/".The system will not store the image of the customer, if he/she appears next time again, in front of the camera.For implementation of this functionality we are checking the similarity of captured image with all other previously present images.

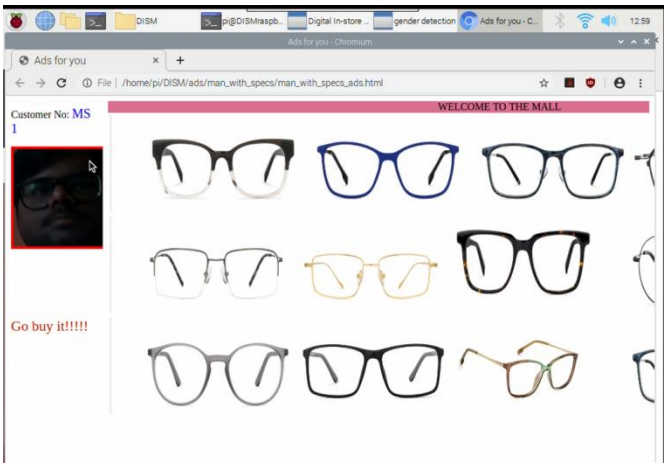

Figure 5: System display ads for customer (Man with specs).

In the above screen the system displays ads for customer having attribute "Man with specs".

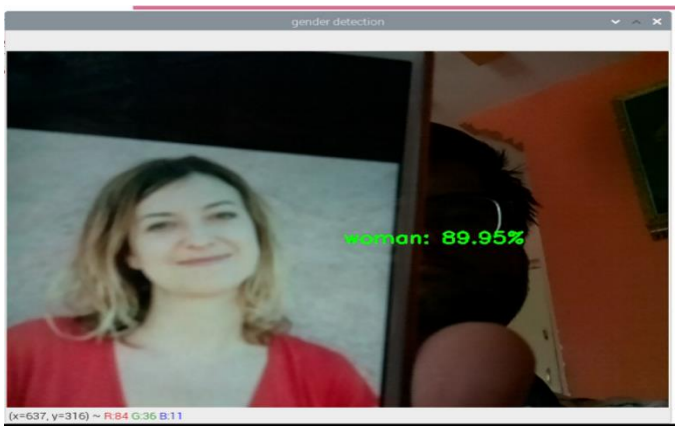

Figure 6: System identifies the customer as “Woman”

In the above screen the system identifies the customer as “Woman”

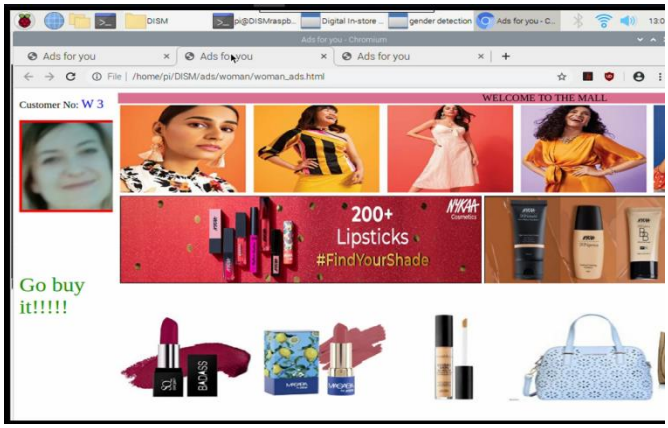

Figure 7: System display ads for customer (Woman).

In the above screen the system displays ads for customer having attribute “Woman”.

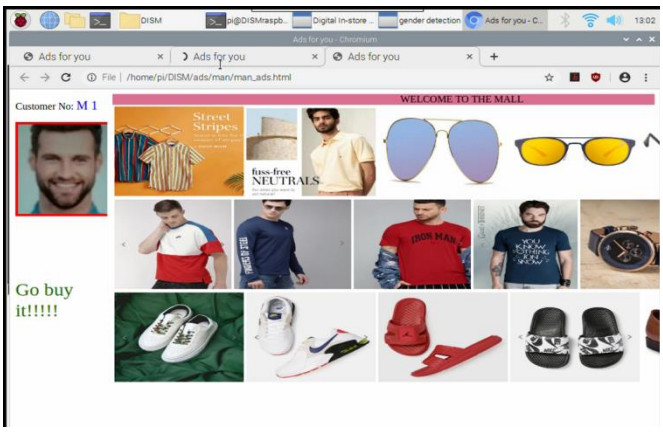

Figure 8: System display ads for customer (Man).

In the above screen the system displays ads for customer having attribute “Man”.

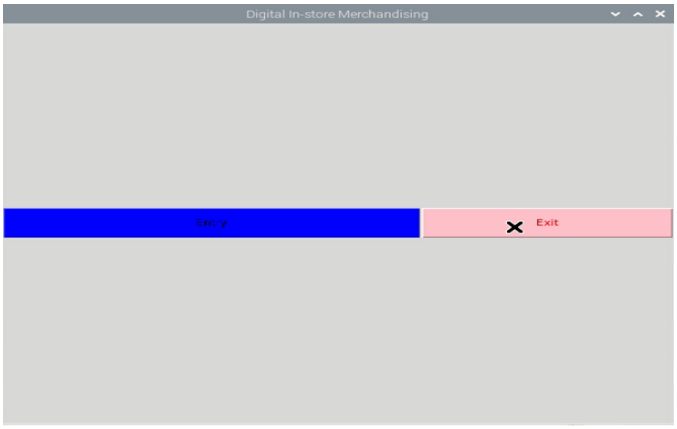

Figure 9: Tkinter window displaying button for entry and exit

For demonstration of Exit module we need to click on exit button in Tkinter window.

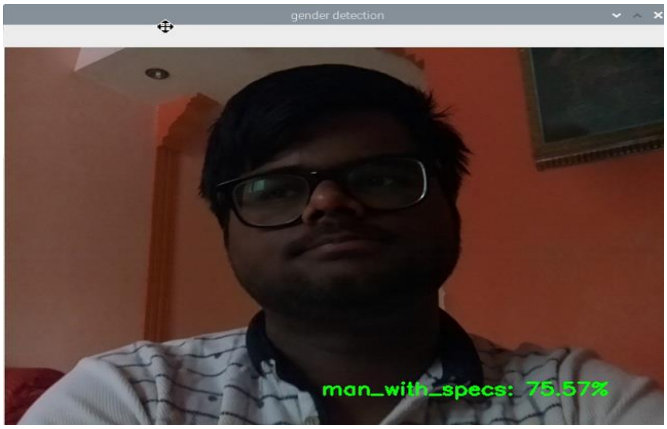

Figure 10: System identifies the customer as “Man with specs” while exiting the mall.

While exiting the mall the system identifies the customer as “Man with specs” and checks whether the image is present in the folder “/Inside_Mall/Man_with_specs/” then it will be deleted from the folder.

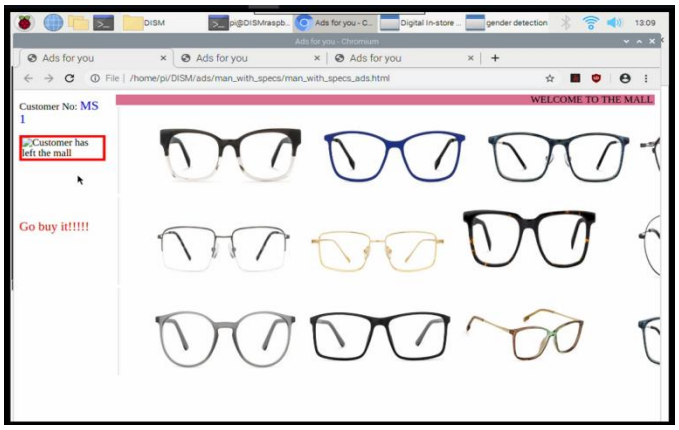

Figure 11: System displays that the customer has left the mall.

When the customer exits the mall his/her image is deleted from the system and screen display "Customer has left the mall" in place of his/her image.

VI. Advantages

1. No need to carry cell phones.
2. No privacy Issue.
3. Individual specific ads can be recommended to boost the sale.

VII. Limitations

1. Cannot display ads of all people with less no of cameras and display devices.

VIII. Future work

1. To Increase the number of attributes to provide advertisement.
2. To add a module which can store the purchased product details of the specific customer and then provide ads on that products also when the customer visits next time.

IX. CONCLUSION

Based on all the data that have been explained before, we can understand that Digital in-store merchandising is very profitable for the shop owners as well as the customers. As there is no such system developed to recommend person specific advertisement.

X. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "Digital In-store Merchandising". We would like to thank Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. Ashok Kasnale, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

X. REFERENCES

[1] Onkar Ghate, Gurunath Chavan, Krutika Dongare, Snehal Mangale "BlueTech: A Bluetooth based Advertisement System for Mall",International Journal of Innovative Research in Computer and Communication Engineering,2017

[2] Christine Bauer and Christine Strauss "Reaching Consumers Individually at the Right Place: A Literature Analysis of Location based Advertising on Mobile Devices ",Management Review Quarterly.66,2016

[3] T.Thiraviyam "ARTIFICIAL INTELLIGENCE MARKETING",International Journal of Recent Research Aspects,2018

[4] Daniel S´aez Trigueros "Face Recognition: From Traditional to Deep Learning Methods" ,arXiv,2018

[5] Tianyi Liu, Shuangsag Fang, Yuehui Zhao, Peng Wang, Jun Zhang "Implementation of Training Convolutional Neural Networks"arXiv,2016

[6] S. Muthuselvi and P. Prabhu "DIGITAL IMAGE PROCESSING TECHNIQUES – A SURVEY" International Multidisciplinary Research Journal,2016

[7] Erica Hokse "MOBILE LOCATION-BASED ADVERTISING",2016

[8] Srikar Appalaraju,Vineet Chaoji "Image similarity using Deep CNN and Curriculum Learning",arXiv,2017

[9] Manik Sharma, J Anuradha, H K Manne and G S C Kashyap "Facial detection using deep learning",IOP Conference Series: Materials Science and Engineering,2017

[10] Jinesh Mehta, Eshaan Ramnani, and Sanjay Singh "Face Detection and Tagging using Deep Learning",International Conference on Computer, Communication, and Signal Processing (ICCCSP),2018

[11] Daniel Fleder and Kartik Hosanagar "Recommender Systems and their Impact on Sales Diversity",EC'07 - Proceedings of the Eighth Annual Conference on Electronic Commerce,2017

[12] Sumit Sidana "Recommendation systems for online advertising",Computers and Society [cs.CY],2019

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An Automated System on Collision Alert for Vehicle Safety on Road

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ABSTRACT

There are various reasons due to which accident rates are increasing, some of the reasons are the negligence of the driver, fog, smog, smoke, etc. because of which people are losing their life. In this project, we are going to take note of how we can reduce these accidents by other means which will help to detect the problem in the first place.so, in this project we are basically, calculating or measuring the safety distance between the driving car and front object to avoid the collision.

Keywords : Electromechanical, Automated Braking System, Sensors, Notification, Alert.

I. INTRODUCTION

Automated collision alert system works to avoid accidents or damage. Whenever the sensor detects any obstacle the car automatically adjust accordingly, for instance, it calculates the required speed, proper distance to be maintained between vehicles. So according to the speed of a car, the system will calculate the safety distance. If the obstacle is not in the safety distance then the system will generate alert to apply the brake but in case if the driver doesn't respond then the system will automatically apply the brake. So, in this way it helps to prevent collisions that lead to the safety of vehicles on road.

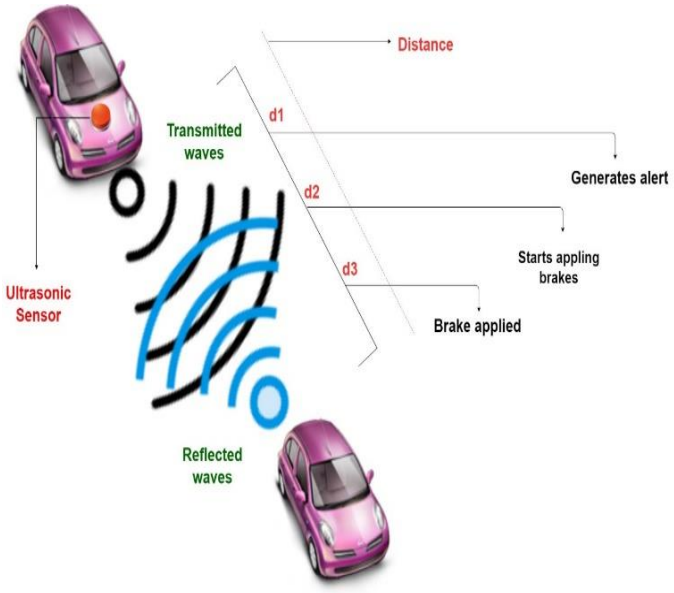

Figure 1: System Architecture

II. LITERATURE SURVEY

TABLE I
LITERATURE SURVEY TABLE

Sr. No.	Paper Name	Author	Method Proposed	Limitations
1.	The Vehicle Collision Warning System based on GPS	Sehun kim, First ACIS/JNU International Conference	GPS to collect vehicle data on AIS and depending upon vehicle's speed ,direction and distance waring is generated.	Collision is detected within 30meters. Automatic braking system is not there.
2.	Performance Study On IR Sensor For Automobile Braking System	N.Sreeraman, IRJET, Volume:05 Issue:03| Mar-2018	The distance of any obstacle, a stationary or a moving vehicle or a road block is sensed by an infrared sensor and it is provided to the microcontroller	Performance Study On IR Sensor For Automobile Braking System.
3.	Automatic Braking System Using Ultrasonic Sensor.	J. V. Sai Ram, IRJET, Volume 3, Issue 4, April 2017	Ultrasonic Sensor detects the obstacle and sends signal to the Aurduino Nano for processing safe distance and accordingly buzzer and brake id applied.	Aurduino Nano less I/O pins so it can be used for limited number of things.
4.	Collision Detection System for vehicles in Hilly and Dense Fog Affected Area to Generate Collision Alerts.	Anil Kumar Gupta, Interational conference on Issues and Challenges in Intelligent Computing Technologues(ICICT), August 2014.	The location of the all the vehicles is send to server using GPS, there processing is done, and if any vehicle comes nearer then the safe distance, then alert is generated.	The system is not suitable for poor connectivity area. the processing time is quite high.

III. TAXONOMY CHART

TABLE III
TAXONOMY CHART

	Processing on Server	Automatic Brake	Alerts Generation	Feasibility in any weather
The Vehicle Collision Warning System based on GPS	✓	✗	✓	✗
Performance Study On IR Sensor For Automobile Braking System	✗	✓	✓	✗
Automatic Braking System Using Ultrasonic Sensor.	✓	✓	✗	✓
Collision Detection System for vehicles in Hilly and Dense Fog Affected Area to Generate Collision Alerts.	✓	✗	✓	✓

IV. Algorithm

A. Algorithm for Safe distance Calculation-

Input : Obstacle
Output : Alert

Steps:

1. Ultrasonic senor transmits ultrasonic waves.
2. If an obstacle is there, the UV rays get reflected back and then single is passed to Uno Arduino.
3. Arduion finds the safe distance and threshold distance.
4. On reaching the safe distance , Arduion generates alert.

B. Algorithm for automatic braking -

Input : Threshold distance
Output : Automatic brake is applied on the vehicle

Steps:

1. If drive fails to take any action and the threshold distance is reached,
2. Automatic brake is applied and the vehicle is stopped before collision.

V. RESULT

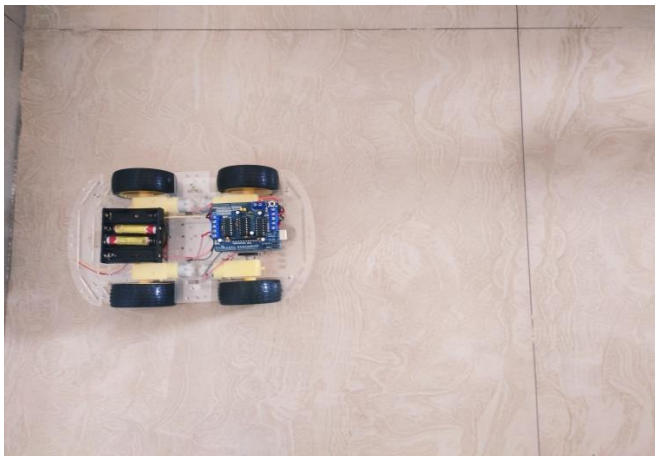

Figure 2: Car at initial state

The ultrasonic sensor emits sound to detect the presence of an object in front, if it receives back the sound, it indicates the presence of an object.

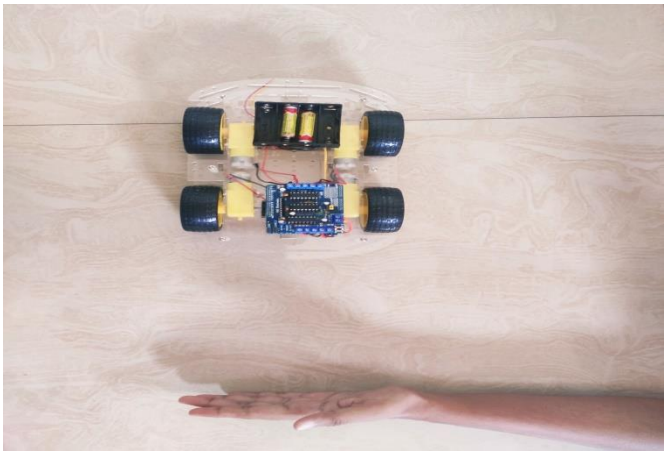

Figure 3: At range 1 system generates alarm

Once the object is detected the buzzer beeps giving a warning to the driver to apply brakes.

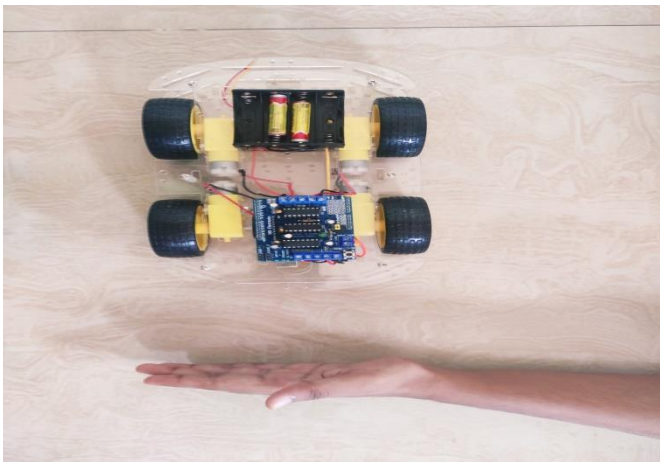

Figure 4: At range 2 system applies automatic brakes

If the car is less than threshold range from the object detected then the motor automatically stops. Hence the car is stopped preventing the accident from occurring.

The below image show the output of the working system on Arduion IDE.

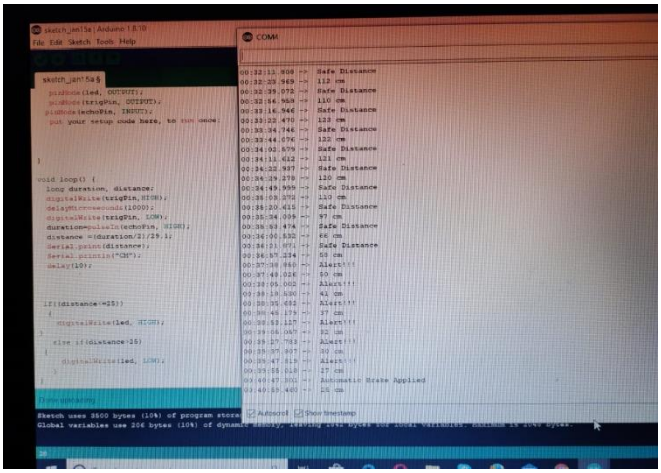

Figure 5: Output on Arduino IDE.

VI. Advantages

1. Avoids Accidents.
2. In area of poor connectivity and poor visibility (foggy area) accidents can be avoided.
3. First generates Alert and if no action is taken Automatic braking is applied.

VII. Limitations

1 Can detect obstacle upto 100 cm (1m).

2 Can detect obstacle in front of the car only.

VIII. Future work

The project work is no more exhaustive as it can be further accomplished by using different range sensors and actuating mechanism.

IX. CONCLUSION

The following conclusions that can be made on automatic braking system using ultrasonic sensor are:

1. Arduino UNO microcontroller is user friendly and helps learners. Mechanical engineers in providing better coding/ programming for automatic braking.

2. Ultrasonic sensor is inexpensive compared to other sensors and provides better sensing span within 100m.

3.Automatic braking system take decision based on microcontroller inputs and begins the braking automatically and regulate the vehicle in advance to any harmful accidents situations. Thus, implementing this System can reduce the close impact likely accidents. Also, it can be concluded that the present project work is no more exhaustive as it can be further accomplished by using different range sensors and actuating mechanism. Present paper work becomes a prepared reckoner for engineers in future project growth.

X. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on An Automated system on collision alert for vehicle safety on road. We would like to express our special thanks of gratitude to our Guide, Prof. Monika Dangore, and Dr. Pankaj Agarkar, HOD Computer Engineering Department, for giving us all the help and support we needed during course of the Paper writing work. We would also like to thank Dr. Ashok Kasnale, Principal, Dr. D Y Patil school of Engineering, who motivated us and created a healthy environment for us to learn in the best possible way.

X. REFERENCES

[1] Sehun Kim, Sunghyun Lee, Inchan Yoon, Miji Yoon, Do-Hyeun Kim "The Vehicle Collision Warning System based on GPS" First ACIS/JNU International Conference on Computers, Networks, Systems, and Industrial Engineering.

[2] N.Sreeraman, G.Sathyapriya, G.Ganesan, G.Ajithkumar, S.Praveen Kumar "Performance Study On IR Sensor For Automobile Braking System", Volume:05 Issue:03|Mar-2018.

[3] Vipul Shinde, Rohan Thorat, Trupti Agarkar, "Automatic Car Driving System Using Fuzzy", Volume:05|Issue:03|Mar-2018.

[4] A.joseph Godfrey, V.Sankaranarayanan, "A New Electric Braking System With Energy Regeneration For a BLDC Motor-Driven Electric Vehicle",Volume:21|Issue:04|August-2018.

[5] Bhaskara. P, Eriki Ananada. K, Venkataramana, "Arduino Based Automated Braking Control System To Enhance The Safety At Low Light And Long Stressed Drive Condition",Volume:04|Issue:2|2018.

[6] Anil Kumar Gupta, Garurav Wable, Tarun Batra ,"Collision Detection System for vehicles in Hilly and Dense Fog Affected Area to Generate Collision Alerts", 2014 Interational conference on Issues and Challenges in Intelligent Computing Technologues(ICICT), August 2014.

[7] J. V. Sai Ram, K.M.S.V. Manikanta, G. Pavanth, B.Jagadeep , "Automatic Braking System Using Ultrasonic Sensor", Volume 3, Issue 4, April 2017.

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System for Heartbeat and Temperature Monitoring with Location Tracking for Soldiers

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ABSTRACT

In extremely dangerous situations soldiers not only deal with the physical threat, but also stress caused by protracted operations or lack of sleep. So for the security purpose of soldiers, a tool is required which is used in health monitoring and tracking the location of the soldier. So in this project a tool is implemented using arduino microcontroller and bio-sensors like heartbeat sensor and temperature sensor for health monitoring purpose . Also to track the location of the soldiers this project uses a GPS system. Additionally a ESP8266 Wi-Fi module is used to send all the values continuously to the military center for continuous analysis of soldiers.

Keywords : Atmega328 Microcontroller, GPS, LM35 Temperature Sensor, Heartbeat Sensor, Battery.

I. INTRODUCTION

To receive the information from the control station or from the superiority, the soldier must be integrated with advanced voice and data communication devices. The soldier needs wireless network for displaying maps and to communicate with military center or military personnel. Apart from the nation's security, the soldier's security is also important in protecting himself with advanced weapons and it is necessary for the army base station to monitor the health status of the soldier.

In order to provide security to the soldiers this project called Heartbeat and Temperature Monitoring with Location Tracking for Soldiers basically monitors the health of the soldiers and keeps track of soldier's security.

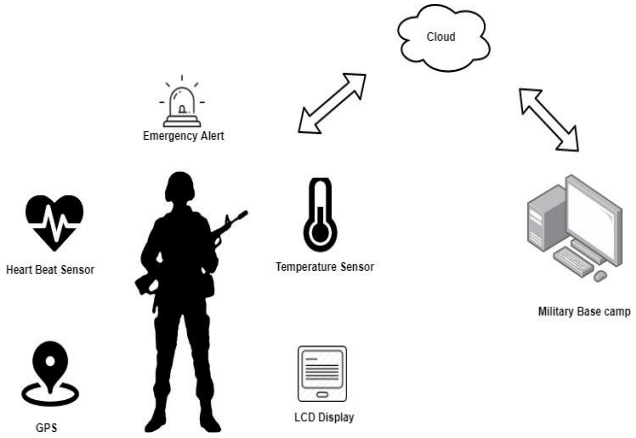

fig. 1 Overall System

II. PROBLEM STATEMENT

Many other jackets existing in the market can provide both cooling and warm service with the jacket. The different climatic conditions such as very cold and very hot temperatures could be dangerous to health. In very cold temperature, the most serious concern is the risk of hypothermia or extreme overcooling of the body. Hence, in this project a smart army jacket for the soldiers is implemented as soldiers play a very important role to protect our country in extreme conditions.

The smart army jacket could monitor health, internal temperature, track location as well as send emergency notification in the form of short message service for the soldier as shown in fig. 1.

III. LITERATURE SURVEY

Soldier Security and Health Monitoring Thanga Dharsni, Hanifa Zakir, Pradeep Naik, Mallikarjuna, Raghu. 2018, the proposed framework can be mounted on the warrior's body to track their wellbeing status and current area utilizing GPS. Through distributed computing this data will be transmitted to the control room [1].

Health Monitoring and Tracking System For Soldiers Using Internet of Things (IoT) Niket Patil 2017, the paper reports an Internet of Thing (IoT) based health monitoring and tracking system for soldiers. This information will be transmitted to the control room through IoT. The proposed system comprises of tiny wearable physiological equipments, sensors and transmission modules [2].

Wearable Systems for Soldiers Monitoring the Health Condition: Review and Application Petr Volf, Slavka Viteckova, Pavel Smrcka 2017, systems for measuring of medical data for the diagnostics of physical and psychological state have significantly spread. This study, examines the current technologies and usage of the wearable monitoring systems in military. The article can be used as a guide for choosing suitable and affordable systems of quantitative evaluation of physical and psychological conditions of soldiers. High end simulation software is required[3].

Wireless detection system for Health and military application Yallalinga, Nirmalkumar S. Benni 2017, upon detection of fall/collapse the sensor system transmits the information wirelessly, which will be received by the care-taker's mobile. The sensor is a belt shaped wearable device consisting of accelerometer (tri-axial) and gyroscope. These sensors are used to classify the posture and dynamics of the user. The main aim of the project is to develop efficient algorithms to detect falls and distinguish between falls and non-falls using these sensors.GSM is outdated. Zigbee is used for wireless communication and it has many limitations such as a range and obstacles in the communication channel[4].

Monitoring of Soldier's Health and Transmission of Secret Codes Zeeshan Raza, Kamran Liaquat 2016, in this paper, design of a smart device for soldier using modern technologies and techniques is shown. The device will be able to sense heartbeat and body temperature of soldier and transmit the reading on base station where the cumulative data will be displayed. For storage of readings a small database is organized. Hardware approach, LCD is not necessary to use if software interface is used. No cloud processing used. Secret codes are already implemented[5].

Heart Rate, Skin Temperature, Skin Humidity and their Relationship to Accumulated Fatigue Decho Surangsrirat, Songphon Dumnin and Support Samphanyuth 2016, the objective of this study is to monitor the heart rate, skin temperature and skin humidity of the new recruited soldiers. The

measurements are collected during their sleep. In multiple participant, experimental results show an increasing trend of the average resting heart rate. In one participant there is an increasing trend of skin temperature, the data also show consistently high skin humidity for this participant[6].

IV. PROPOSED SYSTEM

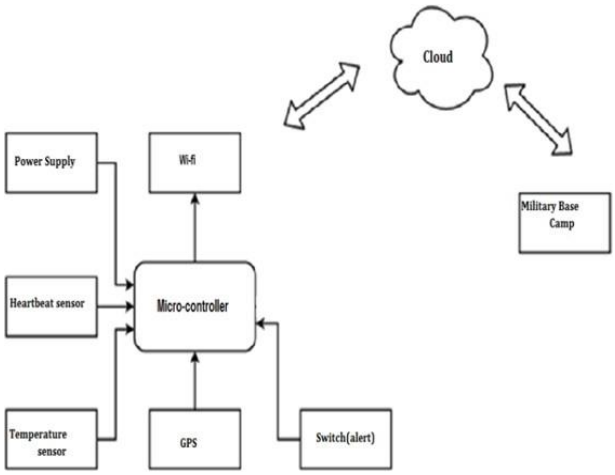

Fig 2. System diagram

This project contains a smart army jacket for the army soldiers as soldiers play a very important role to protect our country in extreme conditions.

This smart army jacket will monitor the heartbeat and internal temperature of the soldier and will also send emergency notification in the form of short message service for safety of the soldier.

Arduino microcontroller and bio- sensors like heartbeat sensor and temperature sensor are used in this project. Also GPS system is used to track the location of the soldier as shown in fig.2.

Hardware Used: Controller, Temperature Sensor, Heartbeat Sensor, GPS, Buzzer.

V. RESULT

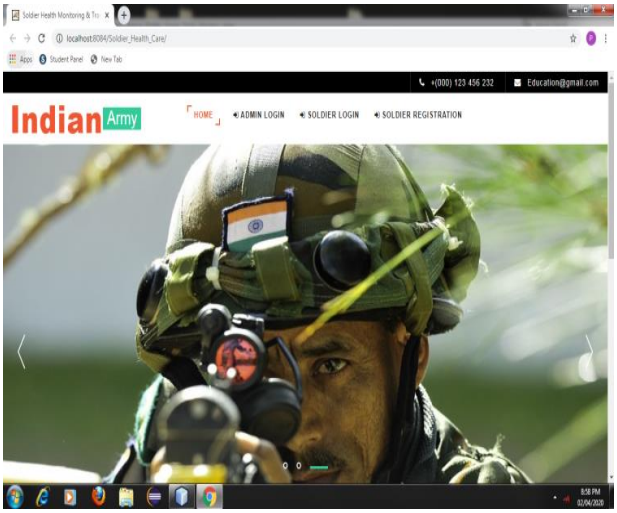

Fig. 3 System login page

The above screen(fig. 3) is the system login page created in this project which appears first on executing the project.

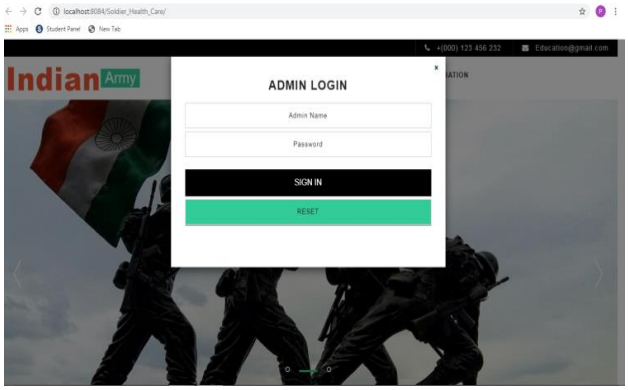

Fig. 4 Admin login

The Admin in the army base station can login through the admin login as shown in fig. 4 to track the health status and location of soldiers.

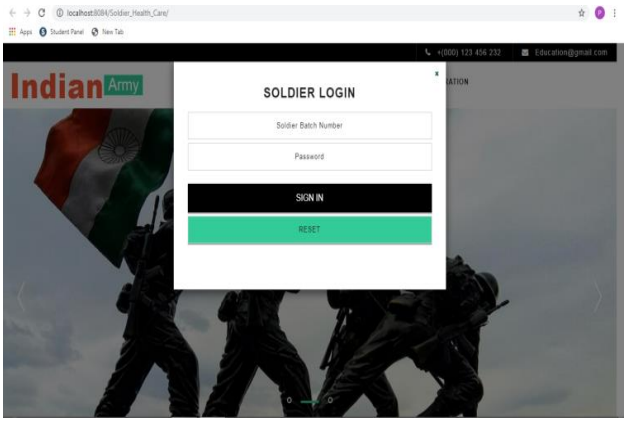

Fig.5 Soldier login

Soldier Login is provided for updating information of the soldier as shown in fig. 5

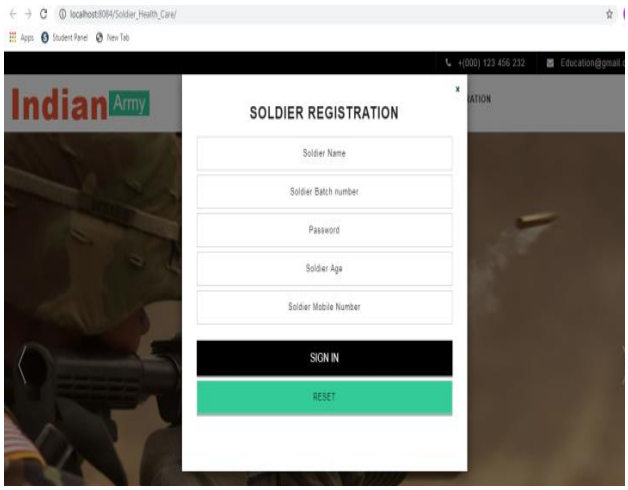

Fig.6 Soldier Registration

A new registration of the soldier can be done as shown in fig. 6 to enter the details of the soldier.

Fig.7 ESP8266 WI-FI Module

ESP8266 Wi-Fi module shown in fig. 7 is used to send all the sensor values continuously to the military center for continuously analyzing soldier records.

Fig. 8 Heartbeat Sensor

Fig.9 Temperature Sensor

LM35 Temperature Sensor(fig. 9) is used to monitor the temperature of the soldier

Fig. 10 NEO-6M GPS module

Neo-6M GPS module shown in fig. 10 tracks position of the soldier anywhere on the globe.

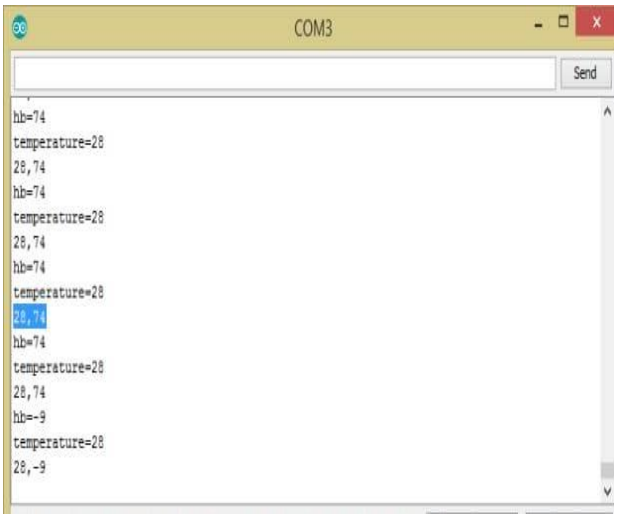

Fig. 11 Heartbeat and Temperature reading

In the above screen(fig. 11) the system displays heart rate and temperature of the body. LM35 Temperature Sensor(fig.9) and Heartbeat Sensor(fig. 8) is used to monitor temperature and heartbeat of soldiers respectively .

VI. ADVANTAGES

1. Soldiers health(heartbeat) is monitored continuously.
2. Location of the soldier can be tracked and sent to control room if he goes missing.
3. High range of security could be provided.

VII. FUTURE WORK

1. Advanced cryptography techniques could be used.
2. Solar power embedded system can be implemented.

VIII. REFERENCES

[1]. Thanga Dharsni, Hanifa Zakir, Pradeep Naik,Mallikarjuna,Raghu,2018 International Conference on Design Innovations for 3Cs Compute Communicate Control. 978-1-5386-7523-6/18@2018 IEEE.

[2]. Niket Patil, Student Member, IEEE And Brijesh Iyer, Member "Health Monitoring and Tracking System For Soldiers Using Internet of Things (IoT)" International Conference On Computing, Communication And Automation (ICCCA2017).

[3]. Wearable Systems for Monitoring Soldiers Health condition: Review and Application by Patrik Kutilek, Petr Volf, Slavka Viteckova, Pavel Smrcka 2017. Vol. 12 No. 2 (2017), PP.259-280

[4]. Yallalinga, Nirmalkumar S. Benni, "Wireless detection system for Health and military application"2017 IEEE 7th International Advance Computing Conference 978-1-5090-1560-3/17

[5]. Monitoring of Soldier's Health and Transmission of Secret Codes by Zeeshan Raza, Kamran Liaquat 2016 Sixth International Conference on Innovation Computing Technology (INTECH) 10.1109/INTECH.2016.7845019

[6]. Heart Rate, Skin Temperature and Skin Humidity and their Relationship to Accumulate Fatigue by Decho Surangsrirat, Songphon Dumnin and Support Samphanyuth 2016 10.1109/BIOSMART.2019.8734230(BioSmart)

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Sentiment Analysis and Opinion Mining for Hindi Reviews

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ABSTRACT

Sentiment analysis and opinion mining for Hindi reviews is the field of study that analyses people's sentiments, feelings, opinions, attitudes, and decisions from Hindi written language. Sentiment analysis systems are being applied in almost every social domain which helps them to analyse customer satisfaction of their product because opinions are central to almost all human activities which can influence every decision. The suggested framework for hindi reviews consists mainly of data collection and pre-processing, and measurement of customer satisfaction on any product by a graphical output. In Data collection and pre-processing stage, text mining is utilized to compile customer- Hindi review-based dictionaries of attributes and sentiment words. An empirical case study will be done on customer hindi reviews. We believe that the proposed customer-review-based approach not only saves time and effort in measuring customer satisfaction and opinion, but also captures the real thoughts of customers.

Keywords : ML, NLTK, Data Set, NLP, Sentiment Analysis.

I. INTRODUCTION

Sentiment analysis and opinion mining is computational study of users sentiments, opinions, feelings, and attitudes. This fascinating problem is increasingly important in businesses and society. Sentiment analysis is a kind of Natural Language Processing (NLP) for tracing the mood of the public about a particular product or topic. The application which considers every individual as a separate class and predict the next move on the basis of previous data available is known as language modelling.

There are mainly two steps that are followed for classification applied in machine learning. Utilising the training data set for learning the model is the first step. In the second step the trained model is applied to the test data set.

The reviews of others have a significant influence in our daily decision-making process for any product. These decisions range from buying a product such as a smart phone to making investments to choosing a school—all decisions that affect various aspects of our daily life. Before the Internet, people would seek opinions on products and services from different sources such as friends, relatives, or consumer reports or by using it. However, in the Internet era, it is much easier to collect diverse opinions in the form of reviews from different people around the world. People look to review sites (e.g., CNET, Epinions.com ,Glassdoor), e-commerce sites (e.g., Amazon, eBay, Flipkart), online opinion sites (e.g., TripAdvisor, Rotten Tomatoes, Yelp, IMDB) and social media (e.g., Facebook, Twitter, Instagram) to get feedback on how a particular product or service

that may be perceived in the market. Similarly, organizations use surveys, and social media as a mechanism to obtain feedback on their products and services. sentiment analysis and opinion mining for reviews is the computational study of opinions, sentiments, and emotions expressed in text.

Following example demonstrate working of our proposed system:

Sample input:

निर्देशक राजकुमार हिरानी और अभिनेता आमिर खान की जिस फिल्म 'पिके' का सभी को लम्बे वक्त से इंतज़ार था, वह आख़िरकार रिलीज़ हो गयी हैं। आमिर का काम फिल्म में काबिल-ऐ-तारीफ हैं। अनुष्का, शुशांत का काम भी अच्छा हैं। कुल मिलाकर फिल्म आपका मनोरंजन करेगी।

Pre-processing:

Sentence extraction

Sentence 1: निर्देशक राजकुमार हिरानी और अभिनेता आमिर खान की जिस फिल्म 'पिके' का सभी को लम्बे वक्त से इंतज़ार था, वह आख़िरकार रिलीज़ हो गयी हैं।

Sentence 2: आमिर का काम फिल्म में काबिल-ऐ-तारीफ हैं।

Sentence 3: अनुष्का, शुशांत का काम भी अच्छा हैं।

Sentence 4: कुल मिलाकर फिल्म आपका मनोरंजन करेगी।

Stop word approval:

Sentence 1: निर्देशक राजकुमार हिरानी और अभिनेता आमिर खान जिस फिल्म 'पिके' सभी लम्बे वक्त इंतज़ार, आख़िरकार रिलीज़ हो गयी।

Sentence 2: आमिर काम फिल्म काबिल-ऐ-तारीफ।

Sentence 3: अनुष्का, शुशांत काम अच्छा।

Sentence 4: कुल मिलाकर फिल्म आपका मनोरंजन करेगी।

Extracting polarity:

Sentence 1: निर्देशक\\0.0 राजकुमार\\0.0 हिरानी\\0.0 और\\0.0 अभिनेता\\0.0 आमिर खान\\0.0 जिस\\0.0 फिल्म\\0.0 'पिके'\\0.0 सभी\\0.0 लम्बे\\0.0 वक्त\\0.0 इंतज़ार\\0.0 आख़िरकार\\0.0 रिलीज़\\0.0 होगयी\\0.0

Sentence 2: आमिर\\0.0 काम\\0.375 फिल्म\\0.0 काबिल-ऐ-तारीफ\\0.0

After applying algorithm आमिर\\0.0 काम\\0.375 फिल्म\\0.0 काबिल-ऐ-तारीफ\\0.25

Sentence 3: अनुष्का\\0.0 शुशांत\\0.0 काम\\0.375 अच्छा\\0.45

Sentence 4: कुलमिलाकर\\0.0 फिल्म\\0.0 आपका\\0.0 मनोरंजन\\0.23 करेगी\\0.0

Overall polarity: Positive

II. LITERATURE SURVEY

TABLE I
LITERATURE SURVEY TABLE

Sr. No.	Paper Name	Author	Method Proposed	Limitations
1.	Sentiment analysis for mixed code for the translite rated hindi and Marathi text	Sharava ri Gavalik ar ,Moham mad Ansari	Docume nts from youtube, twitter,s ocial media, Refining and Removi ng the inconseq uential of the early propose d	Multi ple words, shortc uts for the words like,ly k,lk etc.,po s taggin g

			system.	
2.	Sentiment analysis for hindi language	Piyush Arora	Hindi news websites ,danik Bhaskar, nav bharat times. Naïve bayes,HSL(hindi subjective lexicon), SVM,N-gram features.	Unstructured data,noise(slang abbrevation),contextual info.
4.	A corpus of English-Hindi code-mixed	Sahil swami,Ankush Khandelwal,vijay singh	English-Hindi code mix tweets from twitter Svm with radial basis function kernel, linear	Sarcastic tweets customer
			svm, Random forest classifier.	
5.	Twitter sentiment analysis	Mondher Bouazizi, et.al	A novel technique was proposed to classify the texts that are gathered from Twitter in detailed manner. Amongst various sentiment classes, the text is classified through this classification technique.	Through the experimental results it is seen that the multi-class classification is achieved with 60.2% of accuracy.

III. ALGORITHM

A. Algorithm for classifying the statement -

Input: Review

Output: Sentiment of Review.

Steps:

1. Getting Review from the user.

2. Tokenization Process is carried out.
3. Data pre-processing.
4. Pass it to TfidfVectorizer() function to form vectors.
5. Vectors are then pass to the different classifiers.
6. Each classifier such as Logistic Regression, SGDC, Multinomial NB, KNN, SVM, Decision Tree, Neural Network will provide its own accuracy for the statement.
7. A voting classifier will choose the polarity of the given statement based on the polarities given by all the classifier.
8. Polarity chosen by most of the classifier will be assign to the overall polarity of the given statement.

IV. ADVANTAGES

1. We can develop a stronger, precise, data-based marketing strategy. Sentiment analysis is a way which can advance marketing strategy as it has impact on how people having their mind on their production service or any product. Analysing the opinions around your product helps better understand strategy behind customer's purchasing decisions.

2. Understand your customers. It's hard to succeed in business without fully understanding your customers. The more precise your work is, the better the response rate you will have.

3. Find industry leaders and influencers. By monitoring certain keywords or phrases you're able to find the leaders and influencers you could work with to boost your business to another level by using their experience. Many business men claims that influencer marketing is long inactive. But that's not entirely true. If you want to run a successful marketing campaign, you need to choose the right influencer. Apart from examining the number of likes, shares and subscriber's, take a closer look at the sentiment around given author.

V. LIMITATIONS

1. Computer programs have problems recognizing things like sarcasm and irony, negations, jokes, and exaggerations - the sorts of things a person would have little trouble identifying which can reduce result precision and accuracy.

VI. FUTURE WORK

1. Sentiment analysis and opinion mining has a good way to go before it can replace human coding of sentiment though even human coding will have problems, as idea of negative or somewhat negative may well be different from others. More people believe that machine learning and sophisticated text analytics algorithms have to be improved so as to increase the accuracy of automatic sentiment analysis.
2. We believe that sentiment analysis and opinon mining will only increase its importance as more people start using online channels such as amazon, imdb, glassdoor, twitter to communicate, both directly and indirectly, with corporations.

VII. CONCLUSION

Based on above study and survey on sentiment analysis about different languages particularly Hindi and using different methodologies we proposed a system in which the system allows finding sentiment associated with Hindi review where overall polarity of the review is classified as positive, negative or neutral using our own constructed classifier model which is trained using training corpus in Hindi. Despite all the challenges that threatens Sentiment Analysis and Opinion Mining, one cannot ignore the value that it adds to the industry. Because Sentiment Analysis and Opinion Mining bases its result on

factors that are completely humane, it is bound to become one of the major drivers of many business decision in future. Improved accuracy and consistency in Opinion Mining techniques can help overcome some current problems faced in Sentiment Analysis on Hindi language and give improved results.

VIII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "Sentiment Analysis and opinion Mining for Hindi reviews". We'd like to thank Dr. Pankaj Agarkar, Head Of Department, Computer Engineering, D Y P School Of Engineering, Pune for giving us all the help and support we need during course of the Project. We are really grateful to him. Our special thanks to Dr. Ashok Kasnale, Director DYPTC who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all our Guide Prof. Jayashree Chaudhari and staff members of our college for their support and guidance.

IX. REFERENCES

[1]. Bing Liu,"Exploring User Opinions in Recommender Systems", Proceeding of the second KDD workshop on Large Scale Recommender Systems and the Netflix Prize Competition", Aug 24, 2008, Las Vegas, Nevada, USA.

[2]. Xiaowen Ding. A Holistic Lexicon-Based Approach to Opinion Mining- WSDM'08, February 11-12, 2008, Palo Alto, California, USA.2008 ACM 978-1-59593-927- 9/08/0002.

[3]. R. B. W. N. Jeonghee Yi, T Nasukawa, "Sentiment analyzer: Extracting sentiments about a given topic using natural language processing techniques," ICDM03, IEEE, 2003

[4]. D. A. A. S.M.Shamimul Hasan, "Proximity-based sentiment analysis," IEEE, 2011

[5]. S. Mohammad, B. Dorr, and C. Dunne, " Generating HighCoverage Semantic Orientation Lexicons fom Overly Marked Words and a Thesaurus", In Proceedings of the 2009 Conference on Empirical Methods in Natural Language Processing,pp. 599-608, 2009.

[6]. D. Rao and D. Ravichandan, " Semi-supervised polarity lexicon induction", In Proceeding of 12 conference of the European Chapter of the Association for Computational Linguistics, pp. 675-682, USA, 2009.

[7]. P.J. Stone, "The General Inquirer: A Computer Approach to Content Analysis", The MIT Press, 1966.

[8]. K. Dave, S. Lawrence and D. M. Pennock, "Mining the Peanut Gallery: Opinion Extraction and Semantic Classification of Product Reviews", In Proceedings of 12th International Conference on World Wide Web, pp. 519- 528, Hungary, 2003.

[9]. S. M. Kim and E. Hovy, "Determining the sentiment of opinions", In Proceeding of COLING, pp. 1367-1373, 2004.

[10]. A. Das and S. Bandyopadhay, "SentiWordNet for Indian languages," Asian Federation for Natural Language Processing, China, pp. 56–63, August 2010.

[11]. Michael Gamon, Anthony Aue, Simon CorstonOliver, and Eric Ringger, "Pulse: Mining Customer Opinions from Free Text Natural Language Processing", Microsoft Research, Redmond, WA 98052, USA.

[12]. Minqing Hu and Bing Liu, "Mining and Summarizing Customer Reviews", Proceedings of the tenth ACM SIGKDD International conference on knowledge discovery in data mining (KDD-2004), August 22-25.

[13]. Guang Qiu, Bing Liu, Jiajun Bu and Chun Chen. "Opinion Word Expansion and Target Extraction through Double Propagation." Computational Linguistics, March 2011, Vol. 37, No. 1: 9.27.

[14]. Lie Zhang and Bing Liu. "Identifying Noun Product Features that Imply Opinions." ACL2011 (short paper), Portland, Oregon, USA, June 19-24, 2011.

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Framework For Detecting Dyslexia

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ABSTRACT

A Big data-based multimedia System, which uses Test Modules converged with Speech Recognition, Pupil Tracking to detect a set of symptoms of having dyslexia among children. A person will be solving the different Test Modules wherein the Pupil Tracking, Speech Recognition and Handwriting Recognition modules will be working, after the Tests are completed the trained model will process the results utilising data stored in Hadoop Cluster and Predict the Dyslexia in an individual. The multimedia framework is envisioned to accelerate and ease the process of detecting dyslexia at the global level, and to predict the presence of disease in the individual and also determine the intensity of the disease.

Keywords : Test Modules, EyeTracking Algorithm, Speech & Text Recognition, BigData, CNN.

I. INTRODUCTION

Dyslexia is Learning disorder that involves difficulty reading due to problems identifying speech sounds and learning how they relate to letters and words (decoding). Also called reading disability, dyslexia affects areas of the brain that process language.

Although children with dyslexia tend to show gifted intelligence, the learning disability poses a great challenge to adapt to the normal learning styles in the school. Although various test mechanisms have been proposed in the past in diagnosing the presence of dyslexia among children in preschool and junior schools, most of them cannot be applied to a mass level or supports on single modality. Thanks to the recent advancements in multimedia technologies and Machine Learning, high speed Internet communication, even at rural areas, big data analytics, a new dimension of diagnosis of Dyslexia is now possible.

In this system, we have developed a an application where different Test Modules and Eye Tracking, Speech, Handwriting Recognition modules are implemented.

The different Tests are :

- Clock Drawing Test
- Writing Test
- Reading Test

1. Clock Drawing Test:

In this test, the student will be instructed to fill in the circle of the clock and mark the timing. After the test an algorithm tracks the drawing and analyses the results and stores at the server.

2. Writing Test:

In this test, the student will be instructed to write some words on a sheet of paper. The Paper will be scanned and the Handwriting Recognition module will analyze the results and store at the server.

3. Reading Test:

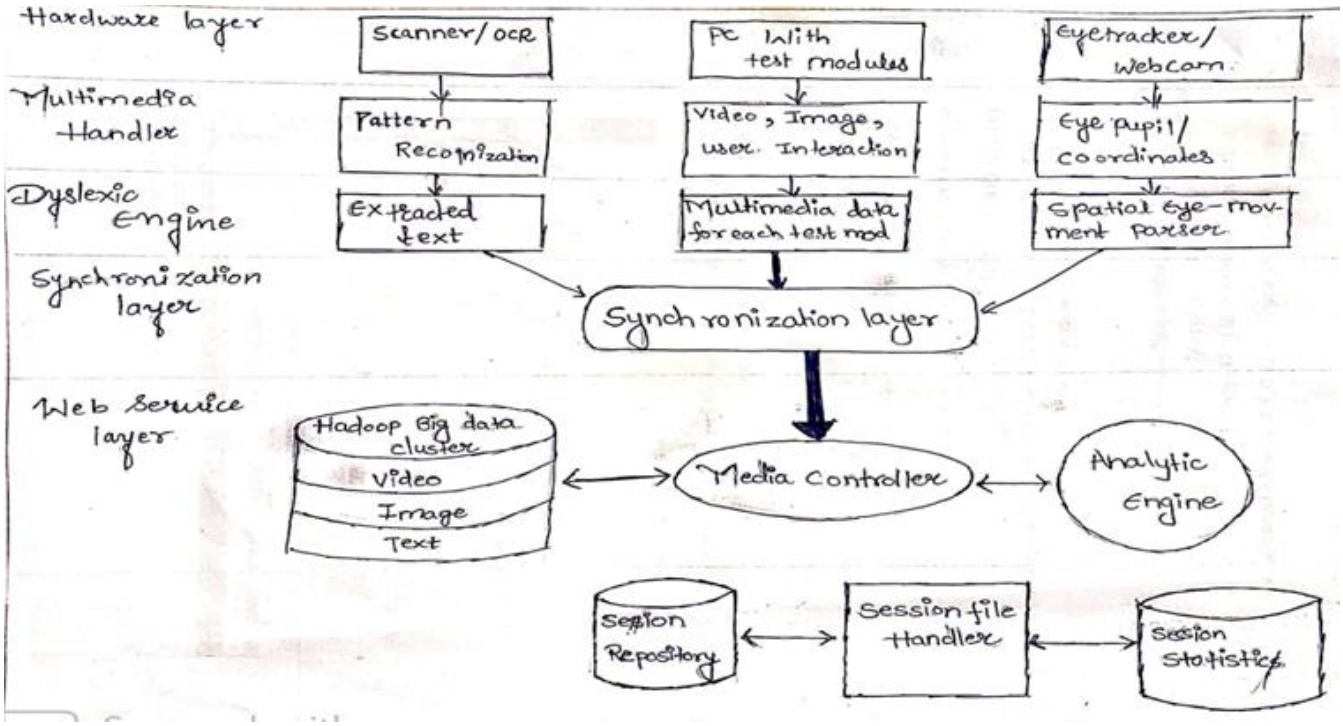
In this test, the student will have to read a given paragraph loudly. While the student is reading the paragraph, the webcam will be functioning in order to implement the Eye-Tracking Algorithm, along with that the Speech Recognition Module will identify the speech. All the results generated by Eye-Tracking and Speech modules are stored at the server.

Each user interactions with the test modules are stored as a video along with the Gaze or Pupil movement. At the end of a test session, the system communicates with the cloud based big data environment where the multimedia data consisting of user typed text, user interaction with different test modules captured as a video and screen images are uploaded for a set of algorithms to detect Dyslexia phenomena.

After the completion of all tests, now at the server side, the trained model analyses the recorded results of respective tests with the data sets and computes the results. The final results containing the prediction of Dyslexia in the student along with other attributes is displayed.

The main goal of this project is to Develop a framework at a global level for detecting Dyslexia and to help the children to be cured at early stage

The test can be administered by a school on a national level, where each individual test is graded by a licensed dyslexia therapist.



II. LITERATURE SURVEY

The overall finding of the above discussion is given below as Table-1 :

Table 1

Sr. No.	Paper Name	Method Proposed	Limitations
1.	ML to detect dyslexia - Kohli and Prasad	ML to detect dyslexia using students test scores as well as demographic or survey data as features	. Didn't have the Eye Tracking Algorithm to accurately predict Dyslexia
2.	Risk of development dyslexia - Costa et al.(2013)	Costa et al. used a totalof144features,including some hand-collected from interviews with families and students(asking about discipline, liking school,having friends,etc.),to assess learning disabilities	Limited to a few number of students, Couldn't deploy on large Scale and also Time Consuming
3.	Dyslexia tests - Loizou & Laouris	Used results of 4 tests as features in several ML techniques to diagnose students, amounting to 226 features	Eye-Tracking and Pattern Recognition absent.
4.	Dyslexia using EEG Wilckeetal	Combine EEG tests and genetic tests to diagnose dyslexia	Not Cost Efficient and not implemented at Global Level

III. TAXONOMY CHART

Paper No.	Paper Name	Test Modules	Eye-Tracking
1.	ML to detect dyslexia - Kohli and Prasad	✗	✗
2.	Risk of development dyslexia - Costa et al.	✗	✗
3.	Dyslexia tests - Loizou & Laouris	✗	✗
4.	Dyslexia using EEG Wilckeetal	✗	✓
5.	Framework For Detecting Dyslexia (Proposed Project)	✓	✓

ALGORITHM :

A. ALGORITHM FOR PUPIL IDENTIFICATION AND TRACKING –

Input : Video / Image

Output : Attributes in image

Steps:

1. Capture the video of student through webcam.
2. Scraping out the face from the image and furthermore the Pupil region
3. Processing the images obtained.
4. Matching the pattern of Pupil movement with that of the dataset to find the attributes.
5. Store the analysed results.

B. ALGORITHM FOR HANDWRITING –

Input : Scanned Handwritten-Text

Output : Machine readable text.

Steps:

1. Obtain the handwritten text.
2. Matching the text with the text in the dataset to find the attributes/obtain the words
3. Store the analysed results

C. ALGORITHM FOR SPEECH RECOGNITION –

Input : User recorded audio.

Output : Machine readable format

Steps:

1. Record the speech of the student.
2. Removing the redundant noise
3. Matching the audio data with the dataset to obtain the attributes
4. Store the analysed results

IV. RESULT

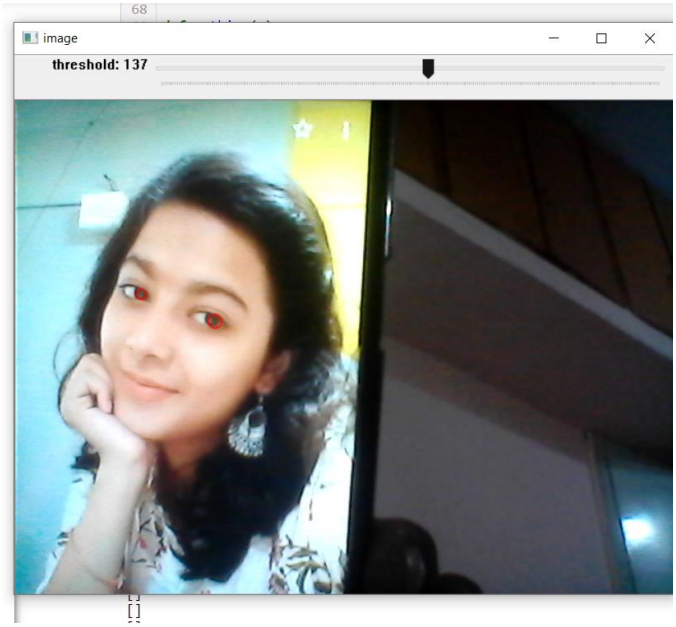


Figure1: Pupil Tracking

In the above screen, while a student attempts the reading test, Camera works parallel and records the video. In the video, Eye Tracking Algorithm detects the pupils of the user and records the pattern of gaze movement.

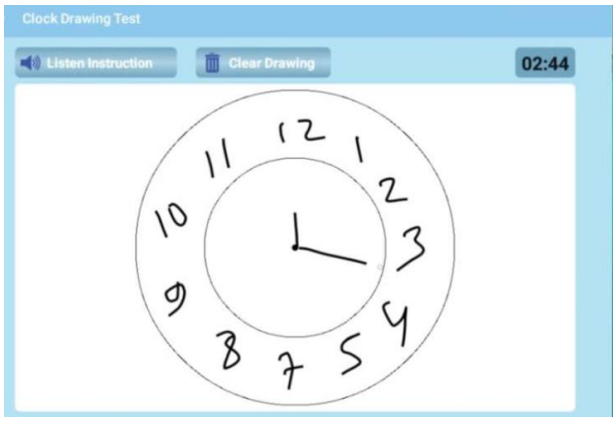


Fig 2 : Clock Drawing Test

In this test, the student will be instructed to fill in the circle of the clock and mark the timing. After the test an algorithm tracks the drawing and analyses the results and stores at the server.

V. ADVANTAGES

- Detection of disease at the earlier stages.
- Application can be deployed even at rural areas.
- It can be implemented over a school or an entire city.
- Earlier detection helps in preventing Major risks like Attention Deficit/Hyper-Activity Disorder(ADHD)

VI. Limitations

- Requirement of Laptop, Mobile with a camera is a must.

VII. FUTURE WORK

- Can be applied on a national level to check the performance of the server side auto-grading algorithms. Our findings will help us in developing assistive technologies for the dyslexic children with moderate learning environment in the school.

- Future Scope Involves Development Of a System or Game which will help cure these Dyslexic Children.

VIII. CONCLUSION

We have presented our ongoing research outcome on identifying dyslexia pattern automatically to help each school or parents identifying dyslexic students. We have used Eye-Tracking, Speech/Text recognition, multimedia capturing, storage, analysis and retrieval with the support of big data analytics. The multimedia is captured during examination time and presented to the doctor for getting a semantic view of the exam time user hand and eye movement, which is a prime source of finding dyslexic patterns.

IX. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on "**Framework for Detecting Dyslexia**". We would like to take this opportunity to thank Dr. Pankaj Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr M. Z. Shaikh, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

X. REFERENCES

[1]. Towards a Game to Detect Dyslexia. In Proc. of the 17th Int. ACM SIGACCESS Conference on Computers & Accessibility. ACM, New York, NY, USA, 307-308.

[2]. A Serious Game for Predicting the Risk of Developmental Dyslexia in Pre-Readers Children," in Computer Communications and Networks (ICCCN), 2012 21st International Conference on, vol., no., pp.1-5, July 30 -Aug. 2 2012.

[3]. The implementation of interactive multimedia in early screening of dyslexia," in Innovation Management and Technology Research (ICIMTR), 2012.

[4]. Dyslexia diagnosis in reading stage though the use of games at school," in Computer Games (CGAMES), 2012 17th International Conference on, vol., no., pp.12-17, July 30.

[5]. Dyslexia diagnosis in reading stage though the use of games at school," in Computer Games (CGAMES), 2012 17th International Conference on, vol., no., pp.12-17, July 30.

[6]. Web readability for students with Dyslexia: Malaysian case study," in User Science and, engineering 2014 3rd International Conference on, vol., no., pp.192-197, 2-5 Sept. 2014.

[7]. E.Łodygowska,M.Chęć,andA.Samochowiec,"Academicmotivationin children with dyslexia,' J. Educ. Res., vol. 110, no. 5, pp. 575–580, 2017.

[8]. J. M. Carroll, J. Solity, and L. R. Shapiro, "Predicting dyslexia using prereadingskills:Theroleofsensorimotorandcognitiveabilities,"J.Child Psychol. Psychiatry, vol. 57, no. 6, pp. 750–758, 2016.

[9]. C. Peake, J. E. Jiménez, C. Rodríguez, E. Bisschop, and R. Villarroel, "Syntactic awareness and arithmetic word problem solving in children withandwithoutlearningdisabilities,"J.Learn.Disabilities,vol.48,no.6, pp. 593–601, 2015.

[10]. S. Araújo, L. Faísca, I. Bramão, A. Reis, and K. M. Petersson, "Lexical and sublexical orthographic processing: An ERP study with skilled and dyslexic adult readers," Brain Lang., vol. 141, pp. 16–27, Feb. 2015.

[11]. V. Leong and U. Goswami, "Assessment of rhythmic entrainment at multiple timescales in dyslexia: Evidence for disruption to syllable timing," Hearing Res., vol. 308, pp. 141–161, Feb. 2014.

[12]. A.BoumarafandJ.Macoir,"Theinfluenceofvisualworddforminreading: Single case study of an Arabic patient with deep dyslexia," Reading Writing, vol. 29, no. 1, pp. 137–158, 2016.

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Survey on Fingerprint Based Security System for Vehicle

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ABSTRACT

Nowadays rate of vehicle theft is very advanced all through world and the situations are even worse in developing countries. Therefore, protection of the vehicles with an intelligent, reliable, effective and economical system is very important. The existing technologies for vehicle security have number of limitations including high false tracking rate, easy deactivation and high cost. In this research, an fingerprint vehicle security system has been designed and implemented using sensor-network system which employ Global Positioning System(GPS) and Global system for mobile Communication to set the alarm in danger. This cutting edge technology is capable to protect, monitor and set alarm within the less time.

Keywords : Micro-controller Unit (MCU); Global System for Mobile (GSM); Global Positioning System (GPS).

I. INTRODUCTION

Automated person identification or recognition has become popular in recent years because of its application like protected access to computer systems, buildings, cellular phones and in terms of security like video surveillance. Person identification techniques are divided into knowledge based, token based and biometric based. A knowledge based approach relies on something that an individual knows to make a personal identification like password.Token based approaches are based characteristics of an individual for identification and it cannot be stolen or lost.

Fingerprint based determination is one of the most crucial biometric technologies which have drawn an encompassing amount of attention lately. Fingerprints are believed to be unique across individuals. Fingerprint bio-metrics provides robust, reliable. identification. There are two varieties of fingerprint systems: verification and identification. Fingerprint verification is the process of acceptance and rejectance of the authorized person using his/her fingerprint. Fingerprint identification, on the other hand, is the process of deciding which registers one's fingerprint.

Fingerprint biometrics is one of the efficient, secured, cost effective, ease to use technologies for user authentication. Because of the intellectual property protection and commercial profits, it can also be used in the field of automobiles for providing security and theft protection of the vehicles.

II. Related Work

The modern developments in biometrics recognition system tracks to the improvement in reliability and accuracy of the system. Fingerprint Recognition (FR)

for vehicle security system are summarized in below section.

Some systems utilities Auto cop mechanism which is a video surveillance solution that can be fitted into the vehicle. The camera will endlessly monitor the actions within the system. The main drawback of this system is that, the camera will not detect accurately when there are changes in the lighting conditions in and approximately the system.

Other systems include in-vehicle anti-theft component that will not enable the functions of something an individual have like passport, driving license, ID card, credit card or keys. But these approaches have lot of demerits like: tokens may be stolen, lost, elapsed or mislaid. But the biometric systems use physiological or behavioral e appliances if it find itself is illegally moved to another car. The destructive aspect of this system is that it requires a secure processor and smart card chips to store in the Group Identification Number . The advanced system uses the Global Positioning System (GPS) to track position of the targeted vehicle and its current location. GPS uses global navigation satellite system. The location information provided by GPS system cannot provide location if view of the sky is severely limited. It is also influenced by other factors like rainfall, fog and snowfall.

Radio frequency Identification (RFID) is utilized in Intelligent Computerized anti-theft system [ICAT]. RFID cards are used to provide guaranteed access. The restriction here is that RFID cards without keys can be easily stolen.

III. Methodology

Since, other biometrics has their own virtue, the fingerprint recognition technique is unique and it provides higher security and accuracy.

a. The fingerprint of an individual is acquired by a fingerprint scanner to produce a digital representation.
b. Pre-processing, is the process in which the input of fingerprint is enhanced and adapted to simplify the task of feature extraction.
c. Feature extraction, in which the fingerprint is further processed to generate discriminatory properties called feature vectors.
d. Fingerprint matching, in which feature vector of the input fingerprint is compared with one or more templates. The database stores the templates.

The fingerprint coordinating techniques are minutiae based matching and pattern matching. Pattern matching compares two images for checking similarity. The minutiae matching relies on minutiae points i.e. location and direction of each point.
Algorithm of Fingerprint based Vehicle security system :

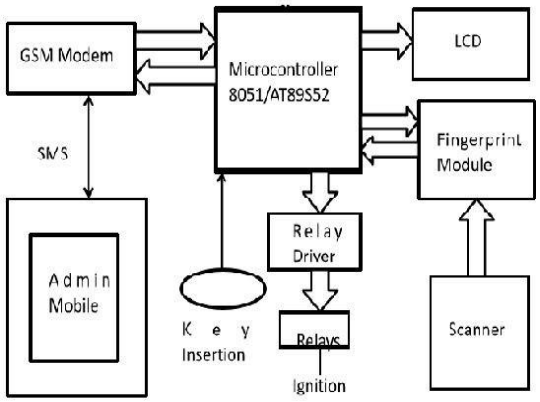

Fig.1 System architecture diagram

1. Start
2. Place a finger and press enter button (top button) to start the system.
3. If finger already stored in the scanner module, start the system.
4. If not,(apply fingerprint max 3 times) message sent to owner and buzzer activate.
5. Stop.

IV. LITERATURE SURVEY

Kiruthiga Narayanasamy (2015) worked on this paper to protect the vehicle from being accessed by any unauthorized access, using fast, easy-to-use, clear, reliable and economical fingerprint recognition technique. Using Global System for Mobile (GSM) communication technology this vehicle security system intimates the status of the vehicle to the authoritative person (owner). If the person is registered, vehicle access is allowed. Else SMS will be sent to the owner. By using GPS technology, vehicle it can be identified very easily. Thus, the system gives security at both levels[1].

Albert Joe Francis (2011) worked on anti theft control system for automobiles that tries to prevent all the possible thefts of a vehicle. This system makes use of an integrated chip that has an proximity sensor, which senses the key during insertion and send away a text message to the owner's mobile that the car is being accessed. This is followed by the system present in the car asking the user to enter a unique password or pin. The password consists of some characters and car key number. If the user fails to enter the correct password in three attempts, a text message is received by the owner with the vehicle number and the location which is being tracked using a GPS.[2]

Vivek Kumar Sehgal (2012) worked on proposed topic related to GSM techniques and a better decision making process which is built to make our vehicle more secure. It is a unique wireless home/car security device that gives instant alerts on your mobile phones the moment a security breach is detected. It is designed such a way that it alert's you wirelessly through a call stealer alarm system wiretap an intrusion. proposed an 8 bit integrated controller inter model.[3]

V. RESULTS AND DISCUSSION

Their are mainly security two modes in security system execution: first, if the system is active and an unauthorized person seek to turn on the vehicle, then alert message will be sent to the registered user in system and the buzzer will initiate and in the second mode, authorized person will be given access.

The main component of this system is microcontroller. It is responsible for monitoring and generating the inputs and outputs respectively. The output of the system will be shown on the LCD .

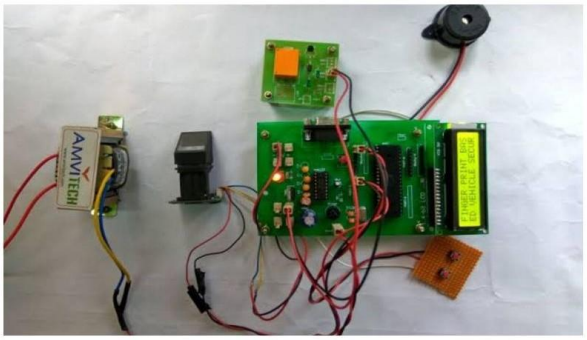

Fig.2 Hardware Setup

The fig above shows the hardware setup of the system.

Fig.3 Application login Page

The Fig 3 shows the application login page where the user can get notification on the mobile phone using this app.First we have to register to access the application for notification,we have also provided registration page for that the fig.4 shows the registration page.

Fig.4 Application Registration Page

TAXONOMY CHART

	Bluetooth Connectivity	Mobile Location	Mobile Data	Need Phone	Authorised user
Online tracking USING GPS	✗	✓	✓	✓	✓
GSM Technolgy	✗	✗	✗	✓	✓
Fingerprint access	✗	✗	✗	✗	✓

VI. CONCLUSION

Security is fundamental criteria in all kind of applications. This project is intented at Improving the level of security for vehicles. As the fingerprint is a auspicious biometric pattern for identifying a person in terms of both security and ease of use. This is a specific method of conniving and assembling a low-cost, packed in theft control system for an automobile which is highly reliable. The work exhibits the initial phase of an embedded car that will be visible in near future. Customized vehicles will not only provide a more interesting drive but also safer one.

VII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on “Fingerprint Based Security System For Vehicle”. We would like to take this opportunity to thank Prof. Chaitanya Bhosale, Professor of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. P M Agarkar, Head of the Department and Dr. Ashok Kasnale, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

VIII. REFERENCES

[1]. Real Time Biometrics based Vehicle Security System with GPS and GSM Technology .ME (CSE) ,Kuaraguru College of Technology, Coimbatore,m India.Procedia Computer Science 47:471-479 · December 2015.

[2]. Anti theft control system design using embedded systemDOI: 10.1109/ICVES.2011.5983776 Conference: Vehicular Electronics and Safety (ICVES), 2011 IEEE International Conference.

[3]. An Embedded Interface for GSM Based Car Security System.Vivek Kumar Sehgal Jaypee University of Information Technology | JUIT, J. P. University of Information Technology · Department of Computer Science & Engineering and Information Technology.

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Real Time Employee Tracker

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ABSTRACT

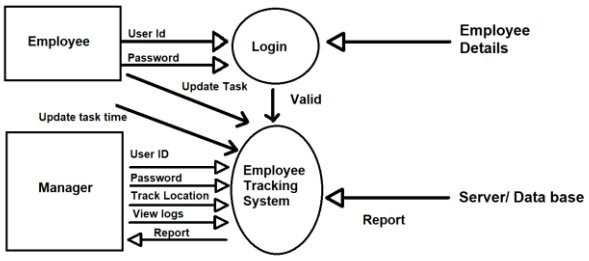
In the growing world, the demand for marketing is increasing. Due to this, the marketing employees have to commute from place to place to finish their day's work. At the end of the day, there is no track regarding the work that they have done throughout the day. In order to overcome this problem, our application provides a boon to the companies, so that they can track their employees throughout the day to increase efficiency. Using our smart Android application, the companies can track their users' or employees' check-in/check-out activities based on their current location throughout the day. This application will majorly focus on live tracking using GPS. This application will also facilitate for offline situations such as network failure. The employee meetings can be scheduled based on real-time depending on the position as well as work load. This way the organizations can make sure that their employees finish the given work ok and track them throughout the day.

Keywords : Android Application, Marketing employees, track of work, online tracking, offline tracking, check-in, check-out, web cache.

I. INTRODUCTION

Our android application will majorly focus on live tracking using GPS. The employees will be tracked by the organization/company throughout the day using their GPS. At the end of the day, all the details about where the employee has been or the places that he visited will be updated in the database. It will also facilitate for offline situations such as network failure. Sometimes, there might be network failure or the employee himself might turn off the GPS for a reason. At times like these, offline tracking will be done. All the data from the time the GPS is turned off till the time it is turned back on, will be stored in the web cache. Then, when the network is turned on, the data from the web cache will be updated in the database. Also, the web cache cannot be cleared/emptied hence preventing the employee to make changes to their location. The employee meetings can be scheduled based on real-time depending on the position as well as work load. The position of the employee and the workload will be considered for assigning new meetings to the employee in real time. This way the organizations can make sure that their employees finish the given work on time and track them throughout the day.

II. SYSTEM ARCHITECTURE



III. OBJECTIVES

The main objective is to know the real time location of the employee. The organization will know the exact location of the employee. A systematic track will be kept on the amount of work done. There will be proper records of the work done by the employee. Make sure the work timings of the employee are not being used for personal work. Because of live tracking, the organization will be able to make sure that the employee is not doing any of their personal work during work hours. Suggest shortest path to the destination. While travelling, the shortest path will be suggested to the employee in order to save time. Assign the next task to an employee, based on the nearest location. Based on the nearest location of the next task and the workload of the employee, the tasks will be assigned to the employees in real time.

IV. LITERATURE SURVEY

Here we have discussed the literature review of existing techniques:

Sonal et al (2016), worked on Employee Tracking and Monitoring System.They used android to implement it. In their study they presented various security profiles on the same mobile phone. They used a dynamic database which retrieves data or information from a centralized database. They provided a separate module to employees when they entered company premises. Through mobile phones all information about the employee phone like their SMS history, Incoming calls, Outgoing calls, Employee Locations, Data usage, Web browser history, and Unauthorized Call History details are tracked. [1]

Priti et al (2015), worked on monitoring employees cell phones using android application.To run the application their system uses android application. The mobile device with the employee and the manager should be in an android phone. Because they are going to send SMS via phone only.
Some alerts are stored in the database, for convenience. This makes it easy [2]

Nirmal, et al, (2016), worked on Employee Surveillance System Using Android Smart Phone. Their system uses Employee monitoring and GPS location Tracking System using Android phone. All the activities of the Employee will be tracked using this system. All the activities of an employee on his/her smartphone and computer, like data usage, all incoming and outgoing calls, web browsing and secured document modification and illegal transfer of company's informative details like blueprints, stocks, projects etc. will be considered. They plan on tracking the employees global geographic position using GPS. Therefore the employees will be strictly monitored during the job hours.[3]

The overall finding of the above discussion is given below as Table-1

SR. NO.	PAPER NAME	AUTHOR	OBJECTIVES	LIMITATIONS
1.	"An Android based employee tracking system"	Etuk Enefiok A. and Onwuachu Uzochukwu C.	This application makes good use of the recent mobile development technologies and thereby increases the overall performance of the employees, also has a substantial business value because it reduces	Firebase data base is full[roof data base but after a limit it is highly expensive

			hardware and maintenance cost and increases customer's satisfaction.	
2.	"Employee Surveillance System Using Android Smart Phone"	M.D. Nirmal, Rohit Koul, Halne Atul, Gagare Tejaswita and Kharde Mayura	This application enables the managers to update the overall performance of the employees in their respective areas. This monitoring system is a revolutionary mobile application which uses Android OS for monitoring time attendance	SQL is limited version of database in which non uniform data is not suitable. Eg Images
3.	AN OPTIMAL SOLUTION TO TRACK AN EMPLOYEE USING INTREGRATED MODULE	R. Kanmani, Kalicharan , Karthik P , Balasathish , Sandra Cris Mervin	Today there is no special device to track the employee's location and send the location to the cloud safely through IOT.	Cloud technology is not that great to meet up the needs with . GPS features were laggin
				g.

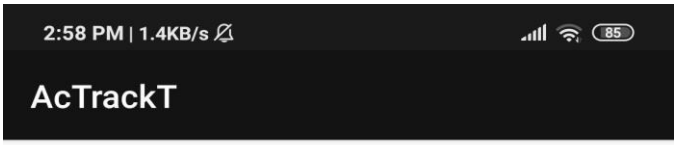
V. TAXONOMY CHART

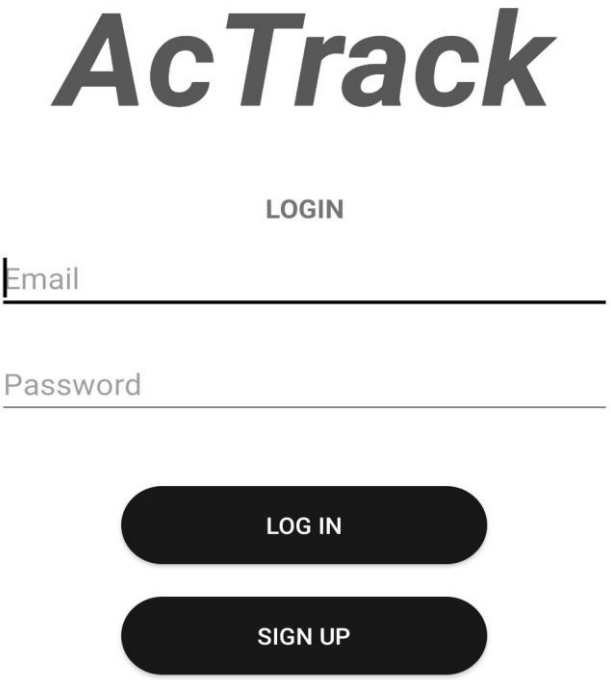
	BLUETOOTH CONNECTIVITY	MOBILE LOCATION	MOBILE DATA	NEED PHONE	PRIOR KNOWLEDGE OF EMPLOYEE
ONLINE TRACKING USING GPS	✗	✓	✓	✓	✓
OFFLINE TRACKING USING WEB CACHE	✗	✗	✗	✓	✓
CHECK-IN/ CHECK-OUT	✗	✓	✓	✓	✓
SUGGEST SHORTEST PATH	✗	✓	✓	✓	✓

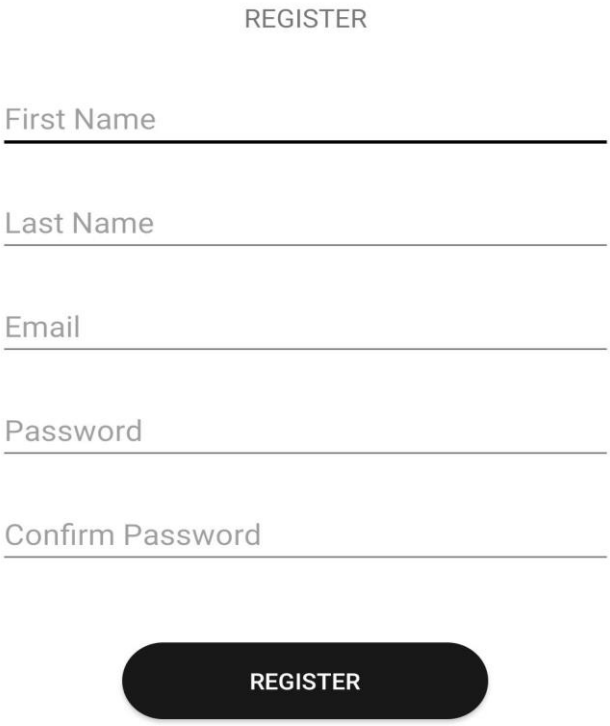
VI. RESULTS

When you first open the app you get the Login/ Sign up page. If you already have an account on the app you can just log yourself in. And if you are new to the app then you can register yourself.

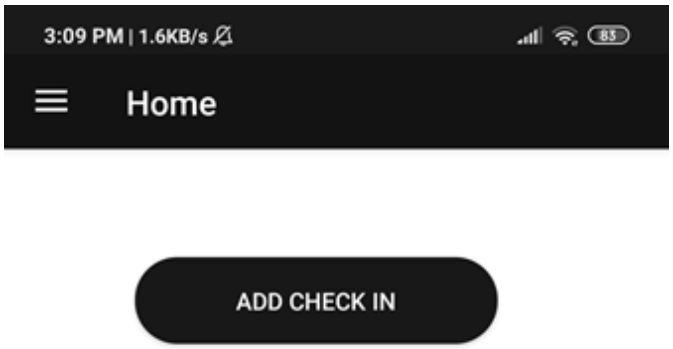
If you are new to the app you can sign up by clicking on the sign up page. On the sign up page you have to add your name, last name, email-id and password.



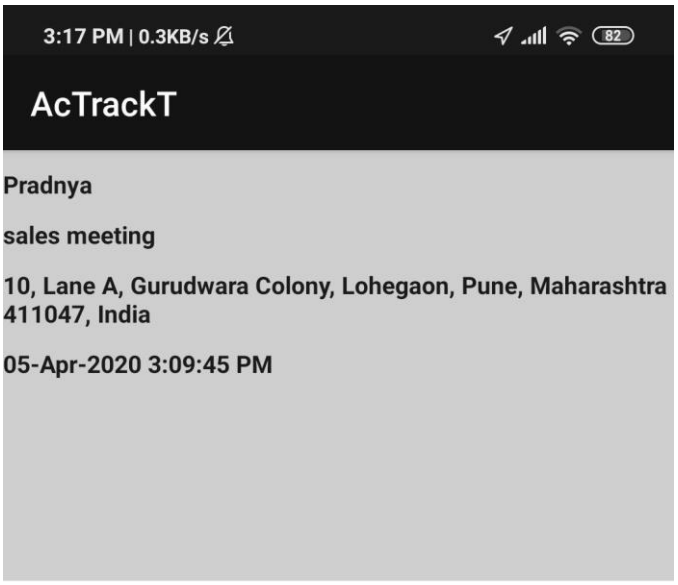


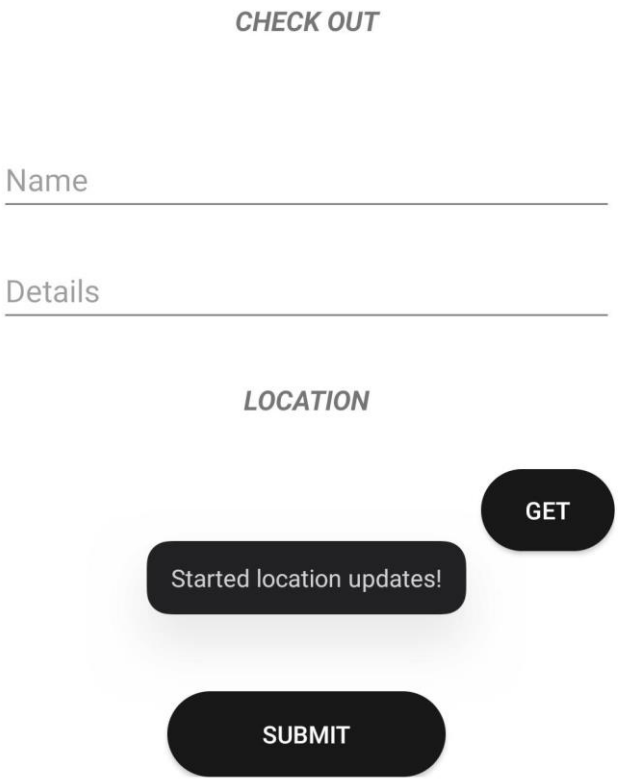


Once you have logged in your account, you can check-in or check-out of the meetings that you attend. You can check-in using the 'Add Check In' button.

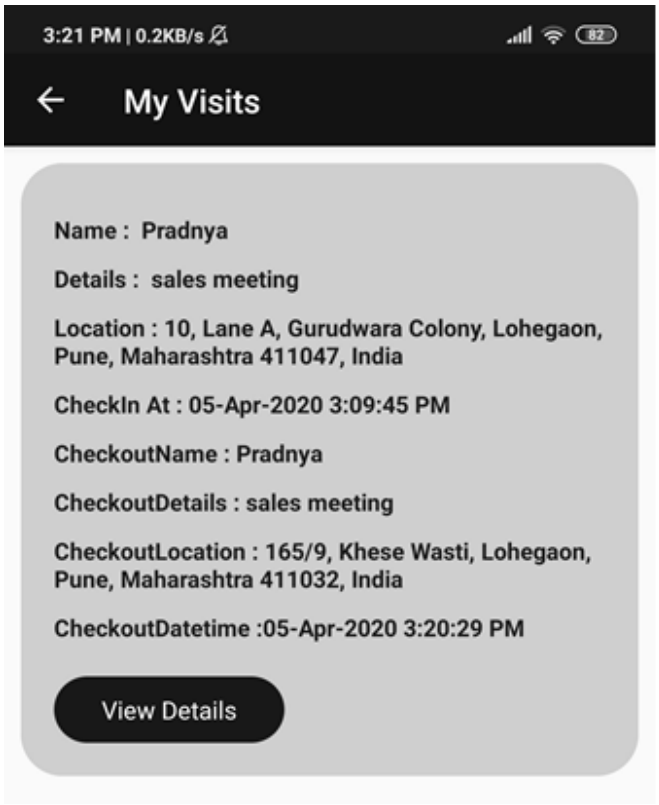


The check in page just requires your name and a small detail of the meeting. Next you have to add your location to the meeting. This can not be done manually, you have to get the location through GPSonly. The app gets your location once you click on the 'Get' button.





The same procedure is to be followed while checking out. The app will automatically get your location through GPS.



VII. ADVANTAGES

1. Tracks employees throughout the day during work hours.
2. Will be able to detect the location even if the employee goes offline by using web cache.
3. Logs in check in and check out activities.
4. Balanced workload.

VIII. LIMITATIONS

5. Lack of accuracy when the device is offline.
6. The device should be well equipped with GPS feature.
7. Data generated for tracking is large in size.

IX. FUTURE WORK

1. With real time tracking the company can also add check in and check out time when the employee attends a meeting.
2. Workload balancing can be done so that all employees get equal amounts of work.
3. Once all the assigned tasks are done, on the basis of workload and nearest location, the employee can be assigned with new tasks.

X. CONCLUSION

In order to overcome the problem of not having a track regarding the work that the sales employees have done throughout the day our application will provide a boon to the company so that they can track the employees throughout the day to increase efficiency.

XI. ACKNOWLEDGEMENT

It gives us great pleasure in presenting the paper on “Real time employee tracker”. We would like to take this opportunity to thank Prof. Chaitanya Bhosale, Professor of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during the course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. P M Agarkar, Head of the Department and Dr. Ashok Kasnale, Principal DYPSOE who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

XII.REFERENCES

[1]. An Android based Employee Tracking System Etuk Enefiok A. Department of Computer Sciences, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria. Onwuachu Uzochukwu C. Department of Computer Sciences, Imo State University, Owerri, Nigeria. International Journal of Computer Applications (0975 – 8887) Volume 153 – No3, November 2016

[2]. M Kowsigan, S Kalicharan, P Karthik, A Manikandan, R Manikandan," An Enhanced Job Scheduling in Cloud Environment Using Probability Distribution", International Journal of Engineering and Technology 9, Issue 2,2017, Pages 1374-1381.

[3]. Aparna Chandran (2013), Smartphone Monitoring System, International Journal of Computer Science & Engineering Technology (IJCSET) ISSN : 2229-3345 Vol. 4 No. 04, page 451-452

[4]. Priti P. Dafale, Nilima N. Mandal and Divyamala B. Thakare (2015), monitoring employee's smartphone using android application, Proceedings of 20th IRF International Conference, Chennai, India, ISBN: 978-9384209-01-8

[5]. Ashwini Jaybhaye, Prajakta Kokare, Bhakti Toradmal and Tanmay Kulkarni (2015), Employee Monitoring System Using Android Smartphone, International Engineering Research Journal (IERJ) Volume 1 Issue 2 Page 32-35, ISSN 2395-1621

[6]. Kalyani Bhagwat Priyanka Salunkhe and Shamal Bangar. (2015), Employee Monitoring System Using Android Smart Phone, International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 3 Issue: 2 537-541 537 IJRITCC.

[7]. Shermin Sultana1, Asma Enayet1 and Ishrat Jahan Mouri (2015), A Smart, Location Based Time And Attendance Tracking System Using Android Application International Journal Of Computer Science, Engineering And Information Technology (Ijcseit), Vol. 5,No.1

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International Journal of Scientific Research in Science, Engineering and Technology

Android Application to Detect and Provide Post Accident Services

Samadhan Chavan, Bhartiya Relanchal, Beauty Kumari, Bharati Mekala, Prof. Ajita Mahapadi
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ABSTRACT

Now days, road accidents widely happens due to lots of problems like, rush driving, pothole, drunk driving etc. The existing system has lots of issues and problem is that it is totally hardware based application with high cost. So we have proposed a new system that uses smartphone sensing of vehicle dynamics to detect the accident. The given system design can facilitate many traffic safety applications for victims. We have developed an android application that use embedded sensors i.e., accelerometer and gyroscope, to capture differences in centripetal acceleration due to vehicle dynamics. Once any car accident happens then our application will activate and generate alert. If no any respond to the application then it will find nearest hospital and police station using KNN algorithm and then it will automatically send the notification to the nearest police station, nearest hospital and parent. We have also enhanced this project based on IoT Concept using RFID technique to detect the vehicle number plate information for verifying complaint to the police station for further process.

Keywords : Accident,smartphone,Accelerometer,gyroscope,RFID,hospital,police station.

I. INTRODUCTION

Now day's road safety as an important area for research. Action programmed has received a great deal of scientific attention in recent years. Progress has been made on several different fronts but in one area there would appear to be a serious lack of interest or, at the very least, a paucity of published information and informed debate.. In the case of road safety it can be argued that solutions which

build on the acceptance of life motor car as a major and immutable technology will reinforce that position and generate a primary paradox: solutions designed to reduce a major negative effect of motorized transport contribute to the perpetuation of the circumstances which lead to road traffic accidents. Traffic accidents are a major public issue worldwide. The huge number deaths are result of road traffic accident that uncovers the story of global crisis of road safety. Road accidents are the second major leading cause of death for people aged between of 5 and 29 and third major cause for people aged between 30 and 44.

II. LITERATURE SURVEY

[1] Nagarjuna R Vatti, PrasannaLakshmi Vatti, Rambabu Vatti, Chandrashekhar Garde,"Smart Road Accident Detection and communication System", in this paper, the authors made an attempt to develop a car accident detection and communication system which will inform the relatives, nearest hospitals and police along with the location of the accident.

[2] Naji Taaib Said Al Wadhahi, Shaik Mazhar Hussain, Kamaluddin Mohammad Yosof; Shaik Ashfaq Hussain, Ajay Vikram Singh, "Accidents Detection and Prevention System to reduce Traffic Hazards using IR Sensors", The detection phase is carried out using IR sensors that could detect and alert the people by sending SMS using GSM module that contains predefined numbers and accident location using GPS module. Second Phase, Accident prevention is carried out using IR sensors by warning the driver about the neighbouring vehicles when the distance between them is beyond the threshold value.

[3] Usman Khalil, Adnan Nasir, S.M. Khan, T. Javid, S.A. Raza, A. Siddiqui, "Automatic Road Accident Detection using Ultrasonic Sensor", Accident detection using ultrasonic sensor provides the facility to detect an accident not only in various street situations but also it might perform well under various natural conditions like rains.

III. PROPOSED SYSTEM

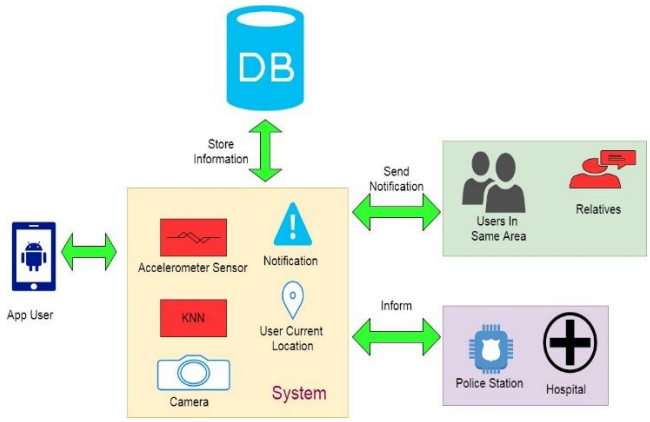

Fig 1. System architecture

A. *Module Description:*

1) ***User***: In this module user register into the system. All information of user stored into database. User places the mobile in car.

2)Accident detection: In this module accident is detected with the help of accelerometer sensor. After detection of accident, system will give an alert to user and will wait for the response if user doesn't response to system then system will conclude that a critical accident has been occurred.

3)Take photo: After detection of accident application takes photo from front camera.

4)Inform Nearest Hospital and police station: If user does not responses to the system then application will search for nearest police and hospital with help of KNN algorithm. After searching system will send notification to police station ,hospital and relatives. We are user current location of user to find nearest hospital and police station.

5)Inform to relatives and other user: After detecting accident system will inform to the nearest users . System will also send message to the relatives mobile number which is stored while registration.

B. *Objective:*

- Automatically infirm to nearest police station and hospital.
- Required time is reduced.
- Reduction of paper work.
- Detect the Vehicle information.
- Detect vehicle information using RFID tag based on IoT.

C. *Algorithm:*

K-nearest neighbours KNN algorithm:

1. Parameter K = number of nearest neighbours.
2. Find the distance between the query-instance and all other the training samples.
3. Sort the distance and determine nearest neighbours based on the K-th minimum distance.
4. Gather the category y of the nearest neighbours.

5. Use simple majority of the category of nearest neighbours as the prediction value of the query instance.

D. *Mathematical Model:*

Mathematical Model:

System Description:

- Let 'S' be the system

Where

S= {I, O, P}

Where,

- I = Set of input (information of user and accelerometer data)
- O = Set of output (detect accident and inform to nearest police station, hospital, user and relatives)
- P = Set of technical processes

Let 'S' is the system

S = {……

- Identify the input data S1, S2, …. , Sn

I = {(current location, accident photo, accelerometer data) }

- Identify the output applications as O

O = { detect accident and inform to nearest police station, hospital, user and relatives }

- Identify the Process as P

Knn for inform to nearest police station, hospital and other user in same area

III. RESULT

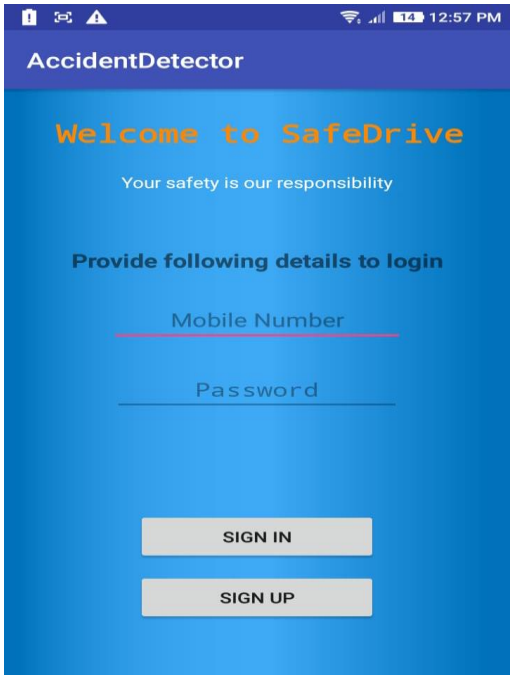

Fig 2. Login page

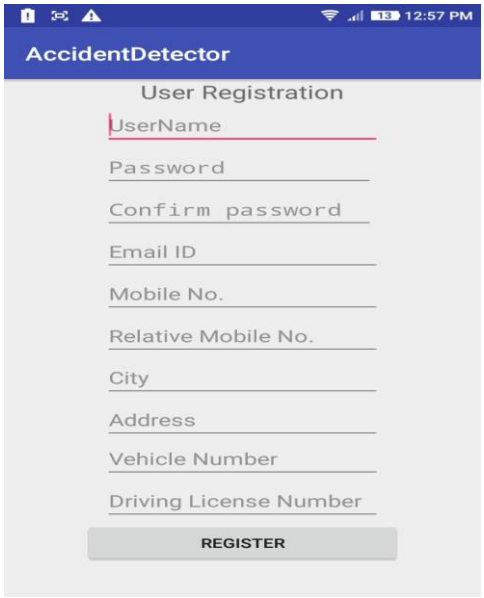

Fig 3. Registration page

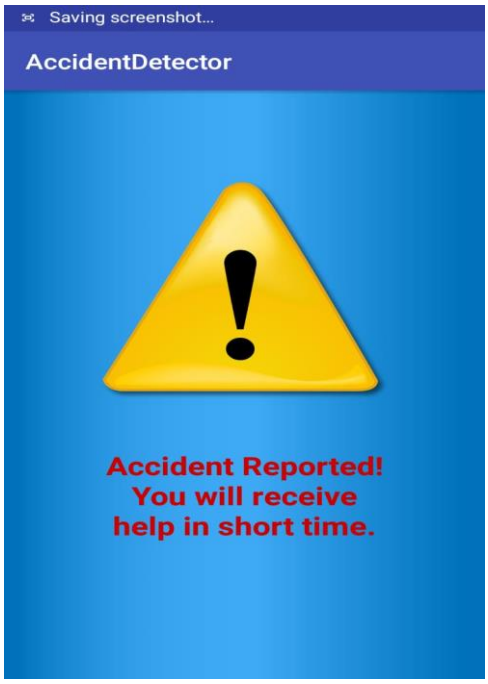

Fig 4. Accident detected alert

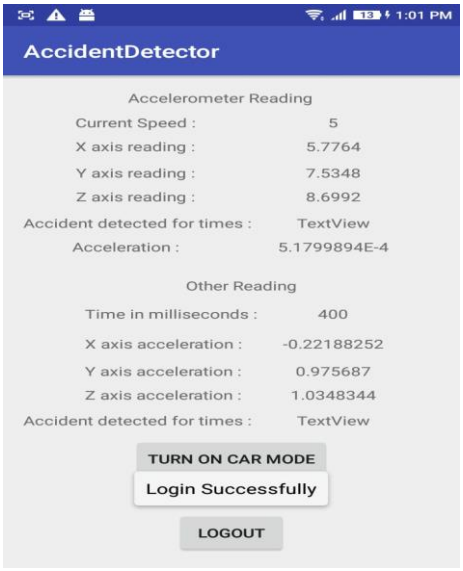

Fig 5. Sensor values

IV. LIMITATION

1. Require high speed internet.
2. System fail if GPS signal get loss.
3. Application may fail to detect.

V. FUTURE SCOPE

1.In future this module is extended using the IoT for health analysis.
2. If any accident is happen then using GSM module SMS sent includes the current location using GPS module and current heart beat sensor.

VI. CONCLUSION

Finally we conclude our proposed results show that the minimizing the overall cost of the project with better output. total time required to perform all the tasks, including the delivery of an SMS with the accident details, followed by providing the nearby police station and hospital details, also vehicle details from sensors and sending them an alert message of the user accident with exact location of user, is taking short time period.

IV. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on “Android Application To detect And Provide Post Accident Services”. We would like to express our special thanks of gratitude to Professor Ajita Mahapadi who gives us the golden opportunity to this project.

VII. REFERENCES

[1]. Nagarjuna R Vatti, PrasannaLakshmi Vatti, Rambabu Vatti, Chandrashekhar Garde, “Smart Road Accident Detection and communication System”, IEEE, 2018.
[2]. Naji Taaib Said Al Wadhahi, Shaik Mazhar Hussain, Kamaluddin Mohammad Yosof; Shaik Ashfaq Hussain, Ajay Vikram Singh “Accidents Detection and Prevention System to reduce Traffic Hazards using IR Sensors”, IEEE, 2018.
[3]. Usman Khalil, Adnan Nasir, S.M. Khan, T. Javid, S.A. Raza, A. Siddiqui “Automatic Road

Accident Detection using Ultrasonic Sensor", IEEE, 2018.

[4]. Yasitha Warahena Liyanage, Daphney–Stavroula Zois, Charalampos Chelmis "Quickest Freeway Accident Detection Under Unknown Post-Accident Conditions" 2018, IEEE, 2018.

[5]. "National Highway Traffic Safety Administration", Dept. of Transportation, "Traffic safety facts 2012: Young Drivers", Washington (DC), April 2014.

[6]. Evanco and William M., "The Impact of Rapid Incident Detection on Freeway Accident Fatalities", June 1996.

[7]. Peter T. Martin, Joseph P. and Hansen B.," Incident Detection Algorithm Evaluation ", Vol. 1, Issue 1, Part 122 of MPC report, March 2001.

[8]. Chris T., White J., Dougherty B. , Albright A. and Schmidt DC.," WreckWatch: Automatic Traffic Accident Detection and Notification with Smartphones ", International Journal of mobile network and application, Springer., Vol. 16, Issue 3, PP. 285-303, March 2011.

[9]. Jorge Z., Carlos T. , Juan C. and Pietro M., "Providing Accident Detection in Vehicular Networks through OBD-II Devices and Android-based Smartphones", IEEE, PP. 813-819,October 2011.

[10]. Bannister G., Amirfeyz R., Kelley S., Gargan M " Whiplash injury", International journal of British Editorial Society of Bone and Joint Surgery, Vol.91 , No. 7, PP. 845-850, July 2009.

[11]. Sneha R.S. and Gawande A. D., "Crash Notification System for Portable Devices", Vol.2, No-3, PP.33-38, June 2013.

[12]. Patel K.H., "Utilizing the Emergence of Android Smartphones for Public Welfare by Providing Advance Accident Detection and Remedy by 108 Ambulances, Vol.2, Issue 9", PP 1340-1342, September – 2013.

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Detection of Organic Chemicals in Soil

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ABSTRACT

Nowadays crops yield isn't nutritious and lacks vitamins. This degrades the standard of the crops. due to the organic fertilizers employed by the farmer, the soil is contaminated with the organic chemicals contained within the soil. But the soil that has been used till now could be contaminated by the organic fertilizers used. albeit a farmer decides to travel for complete organic farming, the soil already contains chemicals that will be absorbed by the fruits, vegetables tested for organic contamination and that they might show positive results even after using complete organic farming techniques. The farmer won't skills much the soil is been contaminated so far. So, to detect the extent of organic contamination within the soil and therefore the components of the soil we do a search project during which we'll be trying to detect the organic constituents within the soil and with proportion and measures so that farmers can remove the organic contaminations. this technique would be the primary of a sort since no system like this has been developed or manufactured till now. The project would be more benefited the farmers who want to maneuver towards fully organic farming and increased the standard of vegetables, fruits, grains, etc. increased the quality of vegetables, fruits, grains, etc.

Keywords: Agriculture, Farmers, Near-Infrared Spectroscopy, FTIR Fourier Transform Infrared, Chemometrics Tool.

I. INTRODUCTION

Agriculture is essential for humans. Agriculture is the backbone of all the developing countries. Farming on the same piece of land for a long time degrades the number of nutrients in the soil, forcing the farmer to use various methods to give the soil back the nutrients or induce nutrients through fertilizers. The fertilizers are of two types namely Chemical fertilizers and Organic fertilizers. Chemical fertilizers have been banned by governments, which may cause serious harm to the soil making it barren. Chemical fertilizers are been taken care of. So, we need to focus on the organic fertilizers which are used in farming for the better yield of crops from the soil.

Organic fertilizers are usually made from plants and animal waste, for example, manure or compost. This manure or compost can be highly processed products. They are mainly sold as a "soil conditioner" rather than fertilizers since the nutrient's ratio is difficult to guarantee. Organic fertilizers can be processed in the factory.

Fertilizers supposed to be Organic can be made using some additives and chemicals. The extensive use of these fertilizers may lead to the imbalance of organic

and inorganic nutrients in the soil. So, to overcome are proposing a system that will provide a piece of detailed information about the soil content like the organic chemicals present.

II. LITERATURE REVIEW

Marianah Masrie*, Mohamad Syamim Aizuddin Rosman[1], To measure and to detect the presence of Nitrogen(N), Phosphorus(P) and Potassium(K) of soil an optical transducer is developed. Such a transducer is needed to decide how much extra contents of these nutrients are to be added to the soil to increase soil fertility. This can improve the quality of soil and reduces the undesired use of fertilizers to be added to the soil. The N, P and K values of the sample are determined by the absorption light of each nutrient. The optical transducer is implemented as a detection sensor which consists of three LEDs as a light source and a photodiode as a light detector. The wavelength of LEDs is chosen to fit the absorption band of each nutrient. The nutrient absorbs the light from LED and the photodiode converts the remaining light that is reflected by reflector to current. The system utilizes an Arduino microcontroller for data acquisition therefore the output from the transducer is converted into a digital display reading. By performing tests on various soil samples shows that the optical transducer can detect the amounts of NPK soil content as High, Medium and Low.

J. Jayaprahas, S. Sivachandran, K. Navin, K. Balakrishnan[2] in their paper Real-Time Embedded Based Soil Analyzer(RTEBSA) the measure of the pH value of soil and electrical conductivity (EC). Here the pH value of the soil is used to identify the solution or mixture acidity or basicity. The RTEBSA is a valuable tool developed to determine the inputs required for better production. Soil tests at the best level will ensure a better application of sufficient fertilizers to meet the need of the crop while taking advantage of the nutrients already present in the soil. It also allows us to determine line requirements and diagnose the problem areas. Samples are tested as the results are only as good as the samples you take. Testing is also a requirement for the farms that have to maintain a nutrition management plan.

The tests are performed for the plants in three categories: Major nutrients- Nitrogen(N), Phosphorous(P) and Potassium(K) Secondary nutrients: Iron (Fe), Manganese (Mn), Copper (Cu), Zinc (Zn), Boron(B). Most commonly measured soil properties of the soil. It is also one informative and useful soil fertility aspect. A) Soil pH and Nutrient Availability: The implication of the pH and nutrient uptake efficiency and crop response is determined to function of soil pH. Liming is said to improve soil pH and hence increase the availability of nutrients and use efficiency. B) pH Value: To measure the acidity and the basicity in the pH of the soil is defined as negative logarithm ions H+ or, more precisely, H3O+aq from a sample solution. From the range 0 to 14, 7 is neutral, below 7 is acidic and above 7 is basic. C) Electrical Conductivity (EC): To check the health of the soil a very quick, simple and inexpensive method that farmers use. The EC level of the soil water is a good indication of the nutrients available for the crops to absorb.

Serpil Savci [3] Chemical Fertilizers Consumer society, to meet the growing need for food, agricultural land per unit area required to achieve maximum efficiency and highest quality product. It is known that the nutrition of the plant is one of the foremost important factors to regulate agricultural productivity and quality. The Quality of crops is affected by the rates of nutrients contained in the soil. In the long-term agricultural land, the soil will be very poor in nutrients, as a result, inefficient. Hence the producer uses fertilizer pesticides to increase fertility. Fertilization among these activities remains a priority at all times. Therefore, according to recent studies excessive use of fertilizers is needed for lands

in the public environment has reported adverse effects. Immoderate fertilization, but there was soil salinity, heavy metal accumulation, water eutrophication and accumulation of nitrate, to consider in terms of air pollution in the air of gases with nitrogen and sulfur, giving and can give problems such as the greenhouse effect.

The overall finding of the above discussion is given below as Table Below

Sr. No.	Paper Name	Author	Method Proposed	Limitations
1	Detection of Nitrogen, Phosphorus, and Potassium (NPK) nutrients of soil using Optical Transducer(2017)	Marianah Masrie*, Mohamad Syamim Aizuddin Rosman, Rosidah Sam and Zuriati Janin	Integrated optical transducer with microcontroller . Arduino microcontroller as an alternative method of determination of the deficiency N, P or K in the soil is successfully developed and tested.	The method detects Inorganic nutrients in the soil, and limited to only NPK
2	Real-Time Embedded Based Soil Analyzer (2014)	J. Jayaprahas, S. Sivachandran, K. Navin, K. Balakrishnan	A soil analyzer using pH Value and Electrical Conductivity	The method detects major nutrients like NPK and minor like Fe, Mn, Cu, using pH value where human intelligence is required and detects limited number of Chemicals.
3	An Agricultural Pollutant: Chemical Fertilizer(2012)	Serpil Savci	NA	NA

Fig.1 Literature Survey

Taxonomy Chart:

Technique	Detection of Nitrogen, Phosphorus, and Potassium (NPK) nutrients of soil using Optical Transducer (2017)	*Real-Time Embedded Based Soil Analyzer (2014)*
Detection of Organic Chemicals	✗	✗
Detection of Inorganic Chemicals	✓	✗
Fewer Resources	✓	✓
Portable	✓	✗

III. System Design

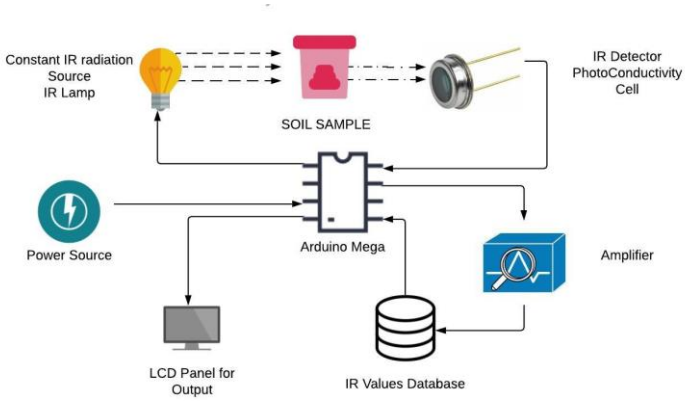

Fig.2 System Architecture

IR spectrometer can be categorized into two classes: dispersive and Fourier Transform instruments. The basic design of a dispersive single beam instrument includes a source of the infrared radiations, a monochromator, and the detector.

When the sample interacts with the infrared radiation is dispersed by a monochromator into its frequency components and information on which frequencies were absorbed can be obtained using a photodiode array detector.

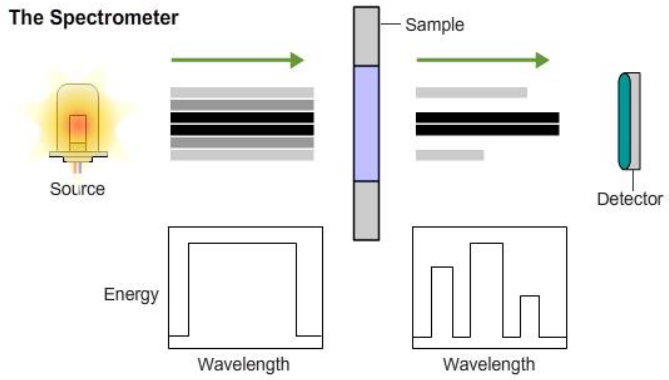

Fig.3 Simple View of Spectrometer

Sources and detectors for infrared have limited stability, with light intensity and detector sensitivity changing over time, or with fluctuation in temperature, etc. The blank and sample measurements should be made one after the other to ensure they made under the same analytical conditions. This limitation is minimized by the use of double-beam instruments that are capable of measuring sample and reference simultaneously.

IR Spectrometer consists of an IR source, sample chamber or sample material, detector, signal amplifier, as shown in the above figure.

A. IR Source

IR radiation is emitted from any object on the earth`s surface mostly glowing black bogy source[12]. IR radiation passes through an aperture which controls the quantity of radiation that reaches the sample, and thus, the detector.

The IR radiation which must be

i. Intense enough for detection
ii. Steady
iii. Extend over the desired wavelengths

The various popular sources of IR radiations are:

i. Incandescent lamp (1 – 50 μm, mid to far IR)
ii. Nernst glower
iii. Globar Source (1 – 50 μm, mid to far IR)
iv. Mercury Arc (50 – 300 μm, far IR)

B. Sample Material

Infrared spectra may obtain for gases, liquids or solids. The material containing the sample must be transparent to the IR radiation. So, salts like NaCl, KBr are only used[6].

Samples of the same substance show shift in absorption bands as we pass from solid to gases and hence the samples of differently in IR spectroscopy[7].

A sampling of solids:

1. Solids run in solution
2. Mull technique
3. Pressed pellet technique
4. Solids films

A sampling of solids:

1. Liquids sample can be sandwiched between two alkali halide plates (NaCl, KBr, CaF_2)[4]
2. The sample cell Thickness is 0.01-0.05mm[8].

A sampling of solids:

1. Gases sample is introduced into a glass cell made up of NaCl[11]
2. Very few organic compounds can be examined as gases.
3. E.g.: 1, 4-dioxane

C. Detectors

The detectors can be classified into three categories:

1. Thermal Detectors: Their response depends on the heating effect off radiation
2. Pyroelectric detectors: Pyroelectric effect depends on the rate of change of the detector temperature rather than on the temperature itself.
3. Photo conducting detectors: Most sensitive

S.N.	Name	Advantage
1.	Thermocouple	Cheap, slow, insensitive
2.	Bolometer	Highly sensitive <400CM^{-1}
3.	Golay Cell	Faster, the wide range
4.	Pyro Electric	Fast and sensitive (MIR)
5.	Photoconductive (non-thermal)	Fast and sensitive (NIR)

Table-1: Detectors

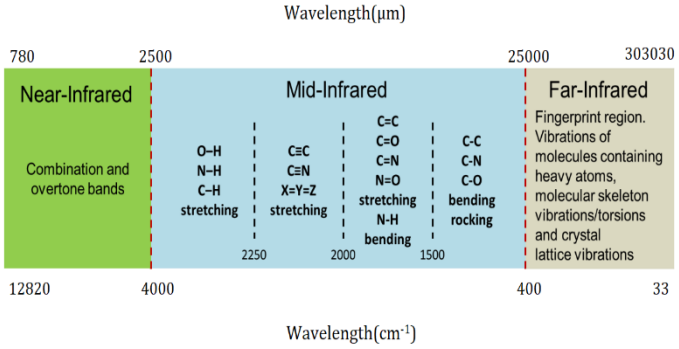

Fig.4 Wavelength of IR radiations

IV. Algorithm

The algorithmic steps to perform IR spectroscopy are as follows:

1. Read the sensor output using Arduino or Raspberry pi processor as an analog signal.
2. Check the voltage value received from Sensor output to the standard range of various soil organic matter (SOM).
3. The voltage value received in the above steps is exactly the difference of the absorb value of IR by an organic matter in soil with the value emitted by Sensor emitter.
4. The difference in value calculated in the above step is compared with the value of the lookup table. The lookup table has the list of SOM matters found in soil and their output difference.
5. If the value obtained from Sensor output matches any entry in the lookup table with the voltage difference of 3 to 5 volts (+ or -) then the soil has some organic matter present in it.
6. Display output to the LCD of the system.

V. Results and Experimental Setups

The Spectroscopy system has an IR sensor as a Light Emitting source and Light detection source. The processor can be Arduino or Raspberry Pi with an LCD. There is a container region to keep soil samples for testing. Different soil samples are taken for testing purposes.

The actual experimental results are based on the following observations:

Absorptions in the visible region are primarily associated with iron-containing minerals such as haematite and goethite which show strong absorption bands between 400 and 660 nm. Both minerals also show absorption bands near 900 nm.

The absorption by clay minerals in the NIR region is mostly related to absorbed and structural water and Mg-, Al-, and Fe–OH bonds in the mineral crystal lattice.

Absorption bands in the 2200–2500 nm region is used by some SOM due to combination vibrations involving O-H stretch and metal-OH bend.

Absorption bands at 1400 nm and 1900 nm are also apparent in many minerals to a varying degree and are related to absorbed and structurally bound water.
Carbonates also have several absorption bands in the NIR region, the strongest being near 2300 nm.

The identification of the absorption bands of wavelength (nm) 1100, 1600, 1700–1800, 2000, and 2200–2400 as the most useful for measuring Organic Compound.

Fig. 5. Experimental Setup

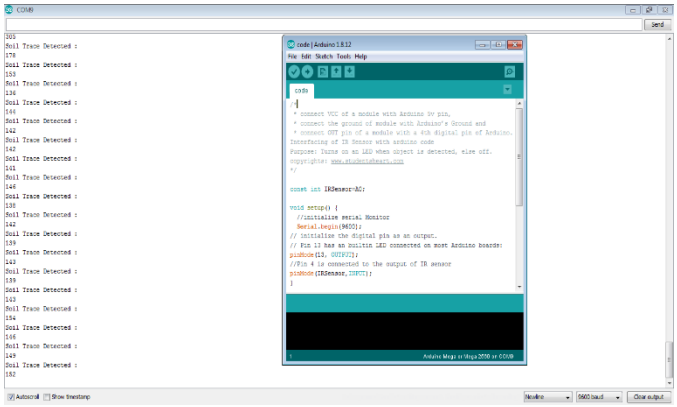

Fig.6 Arduino Output Screen

VI. Advantages

1) The majority of molecules in the universe absorb mid-infrared light making it a highly useful tool.
2) Universal Technique
3) Sensitive, fast and easy
4) Relatively inexpensive and provides rich information.
5) Sensitive to molecules – anything that contains chemical bonds.

VII. Limitation

1) By IR spectroscopy, it is not possible to know the molecular weight of the substance.
2) It doesn't provide information on the relative positions of the different functional groups on a molecule.
3) From a single IR spectrum of the substance, it is not possible to know whether it is a pure compound or a mixture of compounds.

VIII. Future Work

By examining relationships between FTIR regions and other soil analyses in an on-farm study encompassing a range of organic management practices, this work illustrates the potential for several spectral indicators (e.g. band areas at 2930, 1620, 1420, 815 cm^{-1},) to improve the use of common measurements like TSC in guiding organic management[10]. Furthermore, this work shows that new types of pre-treatments of the soil before FTIR analysis can serve to better describe SOM composition, which is a pre-requisite to its use as a soil testing tool in the future and demonstrates its potential applicability for SOM management in on-farm contexts.

IX. Conclusion

From the research, we have done and the research papers, we can conclude from those methods of soil analysis are effectively used in various nutrients detection processes. The various methods like electrochemical sensors, pH measures, and optical transducers are to detect the Inorganic chemicals and materials from the soil, thus detecting the deficiency of these materials from the soil and setting the threshold values for nutrients. These tests give us the approximate values related to the organic chemicals.

REFERENCES

[1] Marianah Masrie*, Mohamad Syamim Aizuddin Rosman, Rosidah Sam, and Zuriati Janin, 2017 "Detection of Nitrogen, Phosphorus, and Potassium (NPK) nutrients of soil using Optical Transducer".

[2] J. Jayaprahas, S. Sivachandran, K. Navin, K. Balakrishnan 2014, “Real-Time Embedded Based Soil Analyzer”.

[3] Serpil Savci. 2012. International Journal of Science and Development, “An Agricultural Pollutant: Chemical Fertilizer”.

[4] Lagos, M. and Batson, P., 2018. Thermometry with Subnanometer Resolution in the Electron Microscope Using the Principle of Detailed Balancing. *Nano Letters*, 18(7), pp.4556-4563.

[5] Idrobo JC, Lupini AR, Feng T, Unocic RR, Walden FS, Gardiner DS, et al. (March 2018). "Temperature Measurement by a Nanoscale Electron Probe Using Energy Gain and Loss Spectroscopy". Physical Review Letters. 120 (9): 095901.

[6] Hage FS, Nicholls RJ, Yates JR, McCulloch DG, Lovejoy TC, Dellby N, et al. (June 2018). "Nanoscale momentum-resolved vibrational spectroscopy". Science Advances. 4 (6): eaar7495.

[7] Lagos MJ, Trügler A, Hohenester U, Batson PE (March 2017). "Mapping vibrational surface and bulk modes in a single nanocube". Nature. 543 (7646): 529–532.

[8] Govyadinov AA, Konečná A, Chuvilin A, Vélez S, Dolado I, Nikitin AY, et al. (July 2017). "Probing low-energy hyperbolic polaritons in van der Waals crystals with an electron microscope". Nature Communications. 8 (1): 95. arXiv:1611.05371.

[9] Venkatraman K, Levin BD, March K, Rez P, Crozier PA (2019). "Vibrational spectroscopy at atomic resolution with electron impact scattering". Nature Physics. 15 (12): 1237–1241.

[10] Derrick MR, Stulik D, Landry JM (2000). "Infrared Spectroscopy in Conservation Science, Scientific Tools for Conservation" (PDF). Getty Publications. Retrieved 11 December 2015.

[11] Senga R, Suenaga K, Barone P, Morishita S, Mauri F, Pichler T (September 2019). "Position and momentum mapping of vibrations in graphene nanostructures". Nature. 573 (7773): 247–250. .

[12] Lagos MJ, Batson PE (July 2018). "Thermometry with Subnanometer Resolution in the Electron Microscope Using the Principle of Detailed Balancing". Nano Letters. 18 (7): 4556–4563.

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Smart Blind Stick for Obstacle Detection

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ABSTRACT

The Smart Blind Stick for Obstacle Detection discussed here is mainly for visually impaired people. In this system, we have developed a stick which consists of ultrasonic sensor, Arduino uno, buzzer, vibration motor, RX-TX transistor which will help blind people to detect obstacle and water present on their path to their destination. The main drawback with blind individuals is to travel a way to their destination where they require to travel. Such individuals would like help from others with sensible sight. As represented by World Health Organization, 10 percent of the visually impaired don't have any practical sight in the least to assist them move around while seeking no help. This work proposes a new technique for designing a smart stick to help visually impaired people that will provide them obstacle free navigation. The proposed system intended to provide low cost and efficient navigation aid for the blind. It gives a sense of artificial vision by providing information about the environmental scenario of objects around them with the help of sensors working in a manner to avoid obstacle, warn the blind person about the water in front of him/her and locate the stick in emergency situation. In this technology controlled world, where people strive to live independently, this project proposes an ultrasonic stick for blind people to help them gain personal independence with most efficient and effective algorithms which make it very helpful for the visually impaired people.

Keywords : ultrasonic sensor, Arduino uno, buzzer, vibration motor, RX-TX transistor

I. INTRODUCTION

Visually impaired people find it difficult to recognize the smallest detail without healthy eyes. Survey by World Health Organization carried out in 2011 estimates that in the world, about 70 million people is visually impaired and, about 7 million people fully blind and about 63 million people with low vision. The problem with blind people is to navigate their way to wherever they want to go. People need assistance from others. As visually impaired have no functional eyesight at all to help them move around without assistance and safely. This study proposes a technique for designing a smart stick to help visually impaired people that will provide them navigation. The conventional navigation aids for persons with visual impairments are the walking cane and dogs which are characterized by many imperfections.

Shortcomings of these include: training phase, range of motion, and very insignificant information communicated been communicated. Our approach modified this cane with some electronics components and sensors, the electronic aiding devices are designed to solve such issues. The

ultrasonic sensors, humidity sensor, buzzer, and vibration motor are used to record information about the presence of obstacles and water on the road. Therefore whenever there is an obstacle in its range it will alert the user by sensors. Humidity sensor is used to detect water in path of the user. Blind guidance systems use ultrasound because of its environmental noise. With modern technology both in hardware and software it has become easier to provide intelligent navigation system to the visually impaired. Much research effort have been focused on design of Electronic Travel Aids to aid successful and free navigation of the blind. Also, high-end technological solutions have been introduced recently to help blind person navigate on their own. Another reason why ultrasonic is prevalent is that the technology is cheap. Moreover, ultrasound emitters and detectors are portable components that can be carried out without the need for complex circuit.

Whenever user wants to locate it, such a person will press a button on remote control and buzzer will ring, then the person can get the idea of where the stick is placed. Vision is most important part of human physiology as information human being gets from the environment is via sight. The 2011 statistics by the World Health Organization (WHO) estimates that there are 70 million people in the world living with visual impairment, 7 million of which are blind and 63 million with low vision. The conventional aids for persons are characterized with many limitations. Some inventions require separate power supply. These bulky designs will definitely make the user to be exhausted. The objective of research: is to style a technology for visually impaired folks that observe obstacles and different routes for blind; to alarm the user through vibration to see the obstacles; and to help the user finding his stick when he cannot remember where is was kept. Several attempts have been made to design obstacle avoidance devices for the blind using components with limited number of applications. This section will discuss some of these attempts and their shortcomings. In the system, ultrasonic sensor, water sensor, Buzzer, vibrator and battery were used.

II. OBJECTIVE

The main objective is to assist visually impaired folks to navigate with ease with help of advance technology. In this technology controlled world, we are trying to help the blind people match up the pace with the normal people and do not feel left back, this project proposes associate in detecting and alarming stick for blind folks to assist them gain personal independence. Since this is economical and not bulky, one can make use of it easily.

III. BLOCK DIAGRAM

The microcontroller then processes this knowledge and calculates if the obstacle is within the range. If the obstacle isn't in the range then the circuit will do nothing. If the obstacle is within the range of the microcontroller then it sends a symbol to sound a buzzer. It also detects and sounds a different buzzer if it detects water within that range and alerts the blind. Following **fig: 1** is the block diagram of our proposed model depicting the input and output of the system. The input will be consisting of the sensors we are including in the model and output is the senses that can be felt by the blind person which are in the form of vibration or buzzer depending on the type of obstacle coming in front of the blind person that can be of any solid material or can be water.

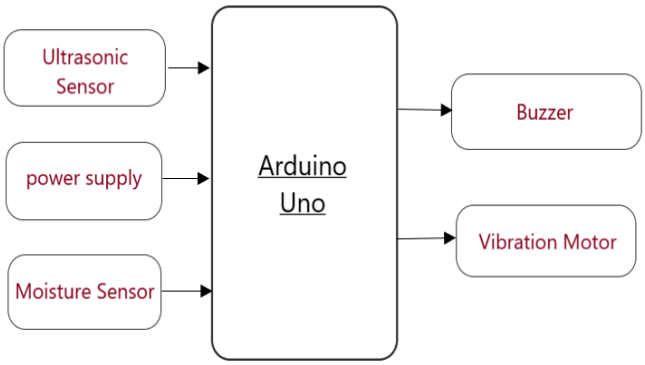

Fig-1: Block Diagram of the Model

IV. BLIND STICK IMPLEMENTATION

The implementation of the smart blind stick is started with the circuit diagram which is shown below.

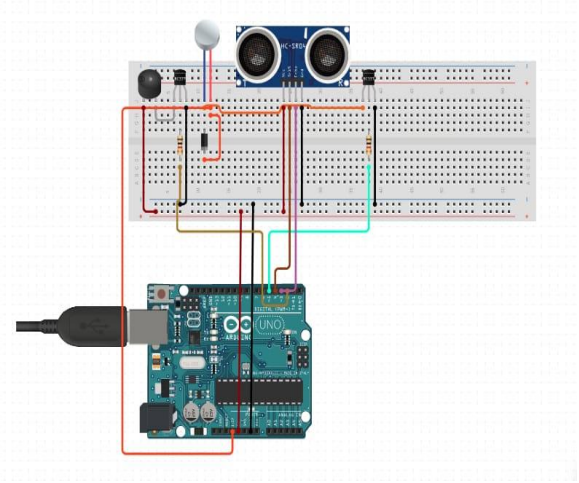

Fig-2: Circuit Diagram

After the circuit diagram below is the animated picture of the smart blind stick and all of its sensors, buzzers and vibration motors combined.

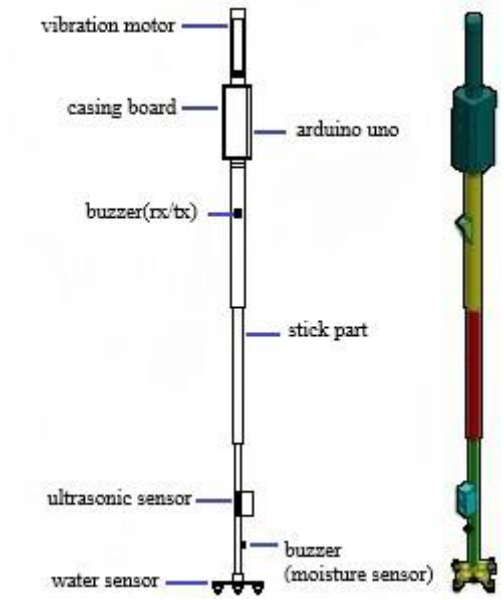

Fig-3: Animated Picture of Smart Blind Stick

V. COMPONENTS

- **Arduino Uno**- Arduino can control the environment by receiving input signals (Digital/Analog) and can effects its surroundings by controlling lights, relays and other devices. The microcontroller on the board is programmed using Arduino software.

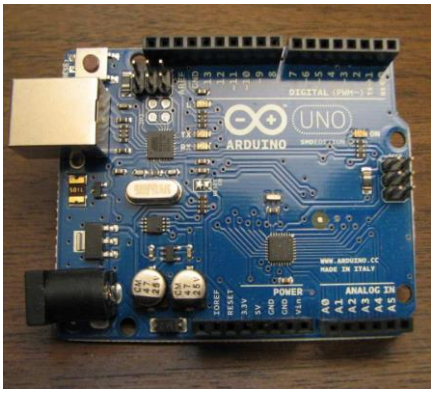

Fig-4: Arduino Uno

- **Ultrasonic Sensor-** Generating, detecting & processing ultrasonic signals Ultrasonic is the production of sound waves above the frequency of human hearing and can be used in a variety of applications such as, sonic rulers, proximity detectors, movement detectors, liquid level

measurement. Ultrasonic Ranging Module HC - SR04.

Fig-5: Ultrasonic Sensor

- **Buzzer-** A transducer (converts electrical energy into mechanical energy) that typically operates. A buzzer is in the lower portion of the audible frequency range of 20 Hz to 20 kHz. This is accomplished by converting an electric, oscillating signal in the audible range, into mechanical energy, in the form of audible waves. Buzzer is used in this research to warn the blind person against water.

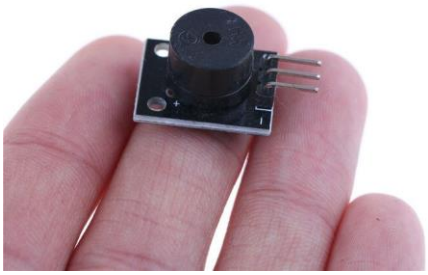

Fig-6: Buzzer

- **Vibration Motor-** A vibration motor is included to enhance the overall feedback for the person who receives the warning against obstacle's closeness in different frequency of vibrations

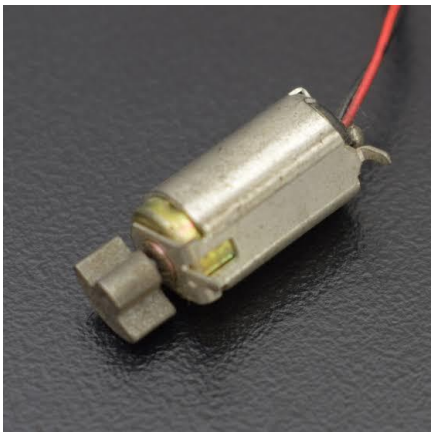

Fig-7: Vibration Motor

- **Rx/Tx Transistors-** TX and RX are low cost transmitter modules Pair which are based on RFIC which minimizes the board size and improve the stability against interferences. The transmitter modules work in very wide voltage range so they are very suitable for battery-driven applications. RX is a type of high sensitive receiver which works at 3.6~5.5V. It can be used together with TX to construct simple and short range wireless control system.

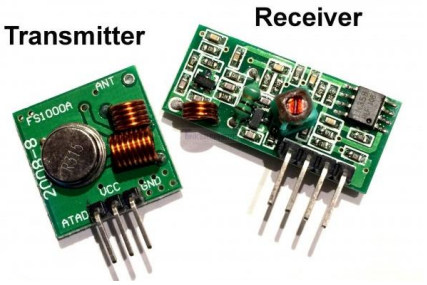

Fig-8-Rx/Tx Transistors

- **Water Sensor-** It is actually not a proper sensor, but two wires left open at the bottom of the stick and when moisture is detected it completes the circuit
and the buzzer is alarmed. The buzzer is programmed to be executed not for a long time at a sequence.

VI. ALGORITHM

A) For Ultrasonic Sensors:

- Trigger the ultrasonic sensor for sending waves.
- Collect the echoes reflected from the obstacle.
- Calculate the distance.
- Check whether the distance is less than safe distance or not.
- If yes, alert the user by switching on the vibration motor.
- If the user doesn't change the direction and the distance between obstacle and user decreases then increase the frequency of vibration.

B) For Moisture Sensor:

- Read the value from moisture sensor.
- Process the value.
- Compare the calculated value with minimum threshold.
- If the value is greater than threshold, then activate the buzzer.

C) For Rx/Tx transistor:

- Identifies the signal from the watch.
- The buzzer (different from the moisture sensor) will activate on the stick.
- Blind person will able to find the stick by the buzzer sound.

VII. RESULT

The below table shows the result produced by the smart blind stick by each sensor and describes the output of the same.

Input	Function	Output
Distance(Ultrasonic Sensor)	Obstacle Detection	Alert By Vibration
Humidity Sensor	Water	Alert By
Input	Detection	Buzzer
Signal From the Watch(Rx/Tx)	Locating the Stick	Buzzer (different from humidity sensor)

VIII. ADVANTAGES

- Obstacle detection when the obstacle is in the range of the ultrasonic sensor which will be the safety distance pre-programmed in the circuit.
- Water present on the path information with indication alarm.
- Simple to use and develop, low cost as the hardware used in this model is of very low cost which overall keeps the budget of the stick to the minimum
- If the stick is lost, the blind person is able to locate it with Rx/TX Transistor Wrist Watch.

IX. LIMITATION

The working of the stick is difficult on rainy season because of two reasons, first it is not waterproof and second the moisture sensor will always be active and the buzzer will not stop.

X. FUTURE WORK

The aim of this model is to style and implement a smart walking stick for the blind which is absolutely achieved. It came up with good results in detecting the obstacles on the path of the user to a certain range. Further aspects of this project will be improved with wireless property between the system parts, thus, increasing the range of the ultrasonic sensor and implementing a technology for determining the speed of approaching obstacles. In the future, necessary modifications will be added to enhance the performance of the system. These include: A global

positioning method to find the position of the user using the GPS, and GSM modules to communicate the location to a relative or care giver. It ought to conjointly accommodate with variable grips for versatile handling.

XI. ACKNOWLEDGEMENT

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XII. REFERENCES

[1] G. Gayathri, M. Vishnupriya, R. Nandhini and M. Banupriya “Smart Walking Stick for Visually Impaired.” International Journal of Engineering and Computer Science, vol. 3, number 3, pp. 4057-4061, 2014.

[2] R. Radhika, P.G. Pai, S. Rakshitha and R. Srinath“Implementation of Smart Stick for Obstacle Detection and Navigation.” International Journal of Latest Research in Engineering and Technology, vol. 2, number 5, pp. 45-50, 2016.

[3] M.H. Mahmud, R. Saha and S. Islam “Smart Walking Stick – An Electronic Approach to Assist Visually Disabled Persons.” International Journal of Scientific and Engineering Research, vol. 4, number 10, pp. 111-114, 2013.

[4] A. Jose, G. George, M.R. Nair, M. J. Shilpa and M. B.Mathai “Voice Enabled Smart Walking Stick for Visually Impaired.” International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, vol.5, pp. 80-85, 2016.

[5] C.S. Kher, Y.A. Dabhade, S.K Kadam., S.D. Dhamdhere and A.V. Deshpande “An Intelligent Walking Stick for the Blind.” International Journal of Engineering Research and General Science, vol. 3, number 1, pp. 10571062, 2015.

[6] B.G. Roopashree, B.S. Patil and B.R. Shruthi “Smart Electronic Stick for Visually Impaired.” International Journal of Innovative Research in Science, Engineering and Technology, vol. 4, number 7, pp. 6389-6395, 2015.

[7] O. O. Olakanmi, “A Multidimensional Walking Aid for Visually Impaired Using Ultrasonic Sensors Network with Voice Guidance", International Journal of Intelligent Systems and Applications (IJISA), vol. 6, number 8, pp. 53-59, 2014.
DOI: 10.5815/ijisa.2014.08.06

[8] E. J. Chukwunazo and G. M. Onengiye “Design andImplementation of Microcontroller Based Mobility Aid for Visually Impaired People.” International Journal of Science and Research. Vol. 5, issue 6, pp. 680-686, 2015. Available at http://dx.doi.org/10.21275/v5i6.NOV164233.

[9] G. Prasanthi and P. Tejaswitha “Sensor Assisted Stick for the Blind People.” Transactions on Engineering and Sciences, vol. 3, number 1, pp. 12-16, 2015.

[10] Ashraf Anwar, Sultan Aljahdali “A Smart Stick for Assisting Blind People” IOSR Journal of Computer Engineering (IOSR-JCE) Volume 19, Issue 3, Ver. II (May.-June. 2017).

[11] K.S.Manikanta , T. S. S. Phani, A .Pravin “Implementation and Design of Smart Blind

Stick for Obstacle Detection and Navigation System" Volume 8 Issue No.8.

[12] Vipul V. Nahar, Jaya L. Nikam, Poonam K. Deore "Smart Blind Walking Stick".

[13] Manikandan Shanmugam, John Victor, Mayank Gupta and K. Saravanakumar, "Smart Stick for Blind People" International Journal of Trend in Research and Development (IJTRD).

[14] Manoj kumar, Rohit verma, Mukesh kumar, Shekhar Singh, Er. Thakurendra Singh "Ultrasonic Based Smart Blind Stick For Visually Impaired Persons" International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering Vol. 6, Issue 3, March 2017.

[15] R.Dhanuja, F.Farhana, G.Savitha "SMART BLIND STICK USING ARDUINO" International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 03 | Mar-2018.

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Analysis and Estimation of Share Market Scenario

Devansh Dhote , Piyush Rai, Sunil Deshmukh, Adarsh Jaiswal, Prof. Yogesh Mali
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ABSTRACT

Share market is a public market for the transaction of business share. It is an organized set-up with a monitoring body and the members who trade in shares are registered with the share market and regulatory body Security Exchange of Board India. Since share market data are highly time-variant and are normally in a nonlinear pattern, analyzing the future price of a share is highly challenging. Analysis provides sophisticated information regarding the current status of the share price movement. Thus this can be developed in decision making for customers in finalizing whether to buy or sell the particular shares of a given share. Many investigators have been carried out for analyzing share market price using various data mining techniques. This work aims at using of Artificial Neural Network techniques to predict the share price of companies listed under index of National Share Exchange (NSE). The past data of the selected share will be used for building and training the models. The results from the model will be used for comparison with the real data to determine the accuracy of the model.

Keywords : Share Market, Analysis, Machine Learning, Supervised Learning Algorithm, Linear Regression, Data Analysis.

I. INTRODUCTION

Analysis of Share market returns is an important issue and very complex in financial institutions. The analysis of share prices has always been a challenging task. It has been observed that the share prices of any company do not necessarily only depend on the financial status of the company but also depends on socio economic situation of the country various technical, fundamental, and statistical indicators have been proposed and used with varying results. However, no one technique or combination of techniques has been successful enough. With the development of neural networks, researchers and investors are hoping that the market confidentialities can be unraveled. A share market is a public market for the trading of company share and results at an agreed price; these are securities listed on a share exchange as well as those only traded privately. It is an organized set-up with a regulatory body and the members who trade in shares are registered with the share market and regulatory body SEBI(Share Exchange Board India.

The share market is also called the secondary market as it involves trading between two investors. Share market gets investors together to buy and sell their shares. Shares that are in demand will increase their price, whereas as shares that are being heavily sold will decrease their price. Companies that are acceptable to be traded in this market place are called “listed companies”. Investors in share market want to

maximize their returns by buying or selling their investments at a suitable time. Since share market data are highly time-variant and are normally in a nonlinear pattern, analyzing the future price of a share is highly challenging. A lot of studies were performed for the analysis of share index values as well as the daily direction of change in the index. There are so many models to predict a price of a share market. To invest money in the share market we need to have an idea whether the prices of shares are going to increase or decrease on the next couple of days. Several computing techniques need to be joint in order to predict the nature of the share market. As the time elapsed, traditional capital market theory has been changed and various methods of commercial analysis have been improved.

II. RELATED WORK

The paper [1] in this paper we investigate to predict the share prices using auto regressive model. The auto regression model is used because of its simplicity and wide acceptability. We have also conducted a study on the effectiveness of auto regressive model. The Moore and Penrose technique is used to estimate the coefficients of the regression equation. We have also studied accuracy of the analysis by comparing the predicted values with the actual values over a period of time.

Advantage: Uses auto regressive model to predict the future price of a share.
Disadvantage: Analyzing the future price of a share is highly challenging.

The main [2] purpose In this paper, by applying linear regression for analyzing behavior of Share &Price 500 index, we prove that our proposed method has a similar and good performance in comparison to real volumes and the shareholders can invest confidentially based on our share pricing movements.

Advantage: Similar and good performance in comparison to real volumes.
Disadvantage: System work only on two variables.

The paper [3] in this paper we applied well known efficient multiple regression approach to predict the share market price from share market data based on three variables. In future the results of multiple regression approach could be improved using more number of variables.
Advantage: This approach to predict the share market price from share market data based on three variables.
Disadvantage: Future share price analysis is highly challenging.

In this [4] paper, we are using four types of deep learning architectures i.e Multilayer Perceptron (MLP), Recurrent Neural Networks (RNN), Long Short-Term Memory (LSTM) and Convolutional Neural Network (CNN) for analyzing the share price of a company based on the historical prices available. Here we are using day-wise closing price of two different share markets, National Share Exchange (NSE) of India and New York Share Exchange (NYSE). The network was trained with the share price of a single company from NSE and predicted for five different companies from both NSE and NYSE.
Advantage: If few more variables are considered as predictors the results will be even more accurate.
Disadvantage: There is increase the load on data mining at server side.

In this paper [5] we are going to present comparison of machine learning aided algorithms to evaluate the share prices in the future to analyze market behavior. Our method is able to correctly analyze supervised algorithms and compare which algorithm performs the best to predict the future share market prices in the market.
Advantage: The use of an ordinal data type for analysis based on ranking system provides a different dimension for analyzing outcomes. Pretty Flexible and easy to train.

Disadvantage: In these paper major disadvantages is data security. Require more no. of tress to predict accurately that makes model slow.

1. EXISTING SYSTEM

In modern commercial market, the most essential problem is to find essential approach to outline and visualizing the analysis in share-markets to be made by individuals in order to attain extreme income by investments. The share market is a transformative, non-straight dynamical and complex system. Share price analysis has always attracted people interested in investing in share market and share exchanges because of the direct financial benefits. It is also an important topic of research in finance. Analysis of share market returns is a very complex issue depends on so many factors such company financial status and national policy etc. These day's share prices are affected due to many reasons like company related newscast, party-political, social economic conditions and natural disasters. The share exchange is a virtual market where buyers and sellers trade in prevailing securities. It is a market hosted by an institute or any such government body where shares, shares, debentures, bonds, futures, options, etc. are traded. A share exchange is a meeting place for buyers and sellers.

III. SYSTEM OVERVIEW

In this paper our target is supervised Machine learning regression algorithms were used to decide the share market analysis that can predict the share market data. Support Vector Machine algorithm which gives the less accuracy. The proposed algorithm (Linear Regression Algorithm) uses less number of features, while still being able to data.

Fig. 1 shows the proposed system architecture of analysis of share market and estimation scenario. The input data of share is uses for trained dataset with some features. The training dataset contains data preprocessing which includes two steps: Classification, regression and Machine learning technique.

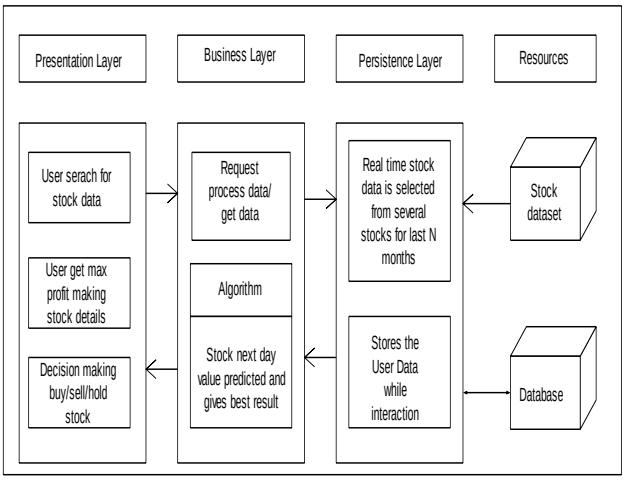

Fig. 1 Proposed System Architecture

Technical architecture is concerned about how large software applications can be or should be organized for better performance and ease of development. The commonly used option is a 3 or n tier architecture which is shown in above fig.1

Presentation Tier (or Client-tier)

It implements the GUI of an application. It is responsible for the presentation of data, receiving user events and controlling the user interface. Most ecommerce applications are web-based. The programming languages used are the combination of HTML, CSS and JavaScript. JSP or ASP is used for dynamic content.

- Decision to Customers/Users System gives decision in the following form

a) Sale- Our system recommends customer to sale a share according to that customer will make the profit
b) Buy- Our system recommends customer to buy a share so in a way that customer will make the profit

c) Hold- Our system recommends customer to hold a share so in way that customer avoid his/her loss

Application Tier

This layer implements the applications' business logic. It is usually powered by a Java Application Server (Web Logic or Web Sphere). There're several sub-layers within the application layer. Analysis Data:

- System performs analysis on share data using 4 algorithms:

  a) Moving average algorithm
  b) Forecasting algorithm
  c) Neural nephron algorithm
  d) Regression algorithm.

After applying above 4 algorithms find the most efficient algorithm for calculating predicted value and making decision we called it as filtered algorithm.

- Analysis using Filtered Algorithm:

Once get the filtered algorithm we find the predicted value and decision using this algorithm. Take last month of data analyze it using filtered algorithm according to that put the result to users.

Data Tier

This is the layer that manages the persistence of application information. It is usually powered by a relational database server (Oracle or MySQL).

- Fetch Share Data:

In This System Share portfolio data will fetch from using Yahoo API and perform the analysis on the share exchange data (opening price, closing price, high, low) for the analysis of next day decision.

IV. ALGORITHM'S AND RESULT

REGRESSION ALGORITHM- The Regression algorithm is one of the most simple,effective and less complex algorithm for determining the future value of the stock price without any need of a broker.The basic formula,

Y=mX+c,

Y=Independent value or the future prices

X=Dependent values or the current prices.

m= slope throughout the years.

C= constant.

MULTIPLE REGRESSION-

Multiple Regression technique is used where there is a large amount unknown Variables and we want to find out the the value of that variable.

It is an extension to linear regression.

Basic formula

Y=mX+c,

Y=Independent value or the future prices

X=Dependent values or the current prices(x1,x2.x3,x4,x5..xn).

m= slope throughout the years.

C= constant.

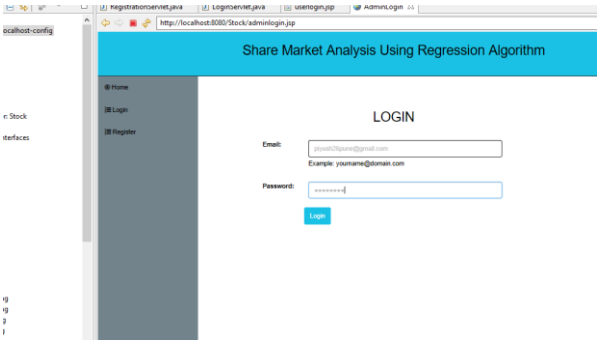

Fig .1 - The app starts with a login page for the user who have already registered.

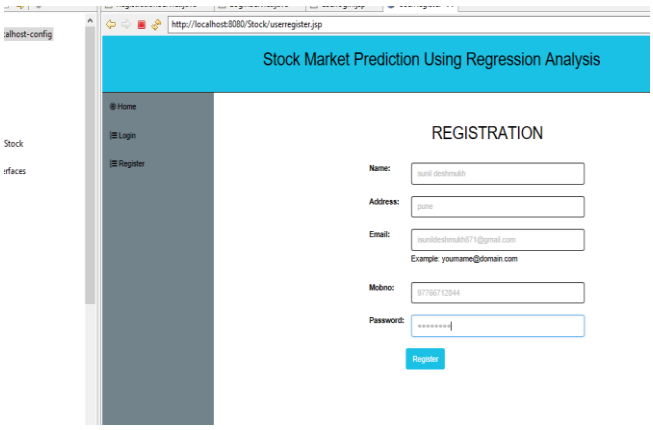

Fig. 2 The app provides new user to register by filling their personal details.

Fig.3 graph shows future value of share price with red colour bar is the loss bar and green colour bar is profit bar.

Fig.4 shows the point which tell when is the best time to buy or sell share

V. CONCLUSION

Share exchange analysis help the organization and also the stake holder to keep track of the trend of the market. It also helps to decide whether to sell, buy or withheld the share so as to maximize the profit. In this paper, I have made a comparative study of various techniques that are used to predict the share market giving a brief description of each.

VI. REFERENCES

[1]. Dr. P. K. Sahoo, Mr. Krishna charlapally ,"Share Price Analysis Using Regression Analysis", International Journal of Scientific & Engineering Research, Volume 6, Issue 3, March-2015 ISSN 2229-5518.

[2]. Farhad Soleimanian Gharehchopogh, Tahmineh Haddadi Bonab and Seyyed Reza Khaze ,"A Linear Regression approach to analysis of share market trading volume: A case study", International Journal of Managing Value and Supply Chains (IJMVSC) Vol.4, No. 3, September 2013.

[3]. Sachin Kamley , Shailesh Jaloree & R. S. Thakur , "Multiple Regression: A Data Mining Approach fir analyzing the share market" trends based on open, close and high price of the month", International Journal of Computer Science Engineering and Information Technology Research (IJCSEITR) ISSN 2249-6831 Vol. 3, Issue 4, Oct 2013, 173-180 © TJPRC Pvt. Ltd.

[4]. Hiransha Ma, Gopalakrishnan E. Ab, Vijay Krishna Menonab, Soman K.P*," NSE Share Market Analysis Using Deep-Learning Models" International Conference on Computational Intelligence and Data Science (ICCIDS 2018).

[5]. Neha Bhardwaj1, MD Akil Ansari1" Analysis of Share Market using Machine Learning Algorithms" International Research Journal of Engineering and Technology (IRJET) Volume: 06 Issue: 05 | May 2019.

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WCNN : NIR-VIS Face Recognition

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ABSTRACT

In this paper we have seen that how WCNN Near infrared-visible (NIR-VIS) heterogeneous face recognition (HFR) refers to the process of matching NIR to VIS face images. The current heterogeneous methods try to extend VIS face recognition methods to the NIR spectrum by synthesizing VIS images from NIR images. It refers to matching a sample face image to a gallery of face images taken from alternate imaging modality. The major challenge of heterogeneous face recognition found in the great discrepancies between different image modalities. The resolution of a heterogeneous face synthesis as complementary combination of two or more components is high. The painting component synthesizes and in paints VIS image textures from NIR image textures. The correction component maps any pose in NIR images to a frontal pose in VIS images, resulting in paired NIR and VIS textures. A warping procedure is developed to integrate the two components into an end-to-end deep network. A discriminator and wavelet based discriminator are being designed to supervise intra-class variance and visual quality respectively.

Keywords : Heterogeneous face recognition, Deep Neural Networks, VIS-NIR face matching, feature representation.

I. INTRODUCTION

Face images can be captured by different acquisition systems like visible light cameras capture visible light (VIS) images while near infrared (NIR) images are captured by infrared imaging devices. The images can be captured at daytime or nighttime so illumination conditions also differ. Such types of images are known as heterogeneous images and heterogeneous face matching refers to matching face images across different modality. The heterogeneous (NIR-VIS) face images. In many face matching system, one of the difficult task is to match the heterogeneous face images. Many applications such as E passport, video surveillance, and photo based identification requires heterogeneous face matching because, in these applications probe face images and gallery face images are of different modalities such as NIR (Near Infrared), VIS (Visible Light), Matching faces across different sensing modalities raises the problem of heterogeneous face recognition (HFR) or cross-modality face recognition. By remarkable difference in sensing processes, heterogeneous images of the same subject have a large appearance variation, which has distinguished HFR from regular visual (VIS) face recognition.

In this paper, the two aforementioned problems are solved by a novel Wasserstein CNN (WCNN) architecture [1]. The WCNN employs a single network structure to map both NIR and VIS images to a compact Euclidean feature space such that the NIR and VIS images in the embedding space directly correspond to the face similarity. The WCNN [1] is

composed of three key components in an end-to-end fashion. First one is inspired by the observations and results indicating that the facial appearance is composed of identity information and variation information (e.g. lightings, poses, and expressions). We have divided the high level layer of the WCNN into two orthogonal subspaces that contain modality-invariant identity information and modality-variant spectrum information.

II. LITERATURE SURVEY

Sr. no	Paper	Author	Functionality	Limitations
1	Wasserstein CNN: Learning Invariant Features for NIR-VIS Face Recognition.	Ran He , Xiang Wu , Zhenan Sun , Tieniu Tan	It uses only one network to project both NIR and VIS images to a compact Euclidean space. The WCNN naturally combines subspace learning and invariant feature extraction.	Limited availability of training samples of cross modality face image pairs.
2	Heterogeneous Face Recognition Using Domain Specific Units.	Tiago de Freitas Pereira, Andre Anjos, and Sebastien Marcel	High level features of Deep Convolution Neural Networks trained on visual spectra images are potentially domain independent and can be used to encode faces sensed in different image domains.	It will focus on the analysis on what such feature detectors are learning for each image domain.
3	Learning a High Fidelity Pose Invariant Model for High-resolution Face Formalization.	Jie Cao, Yibo Hu, Hongwen Zhang, Ran He, Zhenan Sun	Face formalization refers to predicting the frontal view image from a given profile. It is an effective preprocessing method for pose-invariant face recognition.	The prerequisite of warping is decomposed into dense correspondence field estimation and facial texture map recovering.
4	Cross-spectral Face Completion for NIR-VIS Heterogeneous Face Recognition.	Ran He, Jie Cao, Lingxiao Song, Zhenan Sun, Tieniu Tan	Wasserstein convolutional neural network (WCNN) approach for learning invariant features between near-infrared (NIR) and visual (VIS) face images (i.e., NIR-VIS face recognition.	Future work is whether this IDR framework can be useful for other heterogeneous or cross-modal problems.

Algorithm

1. Algorithm for Face Recognition –

Input-Image
Output-Recognized Image
Steps:-

1. User will register and login into the system.
2. After login into the system, user can upload and train dataset.
3. For face recognition user has to first train the dataset.
4. From the trained images, user will randomly upload an image which is to be recognized.
5. As we are taking heterogeneous images and comparing them in large scale.
6. So, this method of face recognition is different from other methods.

2. Algorithm used in face recognition-

Input-Heterogeneous Image
Output-Recognized image
Steps:-

1. We have taken heterogeneous images i.e. Near infrared images and visual images.
2. For comparing and matching heterogeneous images we have used algorithms like Convolutional Neural Network (CNN) and Wasserstein Convolutional Neural Network (WCNN).
3. Heterogeneous images are process under CNN, In CNN images passes through four layers i.e. convolutional layers, Relu layers pooling layers and fully connected layers.
4. After that both the processed heterogeneous images are collected in a layer called shared layer.
5. The WCNN employs shared layer which map both NIR and VIS images to a compact Euclidean feature space such that the NIR and VIS images in the embedding space directly correspond to the face similarity.
6. Finally we can recognize face using heterogeneous images with the help of these two algorithms.

III. RESULTS

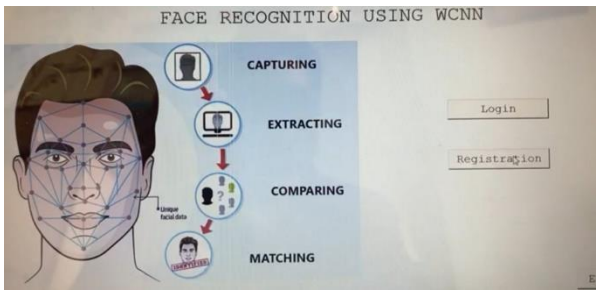

Fig1. Face Recognition Using Wcnn.

In our project we have used NIR-VIS images for face detection .Image processed in 4 General steps that is shown in above fig1.

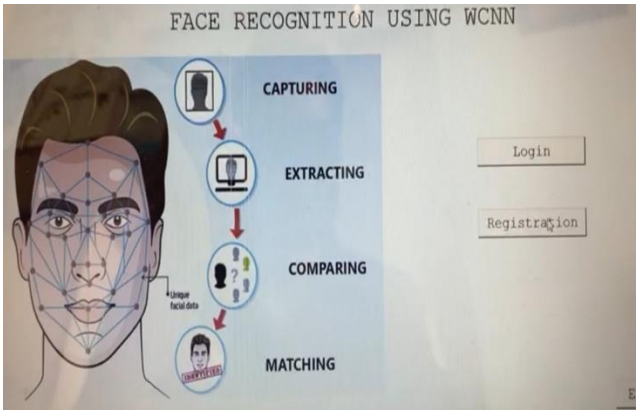

Fig2. Login and Registration Page.

From fig 2. We can see that the users can login using their credentials that is username and password. For a new user, user has to register first.

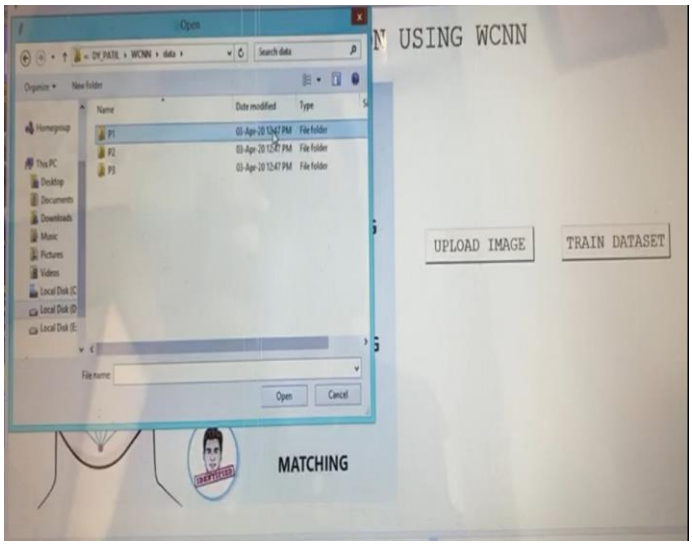

Fig3. Training and Uploading image.

After the registration and login into the system, user can train dataset and upload images for face recognition.

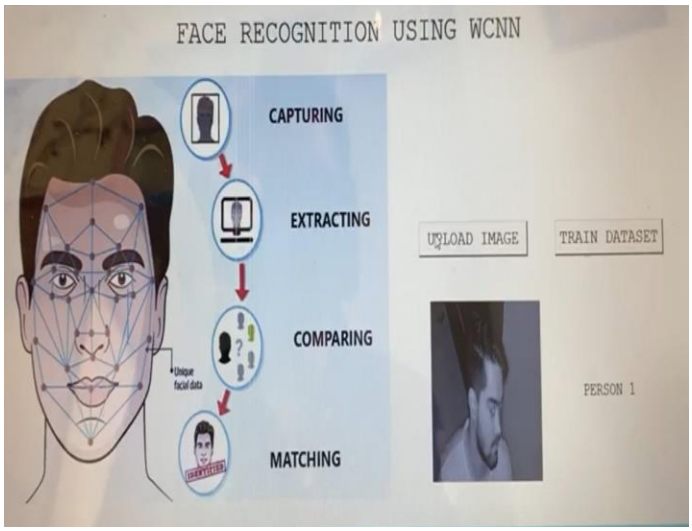

Fig4.Resulted output of Nir-Vis image.

From fig 4 we can see that after training the data set and comparing with the uploaded image we can recognition the person.

ADVANTAGES:

- Because of weaker scattering and absorption, NIR light can penetrate deeper into. In excitation light in the visible (VIS) region cannot reach the imaging target in tissues in the conventional VIS-VIS imaging.
- The main advantage of Convolutional Neural Network compared to its predecessors is that it automatically detects the important features without any human supervision.
- The large-scale VIS dataset is helpful for VIS face recognition; it has limited benefits for HFR if only a small-scale NIR dataset is available.
- The accuracy requirement of face-based biometric recognition, by taking advantages of the recent NIR face technology while allowing the use of existing VIS face photos as gallery templates.

DISADVANTAGES:

-
-

There are many extracted features leading to the variability of images of a single face that add to the complexity of the recognition problem if they cannot be avoided by careful design of the capture situation.

A facial biometric security system can drastically improve your security because every individual who enters your premises will be accounted for. Any trespassers will be quickly captured by the recognition system and you would be alerted promptly.

IV. CONCLUSION

Hence, we have seen how WCNN NIR-VIS FACE RECOGNITION across-spectral joint dictionary learning technique to reconstruct images between the NIR and VIS domain. The WCNN naturally combines subspace learning and invariant feature extraction into a CNN, and divides the high-level layer of the CNN into two orthogonal subspaces that contain modality-invariant identity information and modality-variant light spectrum information. The Wasserstein distance is used to measure the difference between heterogeneous feature distributions, and it is effective at reducing the sensing gap.

V. REFERENCES

[1]. Ran He , Senior Member, IEEE, Xiang Wu , Zhenan Sun , Member, IEEE, and Tieniu Tan," Wasserstein CNN: Learning Invariant Features for NIR-VIS Face Recognition"

[2]. Tiago de Freitas Pereira "Heterogeneous Face Recognition Using Domain Specific Units" Journal of Latex Class Files, vol. 14, no. 8, August 2015.

[3]. Jie Cao "Learning a High Fidelity Pose Invariant Model for High-resolution Face Formalization" 32nd Conference on Neural Information Processing Systems (Nuri's 2018), Montréal, Canada.

[4]. Benjamin S. Riggan "Synthesis of High-Quality Visible Faces from Polarimetric Thermal Faces using Generative Adversarial Networks" International Journal of Computer Vision manuscript.

[5]. Zhenan Sun "Cross-spectral Face Completion for NIR-VIS Heterogeneous Face Recognition" Journal of Latex Class Files, January 2017.

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IoT Based Women Safety Device using Android

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ABSTRACT

In today's world it is not safe to travel alone, specially for women. Since many unexpected, and shameful incidents are happening around the world. Problems can occur from anywhere and anytime, as women are also growing equally like men so for that purpose they have to travel alone at night especially in public transport. for that reason we need to solve this problem of women. They also shouldn't feel any fear regarding their safety. This paper represents IoT based device along with android application which will serve the purpose to rescue the women from crisis situation. As we all know that nowadays every individual carry their own Smartphone's and wearable's. The uses of android along with smart wearable's is increasing rapidly so it is better to have such system which will provide a safe environment for women in crisis situation.

Keywords: SMS, IoT, Android, Bluetooth, Arduino , GPS

I. INTRODUCTION

A. Domain: IoT

The Internet of Things also known as IoT is system of interrelated computing devices, mechanical and digital machines, objects, people that are provided with unique identifiers and the ability to transfer data over a network without requiring any interaction between human/machine and machine/human. This definition of the IoT has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, sensors and embedded systems. Traditional areas of embedded systems, wireless sensor networks, control systems, automation and others all contribute to enabling the IoT. In the consumer market, this technology is most similar with products pertaining to the concept of the "smart home", covering devices and appliances i.e., lighting fixtures, home security system and camera and other home appliances like washing machine that support one or more common ecosystems, and can be controlled by the devices connected with IoT ecosystem, such as Smartphone's and smart speakers.

B. PROBLEM STATEMENT: IoT based women safety device using Android

This paper is focusing on building an effective, fast and reliant system to make the women to feel safe and empowered.

Our platform will act as a 24*7 active help and companion for women so that they don't feel alone in any crisis situation.

It will unite as well as enables the citizens of our nation and the police to work towards a common problem. This tool will act as eyes and ears for the civilians and police and help them in diminish crimes against women.

This device has been designed in a manner that it deals with the various situations a woman can be stuck in like when she is alone or when she is in a public place or when she is in a public transport etc…

II. LITERATURE SURVEY

1. **Ms. Deepali M. Bhavale, Ms. Priyanka S. Bhavale, Ms. Tejal Sasane, Mr. Atul S. Bhavale,"IoT based unified approach for women and children security using wireless and GPS", IJARCET, Volume 5, Issue 8, Aug 2016**

This research paper proposed a system which can be useful for women for security purpose it consist of wearable device with emergency button to access the device immediately and proceed with its further functions. This system can make better use of Arduino based on Linux Board. The system has been developed on web based data driven application that provides use full information. This saves the time and victim get help without loss of time.

2. **Tuman Poddar, Ritesh C, Nagraja Bharat, "Using Wearable Technology To Answer Women's Safety", IJSTM, Volume 4, Issue no.5, May 2015.**

This research paper proposed a system of accessories incorporating computer and advanced electronic technologies. It includes devices with sensors and sync with mobile device for personal safety. This research proposes a system where these aspects of technology to build a unified system. The module setup use Zigbee and GSM for wireless communication and GPS for location tracking. The experiment of this research and its result can be viewed as an opening into a wider and vivid class of possible solution for women safety.

3. **Dr. P. Eswaran, Dr. N. Manoharan, "Women Security Solution Using: IoT", IJPAM, Volume 119, No. 10, 2018.**

Current Scenario from shows that women are facing Lot of troubles and they are not secure in untimed situation since women are working equal to men in every sector like police, Army, Business, etc. When they are leaving alone they may face problems like robbery, rape, murder and harassment. This research proposed a low cost model which is useful for women. By using this system on right time we can save women by problems they are facing while being alone or apart from their family members.

4. **Mr. Vaibhav A. Alone, Asst. Prof. Ashish Manusmare, Asst. Prof. Trupti Bhoskar, "A Study Based on Women Security System", IJSETR, Volume 6, Issue 8, Aug 2017.**

This research proposed an alternative method for women security concerns. Here the system is designed around Arduino Microcontroller that uses GPS and GSM for better security. In this research an intelligent and advanced women safety is proposed. The paper shows that the system ensures complete women safety during public transport and this system gives self defense to women. It is designed around microcontroller ATMEGA328P and button is pressed manually to indicate any miss happening. As soon as miss happening is detected by the device the same is indicated to controller.

III. SYSTEM DESIGN

The proposed system is going to work in the following way when caught in the crisis situation women with the wearable device and Smartphone connected with each other with Bluetooth simply

have to press the panic button placed on the device which then activate the device for the further functioning. On pressing the panic button digital signals will get generated with the help of control unit and get converted into analog signals with the help of Arduino mounted on the device. These analog signals then transmitted to the Smartphone via Bluetooth.

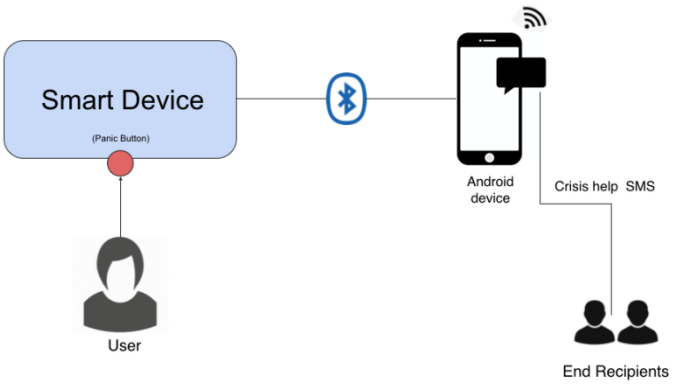


Fig 1: general system architecture

After receiving the signals sent by the device, application installed in the Smartphone is programmed for further processing. In which it includes database connection, real time GPS coordinates fetching and preparing SoS SMS etc… Android application on receiving signal simply prepare the massage with predefined templates including real time GPS coordinates and send it to the emergency contacts saved in the database. Functioning of android application is flexible as message templates and contact list can be updated anytime according to the user needs.

In short the model works as follow, the Smart phone is connected to Smart Device through Bluetooth Low Energy (BLE).Smart Device communicates with the Smartphone via a specially designed API unit collects data from human being using switch. Control Unit collects information from smart device unit. GSM Module will then send the location coordinates and help messages from control unit to the base station from which the messages are forwarded to the relatives if the incident occurs.

IV. ALGORITHM

```
Node_function(pressed)
 {
  IF panic button is pressed THEN
      BEGIN
           Analog signal is generated;
           This Analog signal is converted to digital
           signal;
           Digital signal is transferred using
           Bluetooth;
      End;

  IF Bluetooth signal arrived Then
     BEGIN
          FETCH the Guardians list;
             Get  the Current time;
               BEGIN
                    GET the Current location;
                    APPEND Current Location to
                    Message;
                    Send the Message to Guardians;
          End;
IF Current time increment by 5 min THEN
       BEGIN
         GET the Current location;
           APPEND Current Location to
                    Message;
                    Send the Message to Guardians;
              End;
     End;
}
```

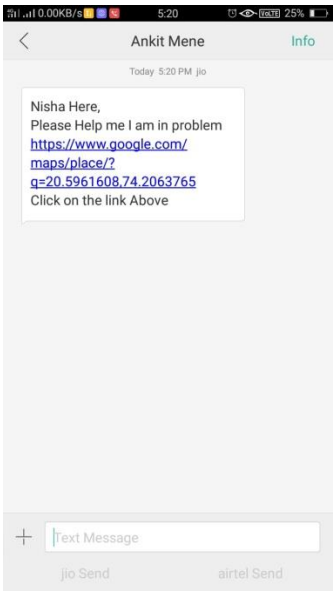
V. RESULT (OUTPUT SCREENSHOT WITH EXPLANATION)

EXPECTED RESULT

This system is expected to behave in following way:

Panic Button

Arduino



SOS Message

Current Location

Bluetooth

After pressing emergency panic button,
Immediately signals will be generated by the Arduino. These signals are transferred to android device via Bluetooth.
On receiving signals by the android application, SoS SMS will be prepared with real time location coordinates and send to emergency contacts which are already defined or stored in the database.

VI. ADVANTAGES

- Comfortable and Easy to Use
- Smartphone Based
- Single Button
- Bluetooth Low Energy(BLE) – Less Energy
- More durability
- 24/7 connectivity
- SOS SMS
- Real-time location sharing
- Backup support

VII. LIMITATIONS

1. To use this, device should be always connected to the mobile using Bluetooth.
2. If mobile is not close enough to the device Mobile will not receive the signal.
3. Internet Connection is must to get the current location.

VIII. FUTURE WORK

1. We can add camera in the device to capture the Images and record the video.
2. We can use the shock system in the device.
3. Using shock system in device the woman can tackle the situation.

IX. CONCLUSION

This research paper is focusing on the minimizing the problems women are facing. This system will help conquering the same problem. There are many alternatives research has been done to tackle same problem but proposed system is more efficient and convenient to use as device is easily accessible and its coordination with android platform makes it even sophisticated.

II. REFERENCES

[1]. "Smart security solution for women based on Internet Of Things (IOT)" G.C.Harkiran Karthik Menasinakai Suhas Shirol International Conference on ICEEOT.IEEEXplore, 24-Nov-2016

[2]. Women's Safety Using IOT" Prof. R. A Jain, Aditya Patil Prasenjeet Nikam, Shubham More Sauabli Totewar.InternationalResearch Journal of Engineering andTechnology(IRJET) volume 04 Issue 05 may-2017

[3]. Mr.S.Sankar, M.Gowthami, A.Saranya, S.Sathyapriya, S.Shanmugapriya, "Design Of Internet Of Things Based Smart Energy Meter Using Embedded Technology And Android Application", International Journal of Innovations in Scientific and Engineering Research (IJISER), Vol.4, No.2, pp. 57-62,2017

[4]. "Smart Security solution for women using lot Prof. Harshitha.N Ishwarya.s2, pravallika. R, jayalakshmi.k, saroja maralabhavi. Volume 2, Issue 5, 2017

[5]. Study on Smart Security Technology for Women Based On IOT", J.K.Thavil. V.P.Durdha wale, P.S.Elake, International Research Journal of Engineering And Technology(IRJET) Volume: 04 Issue:02-Feb-2017

[6]. Smart Gadgets For Women's Safety Akanksha Chandoskar, Shraddha Chavan, Yojana Mokal, Payal Jha,Pournima Kadam, International Journal On Recent And Innovation Trends in Computing and Communications Volume:4 Issue:1

[7]. " SMART GIRLS SECURITY SYSTEM", Prof. Basavaraj Chougula Archana Naik, Monika Monu , Priya Patil and Priyanka Das, International Journal of Application or Innovation in Engineering & Management (IJAIEM), Volume 3, Issue 4, April 2014

[8]. " GPS and GSM Based Self Defense System for Women Safety", Sriranjani R. Journal of Electrical & Electronic Systems, ISSN: 23320796 Volume 6. Issue 2

[9]. Privacy and Security in Internet of Things and Wearable Devices" Orlando Arias, Jacob Wurm, Yier Jin IEEE TRANSACTIONS ON MULTISCALE COMPUTING SYSTEMS, VOL. 1,NO. 2, APRIL-JUNE 2015

[10]. SeokJu Lee, Girma Tewolde, Jaerock Kwon Design and Implementation of Vehicle Tracking System Using GPS/GSM/GPRS Technology and Smartphone Application, I World Forum on Internet of Things (WF-ioT), March 2014, Seoul

[11]. SMART SECURITY SOLUTION FOR WOMEN AND CHILDREN SAFETY BASED ON GPS USING IOT Asmita Pawar, Pratiksha Sagare ,TejalSasane and Kiran Shinde, International Journal of Recent Innovation inEngineering and Research, Volume: 02 Issue: 03 March 2017 (IJSER)

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The MARK8 Drone : Smart Drone for Delivery Medicine

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ABSTRACT

Drones have the ability to gather real time data cost effectively, to deliver payloads and have initiated the rapid evolution in various scientific purposes, public safety, and in commercial industries. Ordinary drone applications in medicine include the assessments for delivering aid packages, medicines, vaccines, blood and other medical supplies to remote areas with the help of security by using QR Code scanning to open and place aids in container box;

Drones help provide emergency healthcare service to patients from a distance to a remote area where reaching by road or other means are either dangerous or not possible. Rapid and fast order deliveries make significant efficiency and early help to needy and avoid life threatening scenarios. Paramedics or health service staff can use drone to deliver required medical supplies to high altitude points or in hostile areas. Our systems include the most efficient and effective algorithms which make it very helpful for delivery medicines for people via drone.

Keywords: Drone, Arduino UNO, Barometer, Compass, Python, Camera Module, QR Code, Brushless motors, ESC, Propellers

I. INTRODUCTION

Increase in online shopping and need of the consumer is rapidly increasing. Thus, use of drone technology to deliver orders are now in consideration. The present automated drone delivery system has a few drawbacks like- The drone just drops the ordered package to the location without the concern of whether the customer is available there or not. There is no facility to change the location after ordering the package or verification of receiver. While taking emergency services in a focus it is highly recommended to use of proper secure delivery system to ensure package is deliver to rightful owner or destination security and intact. Which then This work focuses on the unmanned secure delivery system which will address the above-mentioned drawbacks.

A. The MARK8 Drone

By interfacing GPS/ Barometer and Compass to the drone, we initiated intelligence of reaching to the exact location of delivery can be inherited by the user.Secondly, once the drone reaches the location users must scan QR Code via order application as an authentication once QR is matched then drone drops the package if notthe drone will not release the package.

Although we are working on to create a feedback system where drone can signal as package is droped or not then system will send an SMS to the user about the Success or failure of deliver the package and will fly back to the vendor's control station.

The MARK8 Drone Droneis an unmanned aerial vehicle (UAV), which is also known as 'medicine delivery drone', is utilized to transport medical packages, essential food drugs or other medical or surgical goods, initially the attempts of using commercials UAV's (unmanned aerial vehicle).

B. Problem Overview and Scope of Work

Worlds leading online market company announce that they will use Air delivery systems to delivery each order to their respective customers. Air Vehicle (Miniature UAV, otherwise known as drone) technology to autonomously fly individual packages to customers' doorsteps within 30 minutes of ordering. But each type of drone having its carrying and lifting capacity. Like the order must be less than five pounds(2.26 kg), must be small enough to fit in the cargo box that the craft will carry, and must have a delivery location within a ten-mile radius of a participating.

The present automated drone delivery system has a few
downsides like:

- The drone just drops the ordered package to the location without the concern of whether the customer is available there or not.
- There is no facility to change the location after ordering the package
- What if at the landing of drone, if someone else picks up the package before the intended person comes out from inside home.

C. LITERATRE SURVEY

Mrs Wasim Fatima. S, "Unmanned Aerial Vehicles for space exploration", [10 October 2017]

This research paper was proposed for a system which provides the study of space is not only carried out by astronomers with telescopes but also the space exploration of space is conducted both by unmanned drones and human spaceflight. This paper content deals with the role of unmanned aerial vehicles on earth and the future directions for the use of UAVs in space for exploration and observation purpose.

Miroslav Kratky and Jan Farlik, "Countering UAVs – the Mover of Research in Military Technology", [September 2018]

This research paper was proposed for a system of the risk of misuse of UAVs by criminals, guerrillas or terrorists has compelled authorities, scientists and defence industry to face this threat. Organisations have launched crucial infrastructure defence programs to cope with UAV threat. To solve this problem, it is necessary to develop disciplines improving the air space surveillance and UAVs elimination techniques. The substantial aspects of the UAVs detection and elimination were analysed, being supported by a number of conferences, workshops and journals articles. The contribution of the study in the Counter–UAV area consists particularly in generalisation and evaluation of the main technical issues. The aim of this paper is to emphasise the importance of developing new scientific fields for countering UAVs, and hence it is directed firstly on the scientific audience.

S. G. S. Fernando, "CarryMe: Drone Delivery System for Flooded Area", [December 2017]

In this article, "CarryMe" is the drone delivery system which can be used to provide better disaster recovery by resolving these issues. Collision avoidance algorithm, obstacle detection algorithm, video streaming and autopilot are the main functionalities

of this implemented system. A flooded area can be identified using a map through the web application of CarryMe and the drone controlling interface which user- friendly and it can serve several people using several drones at the same time.

Guang Yang and Xingqin Lin, "A Telecom Perspective on the Internet of Drones:From LTE-Advanced to 5G".

In this article, they elaborate how the drone ecosystem can benefit from mobile technologies, summarize key capabilities required by drone applications, and analyse the service requirements on mobile networks. It present field trial results collected in LTE-Advanced networks to gain insights into the capabilities of the current 4G+ networks for connected drones and share our vision on how 5G networks can further support diversified drone applications.

Lawrence G. Muchemi, "An Autonomous Unmanned Aerial Security Surveillance System to Enhance Security in Remote Territories", [December 2017]

In this article, With the use of Unmanned Automated Aerial surveillance vehicles, we can be able to curb the criminals by surveying the security prone territories where it is not safe for a human to go and report in advance. The implication of the study is that it will provide a basis for further development, automation and adoption of UAV in aerial security surveillance and reporting to authorities the information that will be used to raise alarms and enhance security.

Michael K. McCall, "Small Drones for Community-Based Forest Monitoring: An Assessment of Their Feasibility and Potential in Tropical Areas,[24 June 2014]

In this paper they assess: (1) the feasibility of using small, low-cost drones (i.e., remotely piloted aerial vehicles) in CBFM programs; (2) their potential advantages and disadvantages for communities, partner organizations and forest data end-users; and (3) to what extent their utilization, coupled with ground surveys and local ecological knowledge, would improve tropical forest monitoring. Use of small drones can help tropical communities to better manage and conserve their forests whilst benefiting partner organizations, governments and forest data end-users, particularly those engaged in forestry, biodiversity conservation and climate change mitigation projects such as REDD+.

Burchan Aydin and Emre Selvi, "Use of Fire-Extinguishing Balls for a Conceptual System of Drone-Assisted Wildfire Fighting ,[12 February 2019]

This paper examines the potential use of fire extinguishing balls as part of a proposed system, where drone and remote-sensing technologies are utilized cooperatively as a supplement to traditional fire fighting methods. The proposed system consists of (1) scouting unmanned aircraft system (UAS) to detect spot fires and monitor the risk of wildfire approaching a building, fence, and/or fire fighting crew via remote sensing, (2) communication UAS to establish and extend the communication channel between scouting UAS and fire-fighting UAS, and (3) a fire-fighting UAS autonomously traveling to the waypoints to drop fire extinguishing balls (environmental friendly, heat activated suppressants).This concept is under development through a trans disciplinary multi- institutional project.

D. METHODOLOGY

In The MARK8 Drone Dronewe implemented high performance drone spears with properly aligned and balanced drone frame. Which is 3D printed.The drone is interfaced with GPS, Barometer and Compass, Mini servo, Internet facing transceiver and QR Code display camera and output screen. Top of that a secure container to hold medical supplies. Thus, the drone is

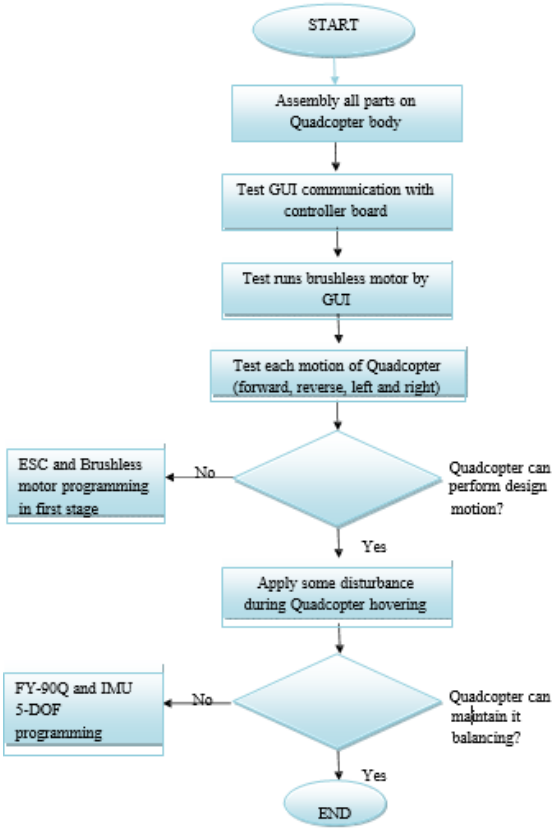
properly programmed with sophisticated software programming using Python to define its flight path do roll, pitch and yaw. Stabilizing it self in high wind and air pressure to maintain current altitude and speed with rapid command control to deliver packages while authenticating user or receiver of the package. A predefine flight path guides drone for the location where it supposed to go. On board flight controller and microcontroller takes the command from command and control device and then GPS and barometer will start tracing the location of the drone and stores the QR code to be scanned at delivery location. If the scanned QR is matches it releases the packages and return to location from where it started.

1. Interfacing of GSM to Arduino and Flight controller

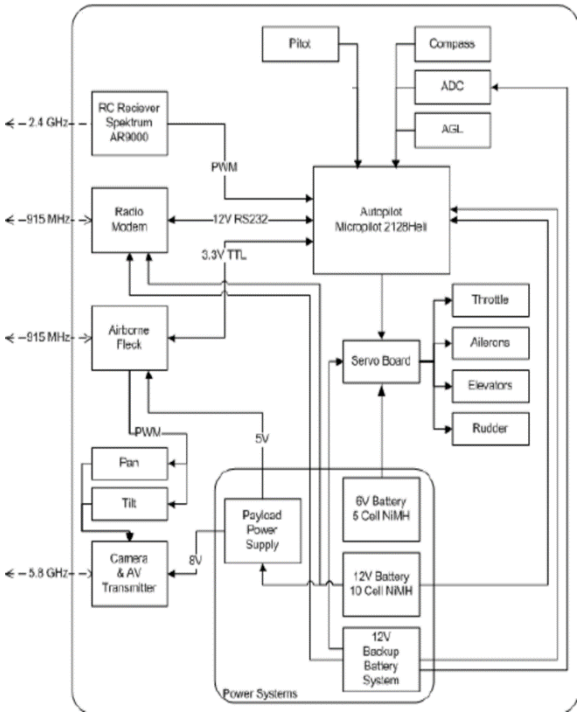
In this work the GSM module used is GSM 900, which is used for transmitting and receiving the data services.

This GSM provides the speed of data transmission of rate 9.6kbps. Three pins of GSM module, namely TX, RX, and GND are interfaced with Arduino by GPIO hardware pins and make these pin as a software serial virtually. GSM module supports the SIM card , having a frequency of 900Mhz. GSM uses the 890-915 MHz frequency band to send data for the mobile station to the base station (uplink) and 935-960 MHz frequency band to receive data from the base station to the mobile station (downlink) while interfacing Arduino with GSM module we used hardware serial pins on the development board. To make GSM stand alone and attached to drone base, it needs a minimum of 7v and 2amp of battery. The interface on the GSM side needs only TX, RX, GND and supply pin.

2. Flow chart



3. System Architecture



4. Algorithms used

Improved Altitude Control Algorithm for Quadcopter Unmanned Aerial Vehicles

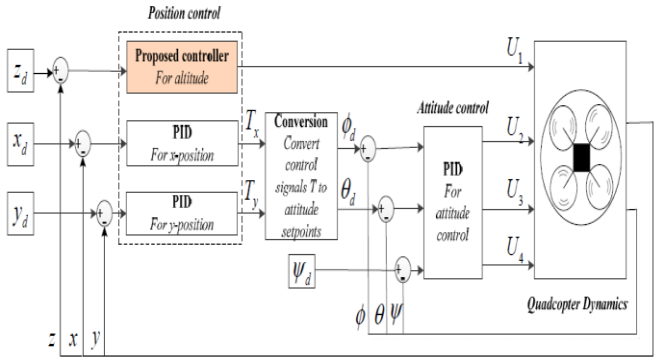


Figure : Full quadcopter controller scheme. The proposed is applied to the altitude control while conventional proportional-integral-derivative(PID) controllers are used for horizontal position and attitude control.

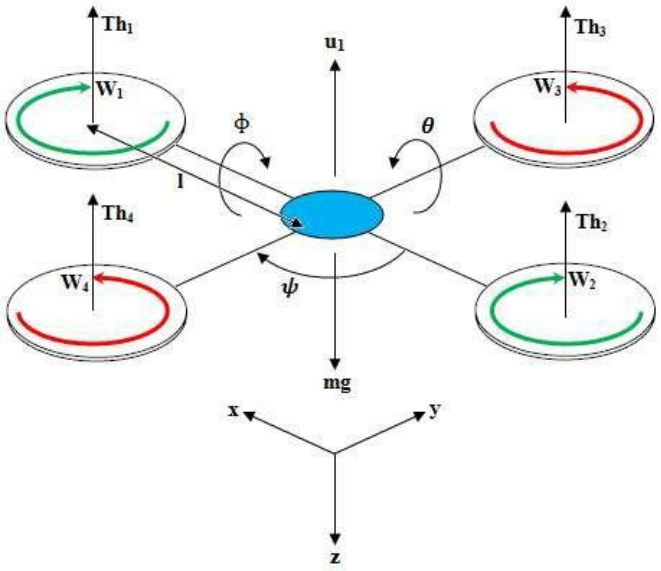
Kalman Filter

If a linear state space model of a system is available, a Kalman filter can be used to obtain optimal estimates of the states from observations. A discrete model with the states X, input signals and observations Y can be written as:

x[k + 1] = F[k]x[k] + G[k]u[k] + G,[k]v[k],
y[k] = H[k]x[k] + D[k]u[k] + e[k],
cov(e[k]) = R[k], cov(v[k]) = Q[k],

5. Mathematical model

The schematic movement of drone is represented in Figure and based on this schematic, the drone mathematical model is derived as below



Where,

U1 = sum of the thrust of each motor
Th1= thrust generated by front motor
Th2= thrust generated by rear motor
Th3= thrust generated by right motor
Th4= thrust generated by left motor
m = mass of Drone
g = the acceleration of gravity
l = the half length of the Drone
x, y, z = three position
θ, ϕ, ψ = three Euler angles representing pitch, roll, and yaw

The dynamics formulation of Drone moving from landing position to a fixed point in the space is given as

$$R_{xyz} = \begin{matrix} C\phi C8 & C\phi S8Sl/J - S\phi Cl/J & C\phi S8Cl/J + S\phi Sl/J \\ C\phi S8 & S\phi S8Sl/J + C\phi Cl/J & S\phi S\phi Cl/J - C\phi Sl/J \\ -S8 & C8Sl/J & C8Cl/J \end{matrix}$$

Where,

R = matrix transformation
S8 = Sin (θ), Sϕ= Sin (ϕ), Sl/J= Sin (ψ)
C8 = Cos (θ), Cϕ= Cos (ϕ), Cl/J= Cos (ψ)

By applying the force and moment balance laws, the Drone motion equation are given in Equation

(3.2) till (3.4) and Pythagoras theorem is computed as Figure

X.. = u1 (CosϕSinθCosψ + SinϕSin) – K1x/m

y.. = u1 (SinϕSinθCosψ + CosϕSin) –K2y/m

z... = u1 (CosϕCosψ) -g- K3z'/m

Where,

Ki = drag coefficient (Assume zero since drag is negligible at low speed)

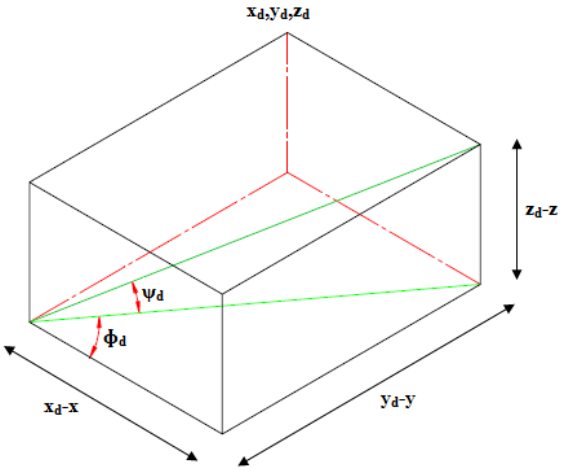


Figure : Angle movement of Drone

The angle ϕd and ψd in Figure are determined using Equation

$$\phi d = \tan^{-1}(\underline{xu\text{-}x})$$

$$\psi d = \tan^{-1}(\underline{zd\text{-}z})$$

$$J(xd\text{-}x)^2\text{-}(xd\text{-}x)^2$$

Drone have four controller input forces U1, U2, U3, and U4 that will affects certain side of Drone. U1 affect the attitude of the Drone, U2 affects the rotation in roll angle, U3 affects the pitch angle and U4 control the yaw angle. To control the Drone movement is done by controlling each input variable. The equations of them are as below:

$$U \begin{cases} U1 = (Th1 + Th2 + Th3 + Th4)/m \\ U2 = 1\ (-Th3\text{-}Th2\text{+}Th3\text{+}Th4)\ /\ I1 \\ U3 = 1\ (-Th1\text{+}Th2\text{+}Th3\text{-}Th4)\ /\ I2 \\ U4 = 1\ (Th1\text{+}Th2\text{+}Th3\text{+}Th4)\ /\ I3 \end{cases}$$

Where,

Thi = thrust generated by four motor

C = the force to moment scaling factor

Ii = the moment of inertia with respect to the axes

Then the second derivatives of each angle are:

$$8 = U2 - IK48'/I1$$

$$1/J\text{-} = U3 - 1K5I'/I2$$

$$\phi = U3 - IK6I\ \phi'\ /I3:$$

6. Drone movement mechanism

Drone can describe as a small vehicle with four propellers attached to rotor located at the cross frame. This aim for fixed pitch rotors is use to control the vehicle motion. The speeds of these four rotors are independent. By independent, pitch, roll and yaw attitude of the vehicle can be control easily. Pitch, roll and yaw attitude off Drone

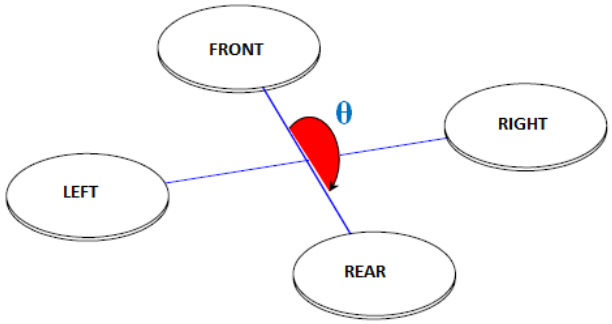


Figure Pitch direction of Drone

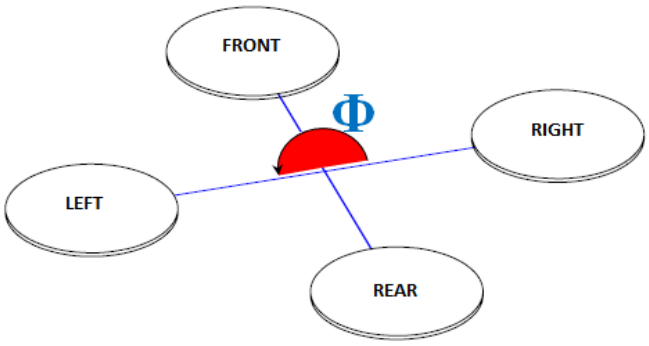


Figure: Roll direction of Drone

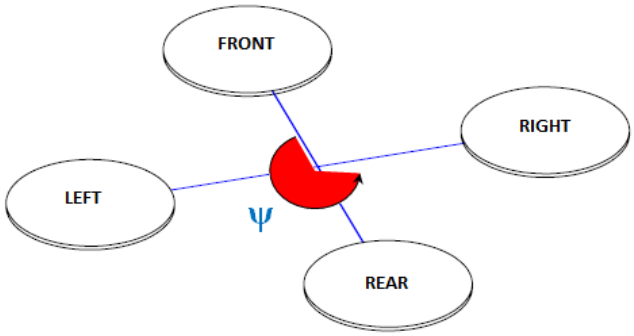


Figure : Yaw direction of Dron

7. Essential parts of the Drone

ESC Controller

An electronic speed controller (ESC) is an electric device to monitor and very the speed during the operation.

A brushless DC Motor

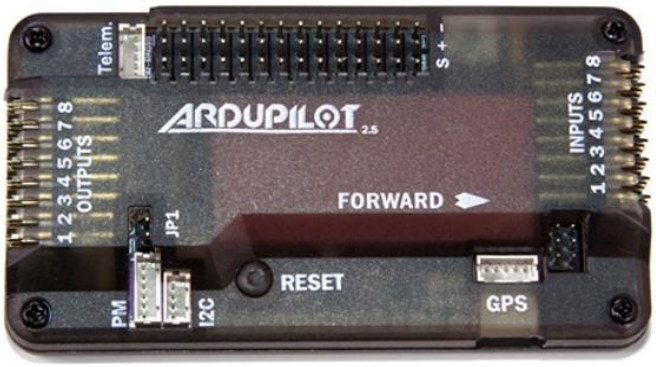
A brushless DC electric motor (BLDC motor or BL motor), also known as electronically commutated motor (ECM or EC motor) and synchronous DC motors, are synchronous motors powered by direct current (DC) electricity via an inverter or switching power supply which produces electricity in the form of alternating current (AC) to drive each phase of the motor via a closed loop controller. The controller provides pulses of current to the motor windings that control the speed and torque of the motor.

Propellers (Clock wise and Counter-Clock wise)

A propeller is a device with a rotating hub and radiating blades that are set at a pitch to form a helical spiral, that when rotated performs an action which is similar to Archimedes' screw. It transforms rotational power into linear thrust by acting upon a working fluid such as water or air.

Flight Controller and Arduino Uno

A flight controller (FC) is a small circuit board of varying complexity. Its function is to direct the RPM of each motor in response to input. A command from the pilot for the multi-rotor to move forward is fed into the flight controller, which determines how to manipulate the motors accordingly.



Camera Module

Camera module is used to scan QR code displays by receiver to authenticate the user. If QR code matches then drone will release the package otherwise it returns to launch location.

Drone Frame

Remote controller and transmitter

FlySky FS-CT6B 2.4ghz 6CH Transmitter and Receiver

Transmitter and receiver TX RX with

- Channels: 6 Channels
- Model Type: Heli, Airplane, Glid
- RF Power: Less than 20db
- Modulation: GFSK
- Code Type: 2.4Ghz No Interference

8. Snapshots

9. Advantages of The MARK8 Drone

The MARK8 Drone Droneis an intelligent flying machine where it's main advantages are

- Specially created for Medical supplies
- Quick and rapid Take Off and Landing
- Can carry Upto 2.5 Kg of Medicines
- Ranges Upto 4 Km
- Self balancing and responds to Air pressures and Air speed
- Speeds Upto 60 to 80 Km/Hr
- All weather delivery
- Can hold Altitude and hover at any point of interaction
- Maintain hight upto 1500 mtrs
- Authenticate user using QR Code

10. Limitations

The MARK8 Drone Dronehas few weakness

- The MARK8 Drone DroneUse Barometer to hold height due to Magnetic interference it can miss calculate its hight or hover. This interference can be caused by Radar, High frequency mobile towers or any electromagnetic fields generated by coils
- No night flight modes
- Currently Obstacle detection is not mounted
- It Self-weighing up to 3 kg and with battery 3.5 kg so payload lifting is restricted to 2.5 kg only. In total weight of the drone with package cannot exceed 6 kg
- It has 30 min flight time with full battery.

II. Future work

The MARK8 Drone Droneit self a good and reliable delivery system but we wanted to add some more features in it. In future will improve its battery life and flight duration.

We proposed to put high sensitivity radar and obstacle detection and avoidance for better performance and less accidents or crash during flight.

Currently it has no night flight modes we are improving The MARK8 Drone Droneto fly in night sky as well.

III.CONCLUSION

The MARK8 Drone Droneis a intelligent and rapid transportation medium specifically design to deliver essential and urgent medical supplies to user. The MARK8 Drone Dronehas all the ability to hover in mid air and safely take off and land on any surface suitable for the operation.

It has latest and advanced flight controller and navigation aids to make it reliable and smooth in operations.

Our on-board camera module scans the QR code displayed on user mobile to authenticate the user to avoid mishandling of the parcel and accurate delivery if the cade is not matched drone won't release package and return to location from where it has begun the journey. Rapid and consistence tracking is done in each flight and it can provide up to 2 km range in a fully charged battery.

We tried to over come various problems stated in the problem statement and created a sustainable and fast yet efficient delivery drone for the medical supplies

This project describes a drone whose operation is completely based on effectively programmed flight controller. Drone provides accurate delivery with the help of GPS/ Barometer using drone. This project reduces time of delivery and gives precise performance. With the help of ESC we can control the behaviour of drone and hence provide better operation to fulfil the requirements. Using transmitter, we can adjust the direction and speed of drone.

IV. REFERENCES

[1]. Motlagh N.H., Bagaa M., Taleb T. UAV-based IoT platform: A crowd surveillance use case. IEEE Commun. Mag. 2017;55:128–134. doi: 10.1109/MCOM.2017.1600587CM. [CrossRef] [Google Scholar]

[2]. Kersnovski T., Gonzalez F., Morton K. A UAV system for autonomous target detection and gas sensing; Proceedings of the Aerospace Conference; Big Sky, MT, USA. 4–11 March 2017; pp. 1–12. [Google Scholar]

[3]. Motlagh N.H., Bagaa M., Taleb T. UAV-based IoT platform: A crowd surveillance use case. IEEE CommuneMag. 2017;55:128–134. doi: 10.1109/MCOM.2017.1600587CM. [CrossRef] [Google Scholar]

[4]. Kersnovski T., Gonzalez F., Morton K. A UAV system for autonomous target detection and gas sensing; Proceedings of the Aerospace Conference; Big Sky, MT, USA. 4–11 March 2017; pp. 1–12. [Google Scholar]

[5]. Kumbhar A., Guvenc I., Singh S., Tuncer A. Exploiting LTE-Advanced HetNets and FeICIC for UAV-assisted public safety communications. IEEE Access. 2018;6:783–796. doi: 10.1109/ACCESS.2017.2776120. [CrossRef] [Google Scholar]

[6]. Bupe P., Haddad R., Rios-Gutierrez F. Relief and emergency communication network based on an autonomous decentralized UAV clustering network; Proceedings of the SoutheastCon; Fort Lauderdale, FL, USA. 9–12 April 2015; pp. 1–8. [Google Scholar]

[7]. Merwaday A., Guvenc I. UAV assisted heterogeneous networks for public safety communications; Proceedings of the Wireless Communications and Networking Conference Workshops (WCNCW); New Orleans, LA, USA. 9–12 March 2015; pp. 329–334. [Google Scholar]

[8]. Motlagh N.H., Bagaa M., Taleb T. UAV-based IoT platform: A crowd surveillance use case. IEEE Commun. Mag. 2017;55:128–134. doi: 10.1109/MCOM.2017.1600587CM. [CrossRef] [Google Scholar]

[9]. Motlagh N.H., Bagaa M., Taleb T. UAV-based IoT platform: A crowd surveillance use case. IEEE Commun. Mag. 2017;55:128–134. doi: 10.1109/MCOM.2017.1600587CM. [CrossRef] [Google Scholar]

[10]. Kersnovski T., Gonzalez F., Morton K. A UAV system for autonomous target detection and gas sensing; Proceedings of the Aerospace Conference; Big Sky, MT, USA. 4–11 March 2017; pp. 1–12. [Google Scholar]

[11]. Kumbhar A., Guvenc I., Singh S., Tuncer A. Exploiting LTE-Advanced HetNets and FeICIC for UAV-assisted public safety communications. IEEE Access. 2018;6:783–796. doi: 10.1109/ACCESS.2017.2776120. [CrossRef] [Google Scholar]

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[13]. Merwaday A., Guvenc I. UAV assisted heterogeneous networks for public safety communications; Proceedings of the Wireless Communications and Networking Conference Workshops (WCNCW); New Orleans, LA, USA. 9–12 March 2015

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Skin Disease Detection Using Machine Learning

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ABSTRACT

A disease of the skin is additionally a selected quite illness caused by bacteria or an infection. These diseases have various unwanted effects on the skin and keep it up increasing over time. It becomes important to acknowledge these diseases at their initial stage to manage it from spreading. These diseases are recognize by using many technologies like image processing, processing, artificial neural network (ANN) etc. Now a days ,in area of research regarding disease of the skin detection image processing has played a giant role and widely used Techniques like segmentation filtering, image pre-processing, feature extraction and edge detection etc. are an area of image processing and are use to acknowledge the part suffering from disease. In this project the database may be a created on the concept of various images which defines particular disease of the skin. Data are becoming to be stored locally or on cloud. Data are becoming to be processed by employing a.I. libraries; the methods of regression are use to avoid data storage problems almost like big data etc. on the thought of given labeled data the software will train, after providing testing data machine will detect diseases.

Keywords- Machine Learning, color detection, pixel detection, Image conversion ,Data Comparison, Database management

I. INTRODUCTION

As we all know that one among the foremost important organ of physical bodies is skin. But sometimes this organ get affect by some reactions, mycosis, illness, genetic problems, lac of water and mineral level in body, etc. To avoid this problem we always decided to stress more about skin but sometimes our skin get affected then problems start then we'll attend the Doctor they struggle to cure this problem If it get cure then we'll say that the treatment for this problem was right. But sometimes the issues regarding skin not get cure thanks to wrong treatment but why it happens?

The reasons are could even be as follows- the disease won't get properly detected or the proper medicine wasn't provided to the patient So we'll avoid the primary problem of not getting properly detected by using the term called as Machine Learning. Machine Learning will help us to avoid many problem in our day to day life and also in medical problems too.

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II. LITERATURE SURVEY

1."Online Children Skin Diseases Diagnosis System"[MAY 2015] Rule based and forward chaining inference engine methods are accustomed implement this model which use to identify to spot the disease of the skin. By using this system, user is allowed to identification children skin diseases via online and provides useful medical suggestions or advice timely. during this method, it consists of diagnosis module, login module, info module, report module and management module. There are two main modules called diagnosis and management module. within a diagnose module questions are asked to the user and on the concept of answers given by the user, Children's symptoms and condition are identified. this system could even be another for people to identification skin diseases of kids, in response to the questions on the symptoms and also the condition children's skin.

2." An automated system for recognizing disease conditions of human skin" [2016]

In this model, the condition of the disease of the skin is identified by evaluating disease of the skin images by using grey normalized symmetrical simultaneous occurrence stencils (GLCM) method. The proposed system is use in an efficient and economical for the automated recognition of skin diseases. this method is beneficial for the skin to reduce the error with diagnosis. Another is that the first test for patients in rural areas, where the good doctors are missing. The system works with relational databases to the storage of implying the necessity for textual skin images. this method also can work for same quite images directly over feature vectors.

3."Mobile-based Medical Assistance for Diagnosing Different Types of Skin Diseases Using Case-based Reasoning with Image Processing "[2018]

In AI (AI), medical field could even be a recent area for research purpose. This paper implements a mobile based medical assistance which is employees for diagnosing skin diseases by the used of CBR and image processing. This model was developed to help users to pre-examine their skin situation whether there or not have a disease or not. Also to increase sing the attention of skin diseases on what it goinig to undertake to to to our bodies which may cause death or infecting people and have a cure before it gets worse. The proposed system is successfully implemented to detect 6 different skin diseases with an accuracy of 90% . the dimensions of symptoms, which is use for testing, is 15% , for validation it's 10% and for testing it's 75% . This supervised system identify diseases at the speed of 90% where the unsupervised system detect diseases at the speed of 80% .The detection rate of the sample disease with the others related disease is as follows: Eczema – 88% ; Psoriasis – 61% ; Acne – 75% ; carcinoma – 51% ; Scabies – 43% ; and Seborrhea Dermatitis – 34% .

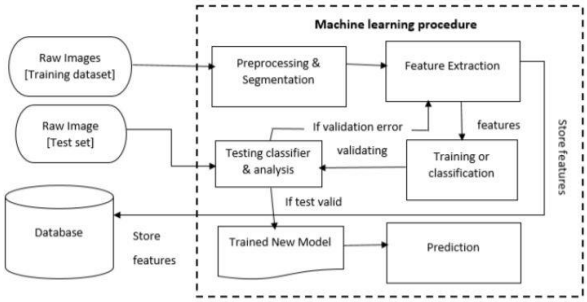
III. PROBLEM STATEMENT

To design a system which can help in skin disease detection in early stages of occurrence. This paper states that using artificial intelligence technology skin disease detection can be done with more accuracy and with loss cost.

Maximum accuracy is obtain by using machine learning technology. Cost reduction and easy

processing helps in identification of skin disease at early stages and harmful effects are avoided.

EXISTING SYSTEM ARCHITECTURE



IV. EXISTING SYSTEM

In this system, we are considering a train of images which might be obtained from the user and preprocessing and segmentation have gotten to be performed on each image. Then feature extraction is completed on each image to extract features which might be accustomed create classification model. With this classification model, system finally can predict the disease for a replacement image of a disease of the skin which could be obtained by the user through Android application. And support this predicted disease, system will ask question from the user and support answer, system will decide disease type. Finally, our system suggests medical treatment or the recommendation supported predicted skin condition result. during this method, we are taking into consideration three diseases viz. Eczema, mycosis, Urticaria. shows system architecture, which shows the principal processes of the proposed system. during this section, we discuss the proposed methodologies intimately pre-processing could also be a necessary step of detection so on get obviate noise like hair clothing and other artifacts and enhance the quality of original image. the foremost purpose of this step is to boost the quality of skin image by removing unrelated and surplus parts within the rear ground of image for further processing.

V. SYSTEM REQUIREMENT

Software requirement.
Python 3.7.
Jupiter.

Hardware requirement
Camera.
RAM quite 4 GB.
32/64 bit system.
Memory over 512 GB.

VI. RESEARCH METHODOLOGY

To complete the training and testing phase of the algorithm we need to follow some methodology as follows :-

Population and Sample:

To train the algorithm we'd like many Image data. That number is additionally goes in thousands. The all data should be labeled data.

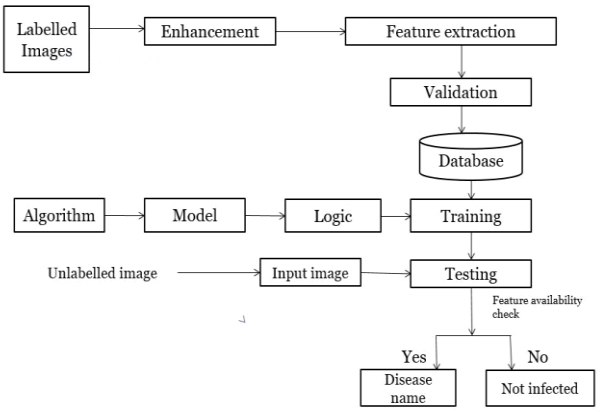
As shown in image.

Fig: WHITE SPOT ON SKIN

2. Data and Sources of Data:

The required data are often generated by the helps of doctors (skin specialist) by getting the pictures of affected skin of patient. That data are the labeled data which can provide to the algorithm for training.

VII. PROPOSED SYSTEM ARCHITECTURE



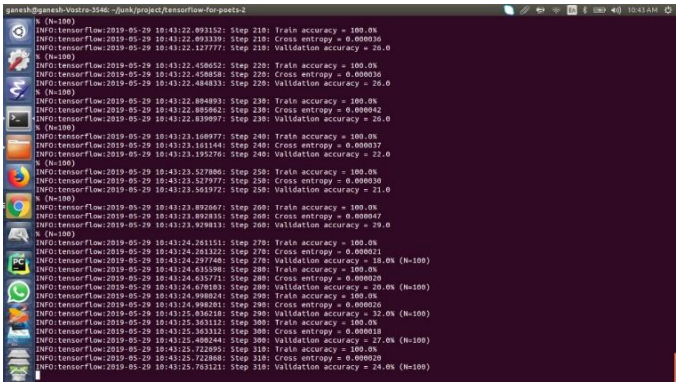
VIII. EXPECTED RESULTS

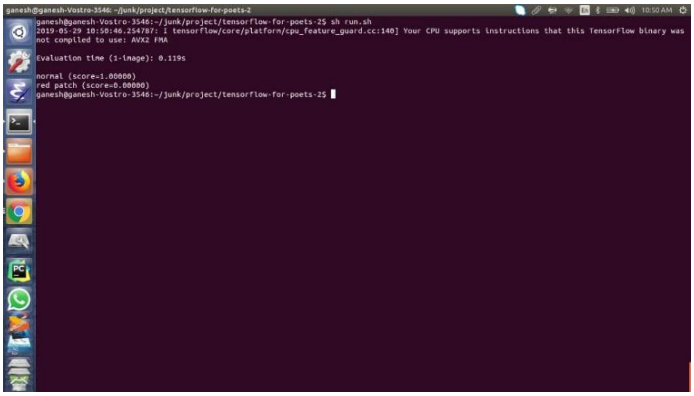
After performing both the phases of coaching and testing we are getting to urge the result as Disease name.

TAXONOMY TABLE

	Disease Detection	Time Efficient	Cost effective	Training capability	Redundancy handling capability	Regression testing	Low error rate
OI children disease detection	✓	✗	✗	✗	✗	✗	✗
Automated sys for disease detection condition of human skin	✓	✗	✗	✗	✗	✗	✗
Mobile based disease detection	✓	✓	✓	✗	✗	✗	✓
Proposed sys	✓	✓	✓	✓	✓	✓	✓

RESULT





IX. CONCLUSION

The proposed system detects the disease of the skin by using machine learning technologies and maximum accuracy is obtained.

X. ACKNOWLEDMENT

We want to acknowledgement Principal. Head of department and guide of our project for all the support and help rendered. We wish to specific our profound thanks to all who helped us directly or indirectly in making this paper. We are thankful to our project guide Prof.Chaitanya Bhosale for her valuable guidance. We also wish to thank our HOD. Prof. Pankaj Agarker and Principal Dr. Ashok Kasnale for his or her kind support.

XI. REFERENCES

[1]. A. Putra, M. T. Rinaldi, "Implementation of fuzzy inference system in children disease of the skin diagnosis application", The 5th International Conference on Eectrical Engineering and Informatics 2015, August 10–11, 2015 hird International Conference on AI and Pattern Recognition(AIPR 16), 2018.

[2]. AUTOMATED DETECTION OF SKIN DISEADE USING TEXTURE FEATURE ANAL KUMAR MITTRA* Master Research Scholar School Education Technology Jadavpur University Kolkata 700032,india

[3]. DR.RANJAN PEREKH Asst. Professor School of Education Technology jadavpur university,Kolkata 70032,india

[4]. Mobile-based Medical Assistance for Diagnosing differing kinds of Skin Diseases Using Case-based Reasoning with Image Processing Carl Louie Aruta, Colinn Razen Calaguas, Jan Kryss Gameng, Marc Venneson Prudentino, August Anthony Chestel J.Lubaton College of Computer Studies New EraUniversity quezon city, Philippines

[5]. Er.ShrinidhicGindhi, Ansari Nausheen, Ansari Zoya, Shaik Ruhin"An Innovation Approch for disease of the skin Detection Using Ima.5ge Processing and datamining"International Journal of Innovation Research in computer and Communication Engineering, Vol. 5, Issue 4,april 2017.

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International Journal of Scientific Research in Science, Engineering and Technology

An Efficient Smart Goggle for Blind People

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ABSTRACT

The smart talking goggles prototype could be a small, cheap and simply wearable navigation aid for visually impaired persons. Its functionality addresses navigation and identification of objects for guiding the user to some and native navigation for sidewalks and corridors, object like human, non-human and solid objects like vehicle – car, bus, tempo, bike etc. With their approximate distance from an individual wearing our prototype. This prototype aims at achieving accuracy in detection of those objects, alerting user by outputting tone and voice stating object classification and sort of distance with avoidance of static further as moving obstacles. During this prototype, we specialize in local navigation and identification which applies to both in- and outdoor situations. The detection of path borders and obstacles before of the user and just beyond the reach of the white cane, such the user are often assisted in centring on the trail and alerted to looming hazards. Employing a stereo camera worn at goggles height, a conveyable computer in an exceedingly shoulder-strapped pouch or pocket and just one earphone or small speaker. The vision[13] algorithms are optimized such the system can work some frames per second . For achieving real time analysis, we used machine learning and neural networking to classify and process incoming dataset with stored procedures with the assistance of cloud computing platform, because node MCU or arduino boards don't seem to be having exact capacity to process this bulky task. For fast processing we are uploading real time frames captured by our onboard camera to cloud using 4G fast internet by pairing our prototype to existing wi-fi network or user's smart phone.
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Keywords : Opencv, Dlib, Scikit-Learn And Scikit-Image, Keras, Mxnet, Deep Learning.

I. INTRODUCTION

Physically impaired people are those people who are not able to identify the presence of obstacle.[4] Our[7],[8],[9]project aims to producing a wearable device which can be used by physically impaired people to detect type of obstacle and distance of it from user. Our prototype helps blind or visually impaired persons to navigate with ease by overcoming challenges to identify objects in front of them and try to not fall or crash onto objects and human. For this purpose, we are implementing new technology in machine learning that is deep metric learning.

We are not trying to output a single label or image or coordinates box of objects in an image, we are directly outputting a real-valued vector resulting faster detections of multifactor images and predicting output with maximum accuracy in objects. Like our model can predict chairs from any form of scrambled or crowded image. An image having various objects in its vicinity and the same is produced to our learning

network and deployed model for analysis and detection of labeled output called chair.

For performing real time data, vector and factor recognition, we use some external factor (like external dependencies) which will contribute in our detection. Object recognition process is performed by using triplet program in which data sets are provided and the gadget will classifies the object by comparing it with available data set and learn from experience. We make use of different algorithm like KNN and SVM for object detection purpose.

II. LITERATURE SURVEY

Mohamed et al.[1] (1029) have designed a system that will make effective product by using latest technologies like supersonic waves, gsm, gps which focuses on helping in an internal environment. A person can make himself comfortable with stick. But the stick has some limitations that, it may not properly work in slippery floor and fireplace. Also it is not handy in nature. The efficiency of this system could be increased by using programmable wheels which will steer the stick off from the obstacles.

Kote et al.[2] (2017) proposed a system which gives the confidence to the person about moving in unfamiliar environment by making use of android app. Providing high detection rate on selected surrounding is the main advantage of powerful camera to capture image is the main disadvantage about the system. Use of this device has some limitations that the users must have knowledge about android application. Gps system and powerful camera can be used to advance this system.

Ankita bhuniya et al.[3] (2017) proposed a system for detecting obstacle in 5 direction (front, right, left back, below). Multiple audio feedback system is the main advantage of this system which has multilingual audio feedback system which makes use of 10 language base audio it available for people all over the globe. The disadvantage about this system is it will not be useful for deaf persons.

III. EXISTING SYSTEM

Existing system focuses an obstacles avoidance and offers guiding information feedback to the visually impaired person. For obstacle avoidance, we use ultrasonic sensors and depth camera to locate the obstacle to live the space of obstacle from the person. Guiding information feedback is given within the form audio which makes use of acrostic pattern, semantic specific different intensities sound or specially localized auditory cues. the data is provided through earphones.

IV. METHODOLOGY

Our aim to develop a prototype will be employed by physically impaired people as a guide which is able to alert him about presence of obstacle and detect approximately distance of that obstacle from person wearing prototype. The prototype makes use of machine learning and deep metric learning by using different mathematical module. We make use of external factors like external dependencies which helps in building an entire vector graph and plotting facial vectors to spot the suspect. this may help in processing real time vector and factor recognition in provided image or video.

Following wide dependencies are used:

- Open computer version (opencv): Efficiently working computer vision repository which is extremely efficient and smooth real-time image processing.
- Dlib: Dlib could be a intelligent implementation of the machine learning vectors and deep learning areas to coach machine in various scenario like complicated identity verification.

- Scikit-learn and Scikit-image: to make deep learning network, to know inputted data and

processes it with compiled version of our code with real time evaluation and high accuracy.

- Keras: High-level neural networks API. It makes coding, training, and deploying neural networks.
- Mxnet: A scalable deep learning framework. so as to form it functional on a cloud distributed computational CPU we made some functional changes within the Dlib identity verification network, now we are able to output the feature vector with 128-d i.e., a listing of 128 real-valued numbers that our code will accustomed quantify the face. While we training network, we use triplets

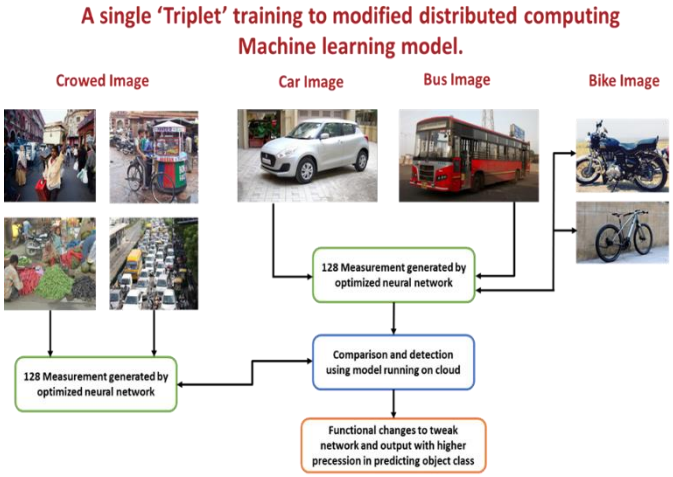
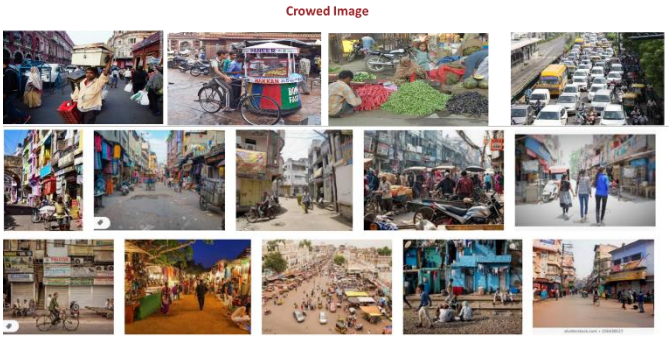


Fig 1: Block diagram of unique deep learning "triplet training."

In this demonstration, we used for unique objects of auto. The identical functional triplet training consists of the dataset of unique images to coach from. With the tradition we used SVM to induce 128-d vector for all images in dataset.

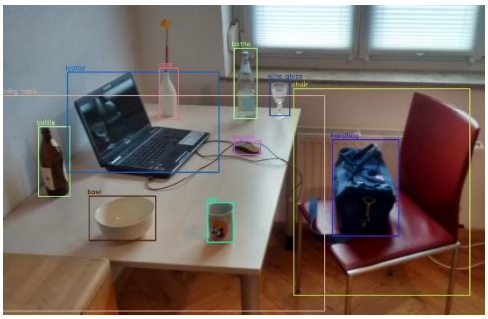
- during this we asked SVM to calibrate 128-d for above image where the pictures of bike are more, hence defined algorithm sense's it as 2 similar objects in dataset.
- Although crowded image could even be a random pick from our data set and as not the identical as bike.
- Our optimized network quantifies the image detection and constructs the 128-d embeddings or quantification for every of the pictures in process.

Datasets We Used to Do Face Recognition



V. RESULT

After combining input from different sensors[10],[11]and processing the input by comparing it with training datasets we produce the output in the form of voice which can be heard by blind person which will alert[12] him about presence of obstacles .by using this gadget we are able to recognize the obstacle and approximate distance of obstacle by using face detection technique.



VI. FUTURE WORK

1. For better performance, we are working on reducing the dependency on internet. Via any medium (wifi or phone's hotspot) for initial connection. For increasing the ease of use of the device.
2. Addition of GPS to the device can guide the person to the reach to the destination with shortest path and minimum obstacles.
3. In future size of camera and other sensors can be reduced so as to mount them more compacity on goggle and make it more light weighted.

VII. CONCLUSION

This paper presents a device which will help the visually impaired person to move freely in indoor and outdoor environment by detecting the obstacles and measuring approximate distance of that obstacles from a person by making use of different sensors like ultrasonic, (gyroscope + accelerometer) and camera module by implementing different technologies like machine learning and deep metric learning .for this purpose we make use of knn algorithm and face detection technique. Triplets are used for training purpose which will helps in face recognition process. Thus this device is very useful for simplifying the problems in life of physically impaired person by altering him about upcoming difficulties in the environment.

VIII. REFERENCES

[1] Mohamedarif Regade, S Bibi Ayesha Khazi, Sushmita Sunkad,"Smart Sticks for Blind using Machine learning ", International Journal of Innovativ Science and Research Technology, May 2019.

[2] Prof. Priya U.Thakare,Kote Shubham,Pawale Ankit, Rajguru Ajinkya,Shelke Om , "Smart Assistance System For the Visually Impaired", International Journal of Scientific and Research Publications, Volume 7, Issue 12, December 2017 ISSN 2250-3153.

[3] Ankita Bhuniya, Sumanta Laha, Abhishek Sarkar,"Smart Glass For Blind People", AMSE Journal- AMSE IIETA Publication 2017.

[4] Esra Ali Hassan and Tong boon Tang,"Smart Glasses For The Visually Impaired People", Department of Electrical and Electronics Engineering, Oct 2017.

[5] R.Mohanpriya, U.Niramala, C.Pearlin Priscilla,"Smart vision for blind people", International Journal of advance Research in Electronics and Communication Engineering Volume 5, Issue 7,July 2016.

[6] Jinqiang Bai, Shiguo Lian, "Smart Guiding Glasses For Visually Impaired People in Indoor Environment" ,IEEE, Zhaoxiang Liu, Kai Wang,2015.

[7] A.Sangami, K.Rubina, M.Kavithra, S.Sivaprakasam., "Obstacle Detection and Location Finding For Blind People", 2015.

[8] K.C. Nalavade, Fatema Bharmal, Trupti Deore, Ajay Patil., "Use of ultrasonic sensors, GSM and GPS technology to implement alert and tracking system for Blind Man", International Conference of Advance Research and Innovation (ICARI), 2014.

[9] M. Naveen Kumar and K. Usha, "Voice Based Guidance and Location Indication System for the Blind Using GSM, GPS and Optical Device Indicator", International Journal of Engineering Trends and Technology, Vol.4 No.7, July 2013.

[10] Kher Chaitrali., Kadam Snehal.,Dabhade Yogita A., Dhamdhere Swati D., Deshpande Aarti V., "An Intelligent Walking Stick for the Blind", 2015.

[11] Akshay Khatri., "Assistive Vision for the Blind", International Journal of Engineering Science Invention, Volume 3 Issue 5, May 2014.

[12] Harsha Gawari and Prof. Meeta Bakuli, "Voice and GPS Based Navigation System For Visual Impaired", International Journal of Engineering Research and Applications", Vol. 4, April, 2014.

[13] João José, Miguel Farrajota, and J.M. Hans du Buf, "The Smart Vision Local Navigation Aid for Blind and Visually Impaired Persons", Institute for Systems and Robotics, University of the Algarve, Portugal, 2011.

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Movable Road Divider for Organized Vehicular Traffic Control with Monitoring Over Internet of Things (IOT)

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ABSTRACT

Our intention is to formulate a mechanism of automated avenue divider that could shift lanes, so that we can have quantity of lanes within the direction of the frenzy. The cumulative impact of the time and fuel that can be saved with the aid of including even one more lane to the course of the frenzy can be tremendous. With the smarter planet application proposed underneath, we will additionally eliminate the dependency on manual intervention and guide visitor's coordination in order that we can have a smarter visitor everywhere in the city. An automated road divider can offer a solution to the above mentioned problem efficaciously right here Low, Medium and high density of site visitors price will be published on IOT server as a graph. Also right here we are detecting ambulance. If ambulance detects ship facts wirelessly via RF. that time best one sign goes inexperienced. An automated road divider can offer a solution to the above mentioned problem efficaciously right here Low, Medium and high density of site visitors price will be published On Arduino Mega Microcontroller.

Keywords: LCD Display, Buzzer, traffic control, Arduino Mega Microcontroller, L293D motor, IR Sensors, LED traffic signal.

I. INTRODUCTION

A consistent boom in metro-metropolis populace, the wide variety of automobiles and automobiles will increase unexpectedly and metro visitors is growing crowded which results in the traffic jam hassle. This proposed gadget will have effective role to avoid the site visitor's jam.

A: under regular conditions, visitor's indicators manipulate particularly has defects:

Whilst the site visitor lane waits until the inexperienced light, time placing is sort of same and fixed. A-avenue changed into always crowded with automobiles and move-beforehand time is brief. So, motors can't skip thru in the time allowed.

However, sub lane has few automobiles and move-in advance time is noticeably lengthy. Emergency motors aren't taken into consideration. (As an instance, fire engines and ambulances have priority over other visitors.

The two lanes must both wait them to pass via.) because the site visitors mild manage gadget is loss of emergency measures, the crossroads usually meets a visitors jam and results in needless financial losses.

B: Heavy visitors Jams

With increasing variety of cars on street, heavy traffic congestion has extensively expanded in important towns. This occurred normally at the principle junctions generally inside the morning, before workplace hour and inside the evening, after office hours. The principle effect of this matter is multiplied time wasting of the human beings on the street. The answer for this problem is by way of developing the program which specific setting delays for one-of-a-kind junctions. The put off for junctions which have high quantity of traffic have to be putting longer than postpone for the junction that has low of visitors. This operation is calling regular Mode.

I.PROBLEM STATEMENT

The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of cars per family is increasing, there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available.

- In today's era, there is continuous and huge amount of Increase in the congestion level on public roads which leads to traffic jam, especially at rush hours.
- Commuters daily face extreme traffic during peak hours resulting in a delay to reach their destination. In the morning, during peak hours the traffic on one side of the road is more compared to opposite side of the road, same is the situation in evening.
- During peak hours the traffic in one direction is way more than that coming from the opposite direction, while the number of lanes available to both sides remains the same.
- To solve this problem, a prototype model is successfully implemented to prove the concept.

II.LITERATURE REVIEW

[1]Hemlata Dalmia, Kareddy Damini, Aravind GoudNakka "Implementation of Movable Road Divider using Internet of Things (IOT)".

The purpose of using road divider is to separating the two ways of traffic i.e. ongoing and incoming vehicles in the traffic. With growing population, the vehicles used per family increases, but there is limitation in resources and leads to more number of cars on roads. In that case static road divider fixes the number of road lines on either side of road. This invites the better usage of available resources. In most of the cities, there are areas like industrial and shopping places where traffic flows only in one direction both in morning as well as in evening. In the peak hours, most of the time one road side is unutilized. It causes time loss of public and traffic jams.

[2] B Durga Sri1, K Nirosha1, Sheik Gouse1 "Design and Implementation of Smart Movable Road Divider using IOT".

Road Divider is generically used for dividing the Road for ongoing and incoming traffic. This helps keeping the flow of traffic. Generally, there is equal number of lanes for both ongoing and incoming traffic. For example, in any city, there is industrial area or shopping area where the traffic generally flows in one direction in the morning or evening. The other side of Road divider is mostly either empty or under- utilized. This is true for peak morning and evening hours. This result in loss of time for the car owners,

traffic jams as well as underutilization of available resources.

[3] Andreas Geiger and Martin Lauer "A Generative Model for 3D Urban Scene Understanding from Movable Platforms 3D scene".

Understanding is key for the success of applications such as autonomous driving and robot navigation. However, existing approaches produce a mild level of understanding, e.g., segmentation, object detection, or are not accurate enough for these applications, e.g., 3D pop- ups. In this paper we propose a principled generative model of 3D urban scenes that takes into account dependencies between static and dynamic features. We derive a reversible jump MCMC scheme that is able to infer the geometric (e.g., street orientation) and topological (e.g., number of intersecting streets) properties of the scene layout, as well as the semantic activities occurring in the scene, e.g., traffic situations at an intersection.

[4] AdvaitKawle, Dhruv Shah, KavinDoshi, Manish Bakhtiani, YashGajja, Pratibha Singh, "Movable Traffic Divider: A Congestion Release Strategy".

In recent years, with an ever increasing rate of development in metro cities around the world, there has been proportional increase in numbers of automobiles on the roads. Although the number of vehicles using the roads has increased, the static road infrastructure is almost the same and is unable to cope with changes like congestion, unpredictable travel-time delays and road-accidents that are taking a serious shape. Traffic congestion has been one of the major concerns faced by the metropolitan cities today in spite of measures being taken to mitigate and reduce it. It has emerged as one of the main challenge for developers in urban areas for planning of sustainable cities.

[5] Mohammad Shahab Uddin,Ayon Kumar Das, Md. Abu Taleb"Real-time Area Based Traffic Density Estimation by Image Processing for Traffic Signal Control System: Bangladesh Perspective."

Traffic congestion is a daily occurrence in most urban areas of Bangladesh now a day. In the last 10 years the scenario has worsen due to rapid increase of vehicles and insufficient roads to accommodate them. This paper describes a method of real time area based traffic density estimation using image processing for intelligent traffic control system. Area occupied by the edges of vehicles will be considered to estimate vehicles density. Calculating the areas of different live roads, the system will automatically estimate the traffic density of each road which will help to determine the duration of each traffic light. An intelligent traffic signal control system with the proposed traffic density estimation technique will be far better than the conventional timer based system of Bangladesh.

III.SYSTEM DESIGN

A. Block Diagram

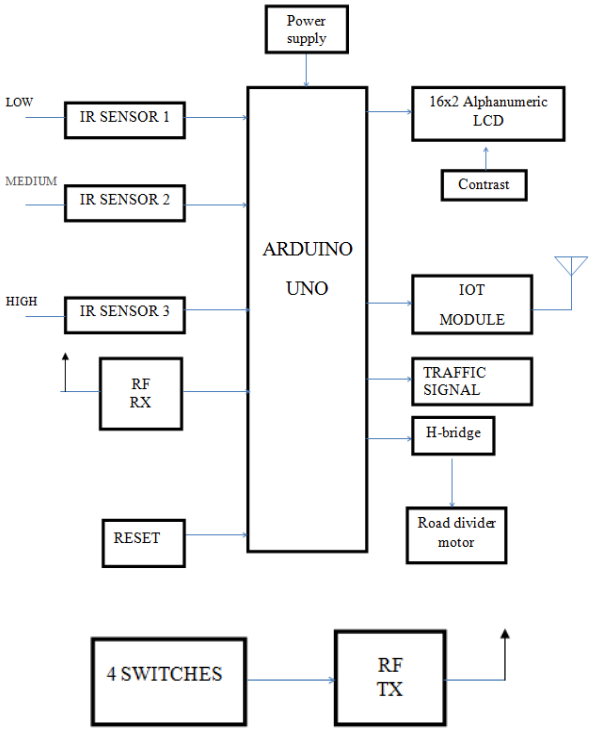


Fig.1 Block diagram.

Recommended font sizes are shown in Table 1.

B. Circuit Diagram

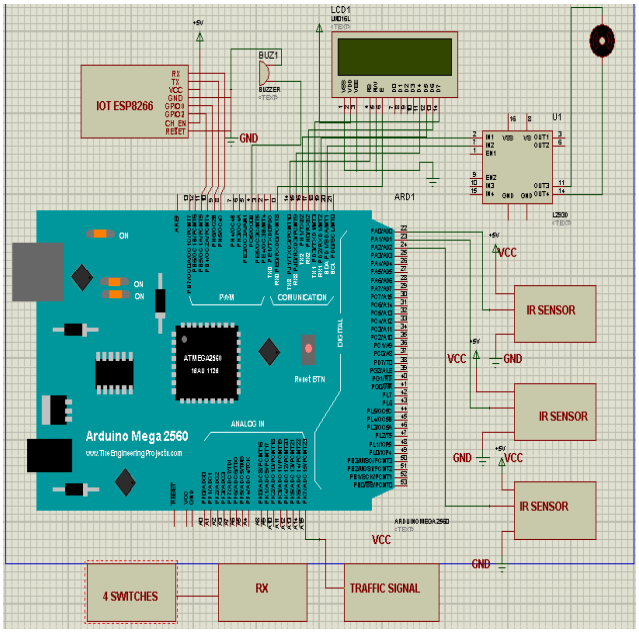


Fig. 2 Circuit Diagram.

A. Algorithm

Let S be the Whole system which consists:
S= {IP, U, Li, S}.
Where,

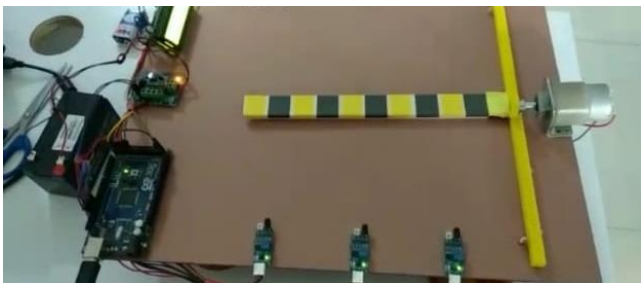
- IP is the input of the system.
- Pro is the procedure applied to the system to process the given input.
- OP is the output of the system.

1. Registration:
U={U1, U2, U3, ……Un }
U Is the user set that view output that send on IOT Module.
Li= {Li1,Li2,Li3,Li 4,….Li n}
Li is the set of obstacle detection vehicle using IR sensor.
S= {S1,S2,S3,….Sn}
S is the RF tx to press the switch ambulance detects and traffic signal gets change.
Input: {IR SENSOR}
Output: {LCD all information will be displayed on lcd}
2. Traffic density updated over thingspeak.
2.Vehicle detection information:
Input: {IR sensor}
Output: {graphically monitored over IOT.}

IV.IMPLIMENTATIONS

Outcomes
To provide online study material, career guidance and result of examination as well as generate a graph of student to get his/her interest point of view. To analyze growth of student, class i.e. Students Performance Analysis.
Screen Shots

Figure shows that the working of the project in this an L293d motor driver and an LCD is connected which displays project name when we ON the system.



Fully designed system with microcontroller and other sensor with a motor, IR sensor, battery etc.

Figure shows when first IR detects the traffic which can be display on LCD as normal.

Figure shows when third IR detects the traffic which can be display on LCD as HIGH.

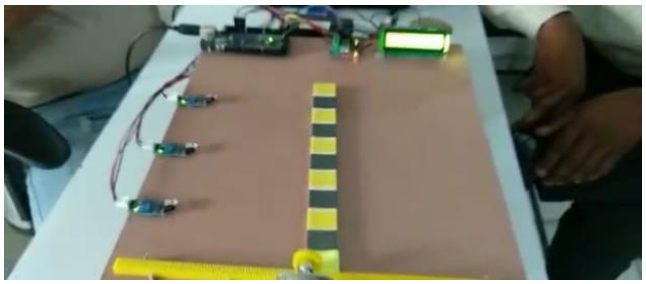


Figure movable road divider.

V.ADVANTAGES, LIMITATIONS & FUTURE SCOPE

Advantages

- Fit & forget system
- Easy installation process
- Fully automatic system

Limitations:

In order to organize the project more effectively the following constrains will set as a framework for the cost, time, power consumption, and accuracy.

Power consumption – Since the system requires a battery to operate, power consumption will need to be optimized. Power consumption is always an issue when it comes to humanoids, motors are an integral part of any humanoid that requires power considerably more than any 7 other components used in humanoids, so care should be taken towards power consumption while designing the humanoids and analyzing its requirements.

Cost – Cost is an important issue when it comes to an account of a research project.

Time – Time is an important factor when work is to be done on hardware components. Hardware component usually requires special attention while working. So, time management should be done to have a reliable result.

Accuracy – To get an accurate result from humanoid data errors must be eliminated or minimized as much as possible.

Additional Considerations:

Design factors that need to take into consideration include safety, reliability, and mobility.

Safety – Consideration of overall safety must be taken into account in order to reduce potential injuries. Hazardous material must be minimized.

Reliability - Since communication between the humanoid and the controller is wireless, humanoid must perform commands effectively.

Mobility – The new design must allow the humanoid to be manipulatable.

Future Work

The future scope of the project is that it can be make useful for the huge Indian traffic were the traffic density is more and signal violators are being high.

VI. CONCLUSION AND FUTURE SCOPE

In this project we introduced sensor based technology for traffic control. We conclude that it provides powerful solution to improve existing system with the new intelligent traffic light controller.

The method of vehicle detection and counting from a IR sensorhas been implemented using ARDUINO Mega development board and ATMEGA microcontroller. After detecting traffic by sensors considering traffic intensity in three variables like LOW, MEDIUM and HIGH road divider is moved accordingly. If intensity is LOW, then divider stays in its position.

If intensity is MEDIUM, then divider moves by a small distance. If intensity is HIGH, then divider

moves by a large distance. The project also provides solution to traffic clearance for the ambulance.

Further modification in the algorithm can improve the system accuracy. Proposed system will have wider future scope that user can get traffic information on pc or Laptop.

REFERENCES

[1] SoufieneDjahel, "Reducing Emergency Services Response Time in Smart Cities: An Advanced Adaptive and Fuzzy Approach", IEEE 2015.

[2] R. Weil, J. Wootton and A. Garcia Ortiz," Traffic Incident Detection Sensor and Algorithms", "Journal of Mathematical and Computer. Modeling, Vol.27 (9), 1998, pp.257-291.

[3] International Journal of Advanced Research in Electrical,Electronics and Instrumentation Engineering "Intelligent Traffic Signal Control System"Vol. 3, Special Issue 4, May 2014.

[4] International Journal of Innovative Research in Science, Engineering and Technology "Innovative Technology for Smart Roads by Using IOT Devices" Vol. 5, Special Issue 10, May 2016.

[5] International Journal of Applied Engineering Research ISSN 0973- 4562 Volume 12, Number 19 (2017) pp. 8264-8269.

[6] International Journal of Research in Engineering, IT and Social Sciences ISSN 2250-0558, Impact Factor: 6.452, Volume 6 Issue 03, March 2016.

[7] International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 "internet of things based smart transportation systems" volume: 02 issue: 07 | oct-2015.

[8] International Journal of Advanced Computer Science and Applications,Vol. 6, No. 2, 2015 "Intelligent Traffic Information System Based onIntegration of Internet of Things and Agent Technology".

[9] RohiniTemkar, Vishal Asrani, Pavitra Kannan, "IoT: Smart Vehicle Management System for Effective Traffic Control and Collision Avoidance" International Journal of Science and Research (IJSR), 2015.

[10] On-road vehicle detection: A review Z Sun, G Bebis, R Miller - IEEE transactions on pattern analysis …, 2006.

[11] A. Hegyi, B. De Schutter, S. Hoogendoorn, R. Babuska, H. van Zuylen, and H. Schuurman. "A Fuzzy Decision Support System for Traffic Control Centres". Proceedings of the 2001 IEEE Intelligent Transportation Systems Conference (ITSC'01), Oakland, California, pp. 358-363, Aug. 2001.

[12] B. Zhou, J. Cao and H. Wu. "Adaptive Traffic Light Control of Multiple Intersections in WSN-based ITS". IEEE VTC 2011, Budapest, Hungary, 15-18 May 2011.

[13] M. Collotta, G. Pau, G. Scat, T. Campisi. "A Dynamic Traffic Light Management System Based on Wireless Sensor Networks for the Reduction of the Red-Light Running Phenomenon". Transport and Telecommunication, Vol. 15, No. 1, pp. 1-11, 2014.

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Fingerprint Based Driving License

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ABSTRACT

Document verification is a very difficult task to monitor for the government. In this technology, all the vehicle related document's images will be scanned and recorded. Whenever a citizen breaks the traffic rule, the police will scan his fingerprint and collect penalty/fine from the defaulter using this technology. They can also track the history of the driver. This biometric-based driving license monitoring system is very easy and convenient at the present era. In our country there are so many people who are not having their original driving license with them, some of the people are maintaining fake licenses, due to this the ratio of accidents increasing day-by-day. The proposed approach of data mining can help get the original documents on online basis with the help of fingerprint.

Keywords : Fingerprint, Biometric Authentication, License, Safe Driving.

I. INTRODUCTION

The Biometric driving license technique provides an important function that is required by the advanced intelligent vehicle Security, to avoid vehicle theft and identify the unauthenticated users. The system can predict the theft by using this technique. This will help to reduce complexity and improve security. The details of the persons are collected and are stored in IoT. The fingerprint
sensor is used to capture the finger print of a particular person. When a person keeps his/her finger on the fingerprint sensor, it will automatically fetch the details of the person i.e. driving license with its expiry date. So it will surely reduce the discomfort of a person carrying license and other documents along with them. By this concept, the police involving in corruption can also be identified. Suppose if a person forgets to bring his/her license or insurance or if their document is expired, then the person will receive the fine amount notification accordingly in the form of a message. If a centralized organization is made for collecting the fine amount, then the person must pay the fine amount at that organization and not to the traffic police. The main objective of the system is to prevent non-license citizens from driving and causing accidents. The biometric identification is one of the most popular and reliable technique. The citizen's account has to be attached with their identification document for payment of penalty charges for breaking traffic rules as well as the citizens can check their penalty details with the help of user id and password provided by the RTO. Whenever citizen breaks rule, the applicable charges notification will be sent on citizen's registered mobile number via SMS. OTP is sent to confirm the further payment process. The information about citizen is stored online on

server and they can have access to their account on the website.

II. OBJECTIVE

The main objective is to find out the fake license ID's by using the fingerprint reader. The technology will help to avoid traffic congestion.

III. LITERATURE SURVEY

The authors Ajay Shankar Patil and SayliAdeshPatil [1] in their paper used Biometric Identification Methods. The System Contains A Database, It Saves The Fingerprint Of A Particular Person.

In the paper named "Fingerprint Based Licensing System for Driving" whose authors are M. Vijay Kumar1, S. Ranjith Kumar [2] used face recognition technique and this system prototype is built on the base of FPGA & VHDL controls all the processes.

Mubin Shaikh, Azhar Hakim, PremSuryawansh, Pratik Shendkar, DarshanKunjir, Prof. Mrs P.P. Bastawade [3] in their paper used fingerprint recognition system is the minutiae biometric pattern extraction from the captured image of the fingerprint.

The model introduced by G Santhosha, B Santosh Kumar [4] the verification in two categories one with SMARTCARD and other with Fingerprint module. The system consists of SMART CARD which can check whether authorized person or not.

The somebody who desire to start the motor vehicle they must show the SMART CARD and After checking the card, then again verify the fingerprint module if the vehicle is matched with database then ignition will on or else off.

In the paper named "Fingerprint Based License Checking For Auto-Mobile" whose authors are J. Angeline Rubella, M. Suganya1, K. Senathipathi [5] fingerprint, face, iris, voice, signature, and hand geometry recognition and verification.

In the paper named "Vehicle Tracking Using RFIDAutomatic vehicle Identification with SensorIntegratedRFIDSystem" whose author are Jayalakshmi, J.J. Wisanmongkol, T.Sanpechuda and U.Ketprom, March-April, 2016[6] used to automate the on road vehicle checking by the police department for which they have introduced a new concept that every vehicle should have RF Device fitted with the vehicle.
In the paper named "Automatic vehicle Identification with SensorIntegrated RFID System " whose authors are J. Wisanmongkol, T. Sanpechuda [7].In paper realized by installing RFID readers in all these intersections and attaching RFID tags in all vehicles to collect the data from the tag IDs and send them to a CCS.

The middleware then processes the data and store it in the database. The use of such data has a wide spectrum of applications. These include, but not limited to, real-time traffic intersections monitoring, traffic information statistics, traffic congestion report, tracking vehicles paths, tracking stolen and illegal vehicles, etc.

In the paper named "Security System for Vehicle using Number Plate Detection and RFID" whose authors are Paras Goyal, Iqbal Singh International Journal of Computer Applications (0975 – 8887) [8] in this system use series of image processing techniques for identifying the vehicle from the database stored in the PC. The system is implemented in MATLAB and its performance is tested on real image.

In the paper named "Aware and Smart Member Card: RFID and License Plate Recognition Systems Integrated Applications at Parking Guidance in Shopping Mall" Cheng-kung Chung and Yu-kuang Hsieh, Yung-hau Wang and Ching-ter Chang [9] The

proposed system is integrated applications of the RFID (HF/ UHF) and LPR technologies.

IV. EXISTING WORK

An existing system like Automatic Number Plate Recognition System is used only for traffic violations.

- Smart cards is another system that contains information like details of vehicles and registration numbers, but does not include the insurance papers.
- A system also exist where each vehicle running on the road should have proper RF chip given while vehicle registration and the vehicles that are registered should get the RF chip from concerned department.
- System works in a way that ,through the dectector area when a vehicle moves , by scanning the RF chip and th associated computing module will validate the vehicle ID with records that are prestored and automatically validating the certificates .
- Another developed system is present which firstly detects the vehicle and after that captures the vehicle number plate. The region in which the vehicle number plate is extracted using the image segmentation and the technique of optical character recognition ,which is used for the recognizing the character and then resulting data will compare with the records of the data base and data extracted from RFID.

V. PROPOSED WORK

In this application, we will be verifying the scanned images with the stored images of documents. When coming to our application the images of the citizen's documents will be stored in the database with a unique id. Citizens have to scan their fingerprint on officer's demand, which is then verified with the image present in the fingerprint module and their record will be updated.

VI. ALGORITHM

Let S[ ] be an array of size N;
Load the template set T={T1.....Tn} into the main memory;
Let Tq be the query template;
For i=1 to N
{ Let maxValue[] be an arrayof size Tq.length;
For j=1 to Tq.length
{ Let m[j] be the jth minutia of the query fingerprint Tj;
maxValue[j]=0;
For k=0 to Tq.length
{ Let m[k] be the kth minutia of the template Tq;
if d(m[j],m[k])<=Tq
{ tempScore=sum(m[j],m[k]);
maxValue[j]=max(maxValue[j],tempScore);
} End if;
} End For;
} End For;
S[i]=Σ(t=1 to Tq.length)(maxValue[t]);
} End For;

VII. RESULT

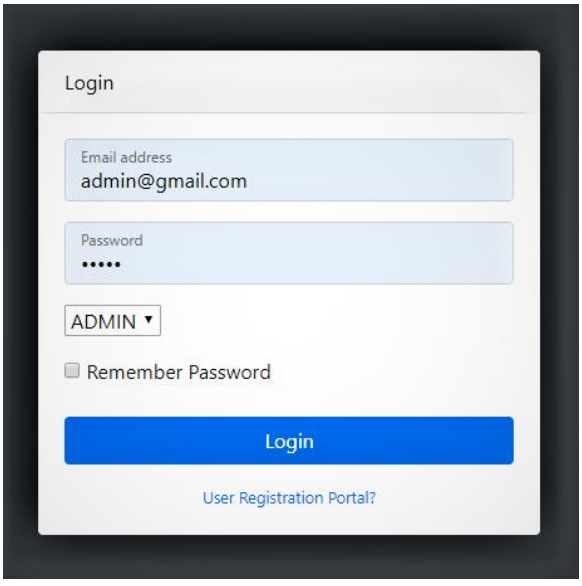

Figure 1: Login Page

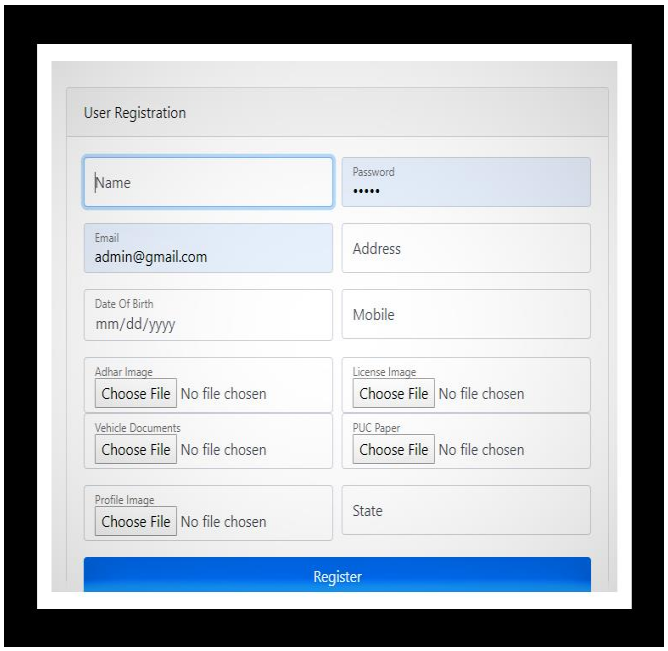

Figure 2: Registration Page

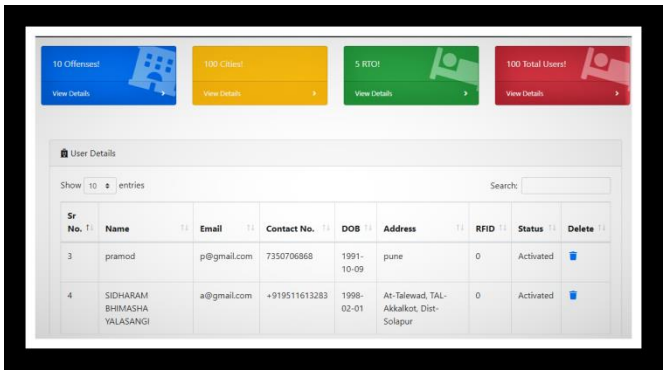

Figure 3: Dashboard

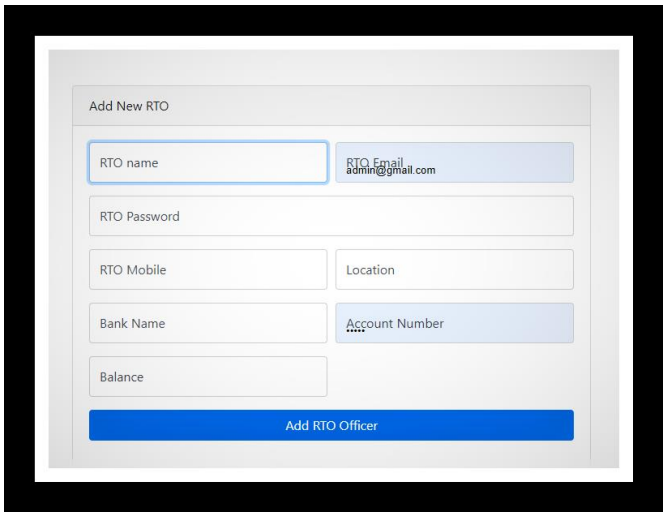

Figure 4: Add new RTO officer

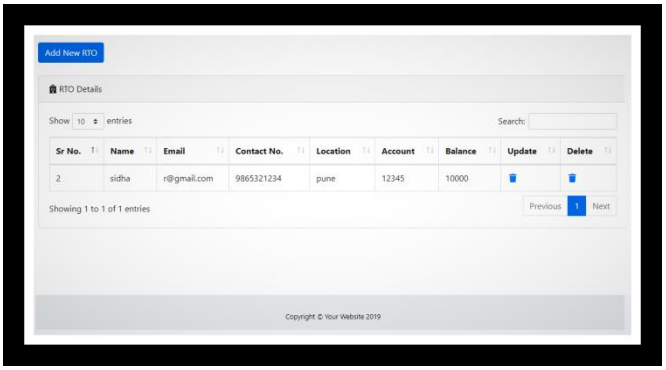

Figure 5: RTO Details

VII. ADVANTAGES

1) Fingerprints are unique
2) Fingerprint sensors are cheap
3) Latent fingerprints are easy to detect and are commonly used in criminal cases

VIII. LIMITATION

1) Almost 10% of the population do not have fingerprints that can be detected by typical scanners.
2) Mostly fingerprint readers do not work well when wet or dirty
3) Many people do not like to use fingerprint technology

IX. FUTURE SCOPE

This system will have a huge scope in the future as it will reduce the document verification load from both the user and RTO. The defaulters who are not following the traffic rules will be easily monitored and caught, and fine will also be charged and collected without any fine fraud from both the ends. Also the record of the transactions will be recorded and also notification will be sent to the user for fine payment with the image proof. Documents will be safe and easy to access by providing fingerprint

impression, also the documents can be easily updated if any of it exceeds expiry date.

X. CONCLUSION

This system is designed for driving license verification purpose based fingerprint authentication. It can be utilized for multiple applications during driving license verification, fake licenses detection, reducing the accidents, crime rates etc.

XI. REFERENCES

[1]. Ajay Shankar Patil, SayliAdesh Patil, ShrinathBhau Patil, Vishal Meshram- "Fingerprint Authorization Based License Checking System for Auto-Mobile" International Journal on Recent and Innovation Trends in Computing and Communication, 4 April 2016.

[2]. M. Vijay Kumar, S. Ranjith Kumar - "Fingerprint Based Licensing System forDriving" International Journal of Advanced Research in Computer andCommunication Engineering,9 September 2014.

[3]. Mubin Shaikh, Azhar Hakim, PremSuryawanshi, Pratik Shendkar, Darshan Kunjir - "Biometric E-licence" International Research Journal of Engineering and Technology ,01 Jan-2018.

[4]. G Santhosha, B Santosh Kumar - "Secure driving system based on fingerprint detection" IJARSE vol. no.4, issue 07, July 2015.

[5]. J.AngelineRubella, M.Suganya, K.Senathipathi - "FINGERPRINT BASED LICENSE CHECKING FOR AUTO-MOBILES" IEEE- Fourth International Conference on Advanced Computing.December 13-15, 2012.

[6]. Jayalakshmi, J.J. Wisanmongkol, T.Sanpechuda and U.Ketprom - "Vehicle Tracking Using RFIDAutomatic vehicle Identification with SensorIntegratedRFIDSystem".March-April, 2016.

[7]. J. Wisanmongko, T. Sanpechuda - "Automatic vehicle Identification with SensorIntegrated RFID System "February 14-16, 2016.

[8]. Paras Goyal, Iqbal Singh -"Security System for Vehicle using Number Plate Detection and RFID" International Journal of Computer Applications (0975 – 8887) Volume 97–July 2014.

[9]. Cheng-kung Chung, Yu-kuang Hsieh, Yung-hau Wang and Ching-ter Chang - "Aware and Smart Member Card: RFID and License Plate Recognition Systems Integrated Applications at Parking Guidance in Shopping Mall" 8th International Conference on Advanced Computational Intelligence Chiang Mai, Thailand; February 14-16, 2016.

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Smart and Integrated Crop Disease Identification System

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ABSTRACT

Farming is the main occupation of large Indian people. To main objective of the farmer is to increase the productivity of the farm. The environmental factors or product resource, such as temperature, humidity, water supply, labor and electrical costs are important. However, above all, crop disease is the grave factor and causes some amount of reduction of the productivity in case of its exposure. Thus, the disease of the crop is much more important factor affecting the productivity of the crops. Therefore, the farmer focuses on the cause of the disease in the crops during its growth, but it is not easy to identify the disease on the spot. Until now, they just relied on the opinion of the experts or their own experiences when the disease is suspicious. However, it triggers a decrease in productivity as no taking correct action and time. In this paper, to find solution of this problem we provide the mechanism, which analyses the images of the crop and checking the condition of soil simultaneously checking the condition of humidity and temperature. Integrating the output of this three unit according to that predict the disease. Whenever disease is identified inform to farmer then farmer take the appropriate action against the disease and overcome the losses.

Keywords : Crop Disease, Identification System, , Camera Module, Soil Sensor, Humidity and Temperature Sensor

I. INTRODUCTION

A. Domain: IOT

The Internet of Things is a system of connect to one another computing devices, mechanical and digital machine, objective, people that are provided with unique Identifiers and the ability to transfer data overall a network without requiring human to human or human to computer interact with each others. The definition of IOT as developed due to learning sensor, and embedded systems. Traditional fields of embedded systems, wireless sensor network, control systems, automation and others all contribute to enabling the Internet of Things. In consumer market, IOT technology is most similar with products pertaining to the concept of "Smart Home", covering devices (Such as lighting fixtures, home security systems and cameras, and other home appliances) that support one or more common echo systems and can be controlled via devices associated with that ecosystem, such as smart phones and smart

convergence of multiple technologies, real time analytics, machine speakers.

II. LITERATURE SURVEY

1. Mrs Jagdish Kashinath Kamble, "Plant Disease detector", [Feb 8-9-2018]

This research paper was proposed for a system which provides fast, efficient, cost effective solution to farmer for detecting plant diseases. Automatic and fast detection of plant disease was main motivation behind this system. Plant disease detected through image processing technique, mobile application is developed for user interface therefore it is easy to use and inexpensive.

2. Hyeon Park, Eun Jeesook, se-Han Kim "Crop Disease Diagnosing Using Image Based Deep Learning Mechanism" [2018]

This research paper was proposed for a system which classifies the healthy and disease crop, it captures the image of fruits, leave or stem and send it to analyze engine, and analysis is done by using CNN (Conventional Neural Network), it analyze the image and classify crops according to condition and analyzed result is send to farmer who requires the decision. And diagnosis of the diseases is done with data set images using deep learning. It performs the accuracy for classification, therefore it increases the productivity.

3. Leninisha Shanmugam, Agasta Adline, Aishwarya N, Krithika G. "Disease Detection In crop using remote sensing image" [2017]

This research paper is proposed for diseases detection using remote sensing image. This system is used when the area of agriculture is high and regular attention is not possible, the purpose of this system is to find and fix the diseases before the disease grows from the bottom to the upper layer. This system is done with two phase.

1st It extracts threshold value of image, and then identifies diseases using canny edge detection algorithm and histogram analysis.

4. Er.Rupinder Kaur, Raghu Garg, Dr.Himanshu Aggrwal. "Big Data Analytics Framework to Identify Crop Disease and Recommendation a Solution" [2015] This research paper is proposing a system which analyze the image of crop and find diseases according to symptoms and takes appropriate action against diseases, it is all done with the help of big data that is huge amount of data, to accomplish this object hadoop and hive tools has been used. The data is collected, cleansed and normalized. It finds the disease name based on symptoms and finds solution from historical data.

III. PROBLEM STATEMENT

Crop diseases hamper the growth of crop to overcome the crop diseases, using this system find the solution for Crop diseases. This paper focuses on identifying diseases of crop as early as possible, fast, ease and overcome the loss and improve the productivity of farmer. This system

has been design in manner that it predict the diseases considering the all parts of agriculture.

IV. PROPOSED ARCHITECTURE

Primary motive of identifying crop disease and find out solution for disease. To find out whether the crop is diseased or not or healthy. We are going to developed crop disease identification. predict the diseases by integrating the result of following three component:

1. Image preprocessing- In this we will capture the image by using REESJ2 math works. For this, different preprocessing used.

- Image Clipping- Cropping the crop image to get interested region.
- Image Smoothing- It is done by smoothing filter.
- Image enhancement- Used for increasing the contrast.

2. Soil condition- In this we will check the condition of soil using the OLtus sensor.

3. Humidity and temperature condition-In this we will check the humidity and temperature condition using DHT-11 sensor.

Integrating three output of this three unit and checking previous data stored in cloud according to that predict disease.

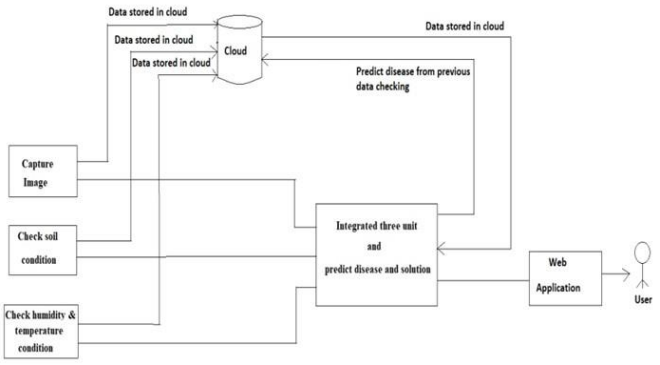

Fig.1 Architecture of proposed system

V. PROPOSED SYSTEM

In previous system we are using different devices to check temperature, soil moisture, etc. But in this system we are using soil sensor, temperature and humidity sensor and Image processing in one single unit, so there is no need to use different devices. Soil sensor will sense the moisture level in soil, Humidity and Temperature sensor will sense the humidity and atmospheric temperature respectively and image of crop. Collectively input will be taken from sensor and output will be displayed on web application. Output will be generated by comparing it with previously available data.

In this system we are using Arduino board for mounting the different sensors on it. The result from different sensors will be combined by the Arduino board and compare it with previously available data to generate desired output, and send output to user interface through web application.

VI. SYSTEM REQUIREMENTS

A. Hardware Requirement

- Arduino UNO
- Arduino MKR GSM14000
- SORACOM Air global IOT sim
- MKR Shield
- DHT-11 Temperature and Humidity Module
- UV light module
- Soil sensor
- Camera module
- GSM module
- Arduino MKR 1000 WIFI
- Log-scale Analog Light sensor(Ga1a12s202)
- Relay module
- Resistors/pushbuttons

B. Software Requirement

- Azure cloud IOT interface
- Machine learning datasets and Triplet program for identifying objects
- Android application to connect with cloud
- Scikit Learn
- Tensrflow

VII. EXPECTED RESULT

Previously, different devices were used to detect diseases. These devices includes image sensor, soil sensor, temperature and humidity sensor. The following diagram shows the working of different devices used for disease prediction.

Fig.2 Image Processing

Fig.3 Soil Sensor

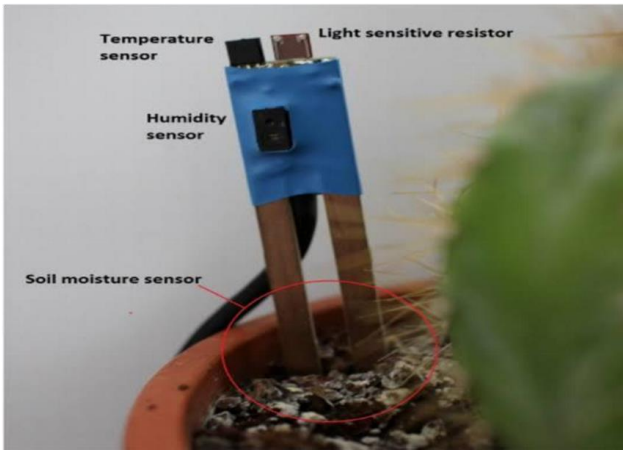

Fig.4 Temperature and Humidity Sensor

Fig. 2 shows the image processing.

Fig. 3 shows the soil sensing.

Fig. 4 shows the temperature and humidity sensing.

There is no single device to detect disease by considering all the agricultural factor, therefore we are preparing device which has all the features which are needed for disease prediction.

VIII. ADVANTAGES

1.Detect the disease of crop.

2.Help to prevent the crop from different diseases.

3.Low cost system.

4.Easy to develop.

5.Easy to setup.

IX. LIMITATIONS

1. To use this system user must be aware about use of smartphone.
2. The proper identification of disease may not possible in some case if there are some complications.
3. As this is integrated system damage to any sensor may affect overall performance of disease detection.

X. APPLICATIONS

1. The system will help to prevent the crops.
2. System uses different sensors like Soil sensor,weather and temperature sensor to detect the diseases of crops.
3. Use to detect the disease of crop so that framer can get information about their crop.
4. And if farmers want to know the previous information about their crops then they can take it as we are going to save all data in the cloud.

XI. FUTURE WORK

1. We can use multiple languages for this system so that farmers will use this system very efficiently.
2. We can identify the crop diseases considering some others factors in crop rotation.
3. We can also make this system user friendly by providing information about crop in multiple languages.

XII. CONCLUSION

Detecting the diseases is main purpose of this system. There is main characteristics of disease detection are help to farmers with speed and accuracy using Internet Of Things (IOT). Thus we will prepare a device which can detect diseases by combining output from soil sensor, Temperature sensor and comparing it with previously available data.

XIII. REFERENCES

[1]. Jagadish Kashinath Kamble:"Plant Disease Detector" International Conference on Advances in Communication and Computing Technology (ICACCT) [Feb 8-9-2018]

[2]. Hyeon Park, Eun Jeesook and Se-Han Kim:"Crops Disease Diagnosing Using ImageBased Deep Learning Mechanism" IOT Covergence Research Department Electronics and Telecommunications Research Institute Daejeon, South Korea [2018]

[3]. Leninisha Shanmugam, Agasta Adline A L, Aishwarya N, Krithika G:"Disease Detection in Crop Using Remote Sensing Image"IEEE International Conference on Technology in ICT for Agriculture and Rural Development [2017].

[4]. Er.Rupindar Kaur, Raghu Garg, Dr.Himmanshu Aggarwal:"Big data analytics framework to identify Crop disease and recommendation a solution" IEEE International conference on technology [2015]

[5]. Sachin D. Khirade, A. B. Patil:"Plant Disease Detection Using Image Processing"International Conference on Computing Communication Control and Automation [2015]

[6]. M. K. R. Gavhale and P. U. Gawande, "An overview of the research on plant leaves disease detection using image processing techniques," vol.16, no.1, pp.10-16, [2014].

[7]. P. landge, S. patil, D. khot, O. otari, U. Malavkar, Automatic detection and classification of plant disease through image processing at international journal of advanced research in computer science and software engineering vol.3,issue- [7 july-2013].

[8]. S. Arivazhagan, R. Newlin shebiah, s. ananthi Detection of unhealthy region of plant leaves and classification of plant leaf diseases using texture features, CIGR, vol. 15(1), pp.211-217, [March 2013].

[9]. David B. Lobell. The use of satellite data for crop yield gap analysis.vol no.143 [2013].

[10]. Monica jhuria, Ashwini Kumar, and Rushikesh Borse, "Image grading", proceedings of the 2013 IEEE second international conference on image information processing [ICIIP-2013].

[11]. J. G. A. Barbedo, "Digital image processing techniques for detecting, qualifying and classifying plant diseases," Springer plus, Vol.2, no.660, pp. [1-12, 2013].

[12]. Zulki Bin Husin, Abdul hallis bin abdul aziz, Ali Yeon Bin Md Shakaff Rohani Binti S Mohamed Farook, "Feasibility study on plant chili disease detection using image processing techniques:, [2012].

[13]. Mrunalini R. Badnakhe, Prashant R. Deshmukh, "Infected leaf analysis and comparison by otsu Threshold and K-means Clustering", volume 2, Issue [3, March 2012].

[14]. H. Al-Hiary, S. Bani-Ahmad, M. Reyalat, M. Braik and Z. ALRahamnesh, "Fast and accurate detection and classification of plant disease", International journal of computer applications (0975-8887)Volume [17-No.1, March 2011].

[15]. uan Tian, chunjiang Zhao, shenglian Lu and Xinyu guo, "SVM-based multiple classifier system for recognition of wheat leaf disease," preceedings of 2010 conference on dependable computing (CDC'2010), November [20-22,2010].

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Government Fund Distribution and Tracking System-Using Blockchain

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ABSTRACT

A blockchain is originally a growing list of records, called blocks that are linked by cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to data modification. In this, we propose a system to track the funds allocated to the government as they travel through the government process at each stage. This system uses blockchain technology to maintain transparency and security at every stage as funds progress. This system allows to keep a clear record with all the users that are connected in the chain to carry out data transactions as necessary. The system uses encryption to secure transactional data using hashes to maintain a block of transactions in a way that is maintained and verified by each node involved to verify the transaction and save the data transparently within the government.
Keywords : Blockchain, Security, Transparency, Encryption, Government Funds, Cryptography.

I. INTRODUCTION

The world came to know about the Block-chain concept twelve years back when Satoshi Nakamoto conceptualized it in 2008; but it got developed a year later, using Bit-coin, a crypto-currency and digital payment system. The concept was later discovering to distributed ledger that leverages the block-chain to verify and store transactions without crypto-currency. The term block-chain is broadly used these days to represent a new disruptive technology poised to be the next big thing across industries from healthcare to finance to retail. According to Gartner, their client analysis on block-chain and related topics has quadrupled since August 2015.

A block-chain is a public ledger residing of ordered and time-stamped records of transactions arranged in data blocks which will use cryptographic validation to link themselves together. Block-chain is a path of recording data and transactions digitally. Each record is a block connected chronologically together into a chain. A block of one or more new transactions is composed into the transaction data part of a block. According to the approach of cryptography, digital signature generates a set of data information representing the identity and data integrity of the signer, usually appended to the data file.

Blockchain is touted for its potential to improve the trust and transparency of data- based transactions between individuals and organizations. The technology offers promise when strategically applied in the right contexts. But what are the conditions under which blockchain makes sense and how might the technology be useful when applied in government? Traditionally, organizations operating their own, individual IT systems seeking to collaborate must reckon with challenges including reconciliation of information, identifying a single source of truth, and facilitating accountability.

Blockchain technology addresses these challenges by providing a technical foundation that supports the execution of shared business processes in a way that no single entity controls the entire system. Government has an inherent need to build, sustain, and protect public trust in information and systems. In some situations, blockchain may help enhance this trust. Traditional relational database management solutions (e.g. Oracle and SQL), deployed globally across millions of applications, have one major operational constraint – the management of data is performed by a few entities who must be trusted. Distributed Ledger Technologies (DLT, commonly referred to as blockchain), an alternative architectural approach to managing data, and removes the need for a trusted authority to store and share a perpetually growing set of data. A foundational characteristic of a blockchain is trust. [Ref. 1]

II. PROJECT IMPLEMENTATION

Overview of Project Modules:

User upload the detailed information in word file .That file will encrypt with Advanced Encryption Standard algorithm that takes plain text and private key and encrypt data. Encrypted data will store on node. Also hash value of uploaded file will store. Authority will see the file after login and send request to get the file .Key Manager will send the key on Authority mail. Then authority will enter the key and will get the decrypted file from node. Before getting the file, data auditing will perform by checking hash value of already stored data on node. Similar process will be followed by each and every module (i.e. User, Authority, and Government) included in this process. Key Manager is used here to provide the encrypted and decrypted key. Here they will also delete his file from node and also get file from node. Data will store on different node through block chain concept. [Ref.2,3,6,10,]

User

- User registers to the system
- User login to the system
- User can view profile
- User will upload file
- User can view details
- User can access the data
- Lastly, logout from the system.

Authority

- Authority registers to the system
- Authority login to the system
- Authority can view profile
- Authority will upload file
- Authority can view details
- Authority can view the data
- Lastly, logout from the system.

Government

- Government registers to the system
- Government login to the system
- Government can view profile
- Government can view details
- Government can view the data
- Lastly, logout from the system.

III. LITERATURE SURVEY

TABLE I. LITERATURE SURVEY TABLE

Sr. No.	Paper Name	Author	Journal	Description
1.	"Logistics and Supply Chain Management: Exploring the Mindful Use of a New Technology	Tino T. Herden	IEEE on 2018	advancement of the theory of mindfulness to assess the use of block-chain technologies in the context of logistics and supply chain management. Several implications, both on the theoretical and on the managerial levels, can be deduced from the case study discussion
2.	Blockchain for Supply Chain Management: Architectural Elements and Challenges Towards a Global Scale Deployment	Varvarigou	IEEE on 2017	blockchain fit in the supply chain industry. It defines the specific elements of blockchain that affect the supply chain such as scalability, performance, consensus mechanism, privacy considerations, location proof and cost
3.	An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends	Zibin zheng, hong-ning dai	2017 IEEE 6th International Congress on Big Data	Gives an overview of blockchain technologies including blockchain architecture and key characteristics of blockchain. This paper then discusses the typical consensus algorithms used in blockchain.

4.	Blockchain and Its Applications – A Detailed Survey	Supriya Thakur Aras, Vrushali Kulkarni	International Journal of Computer Applications (0975 – 8887) Volume 180 – No.3, December 2017	Different applications of blockchain- such as fund transfer, digital contract, education and medical industry. Limitations in block chain technology and the ethics of crypto currency.

IV. Hardware Interfaces

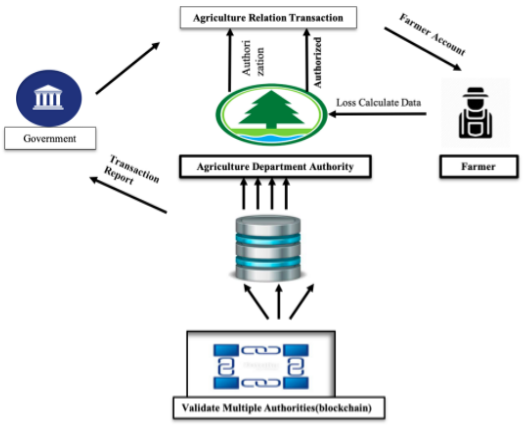
Processor - Dual core/Intel i3
Speed - 1.8 GHz
RAM - 2 GB (Min)
Hard Disk - 100 GB
Key Board - Standard Windows Keyboard
Mouse - Two or Three Button Mouse
Monitor /LCD - SVGA/LED

V. Software Interfaces

Operating System - Windows
Application Server - Apache Tomcat 7
Front End - HTML, JSP, CSS
Scripts - JavaScript.
Database - My SQL 5.0
IDE - Eclipse Oxygen
Coding Language - Java 1.8

VI. SYSTEM DESIGN

A. System Architecture



B. Mathematical Model

Let us consider S as a system for Government Fund Tracking System.
S=
INPUT:
Identify the inputs
F= f1, f2, f3 ..... FN— F as set of functions to execute commands.

I= i1, i2—I sets of inputs to the function set
O= o1—O Set of outputs from the function sets,
S= I, F, O
I = Input given by the user.
O = Output i.e. tracked location.
F = Functions implemented to get the output
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.
= Failures and Success conditions.

Failures:

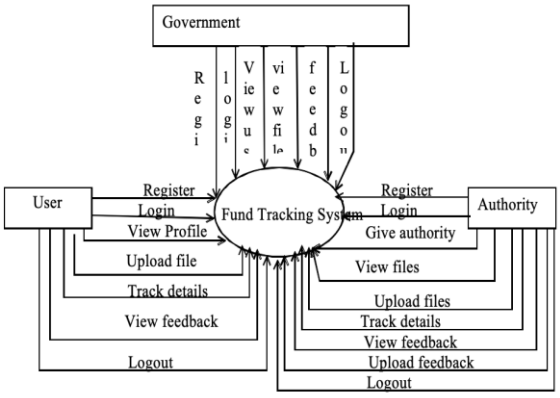
- Huge database can lead to more time consumption to get the information.
- Hardware failure.
- Software failure.

Success:

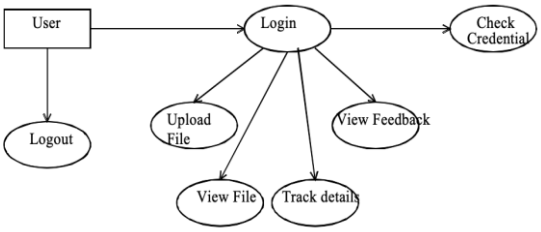
- Search the required information from available in Datasets.

A. Data Flow Diagram

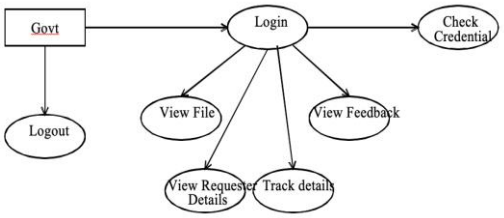
DFD 0



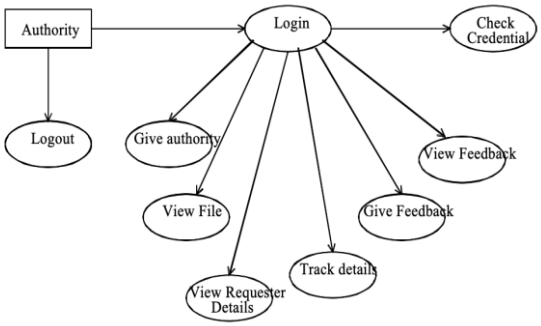
DFD1



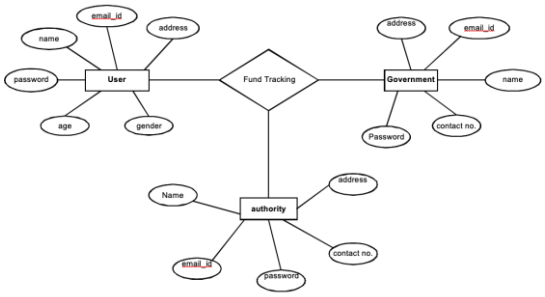
DFD2



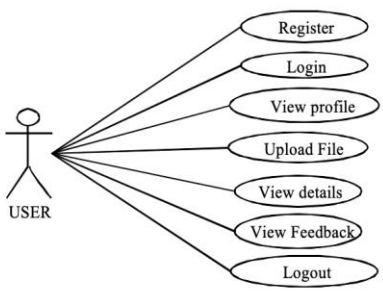
DFD 3

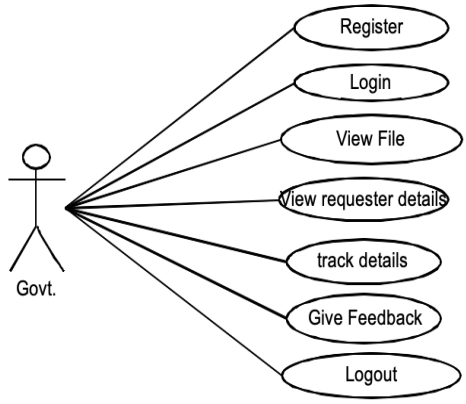


A. ER diagram:



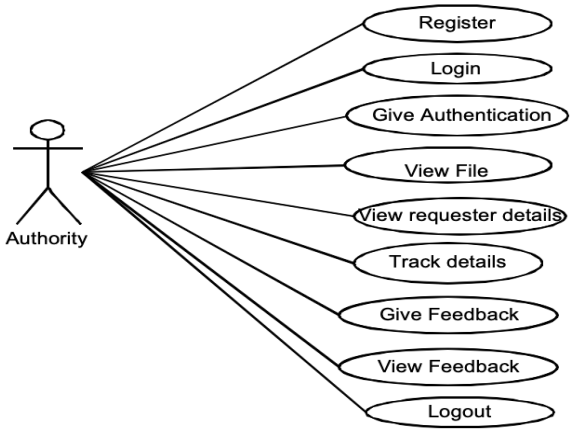
B. Usecase Diagram:



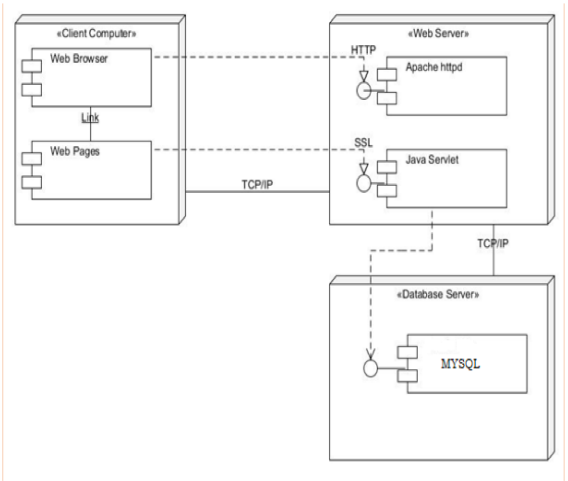


System identifies the customer as “Woman”

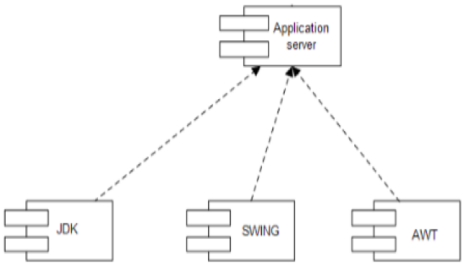
In the above screen the system identifies the customer as “Woman”



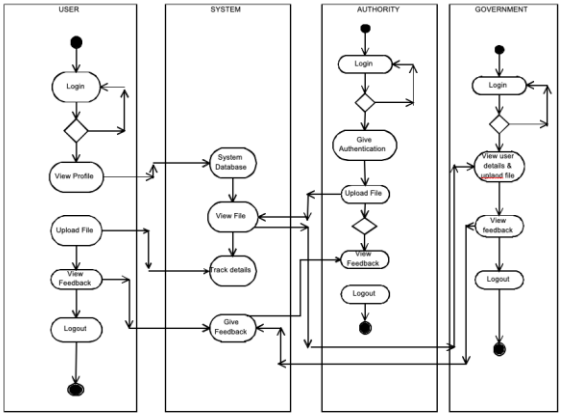
C. Deployment Diagram:



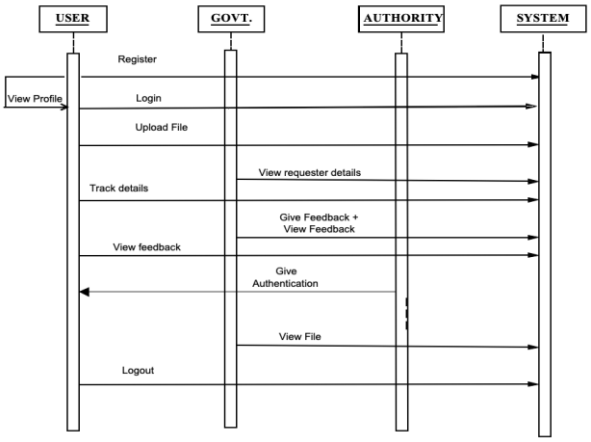
D. Component Diagram:



E. Activity Diagram



F. Sequence diagram:



VII. Algorithm Details:

In this we are going to increase the security and time efficiency by using algorithms i.e. Block-chain Algorithm (Cryptography algorithm).

The main purpose of using public-key cryptography for the blockchain is to create a secure digital reference about the identity of a user. Secure digital

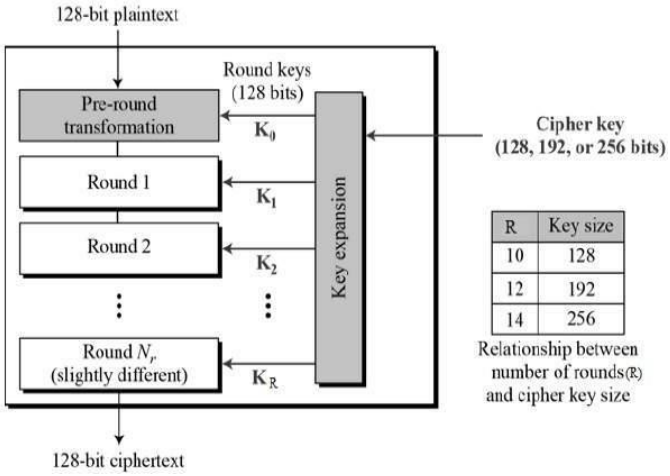
references about who is who, and who owns what, are the basis for P2P transactions. Public-key cryptography allows proving one's identity with a set of cryptographic keys: a private key and a public key.

VIII. Advanced Encryption Standard

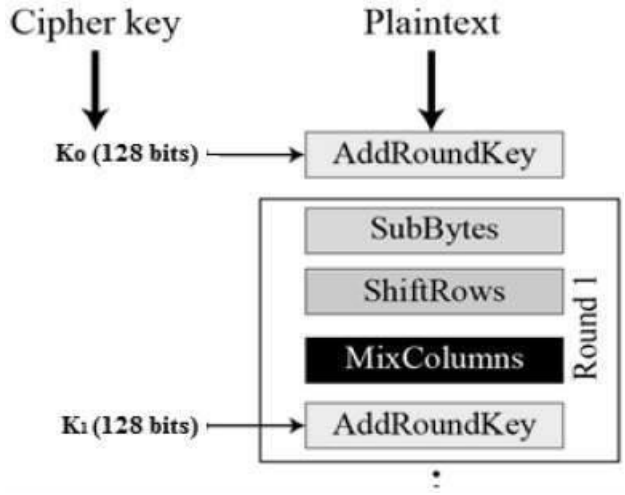
The more popular and widely adopted symmetric encryption algorithm likely to be encountered nowadays is the Advanced Encryption Standard (AES). It is found at least six times faster than triple DES.
The features of AES are as follows –

- Symmetric key symmetric block cipher
- 128-bit data, 128/192/256-bit keys
- Stronger and faster than Triple-DES
- Provide full specification and design details
- Software implementable in C and Java

The schematic of AES structure is given in the following illustration –



Encryption Process: Here, we restrict to description of a typical round of AES encryption. Each round comprises of four sub-processes. The first-round process is depicted below –



Byte Substitution (Sub Bytes): The 16 input bytes are substituted by looking up a fixed table (S-box) given in design. The result is in a matrix of four rows and four columns.

Shift rows: Each of the four rows of the matrix is shifted to the left. Any entries that 'fall off' are re-inserted on the right side of row. [Ref. 2,3,6]

IX. SHA-1(Secure Hash Algorithm):

Secure Hashing Algorithms, also known as SHA, are a family of cryptographic functions designed to keep data secured. It works by transforming the data using a hash function: an algorithm that consists of bitwise operations, modular additions, and compression functions. The hash function then produces a fixed size string that looks nothing like the original. These algorithms are designed to be one-way functions, meaning that once they're transformed into their respective hash values, it's virtually impossible to transform them back into the original data. A common application of SHA is to encrypting passwords, as the server side only needs to keep track of specific user's hash value, rather than the actual password. [Ref. 12,13]

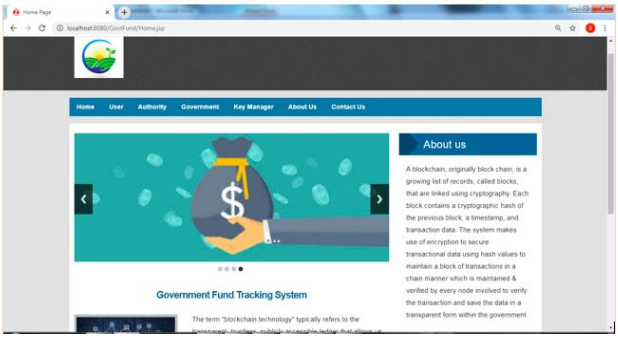
X. RESULTS

Outcomes:

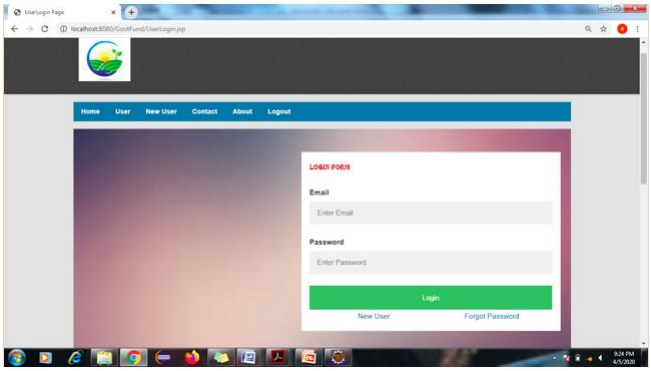
The application will be able to analyse the data from various different internet sources and help in determining a pattern among the fraud or scam occurred in various regions thereby predicting future fraud regions and type of crime in these regions also it may help law enforcers to generate criminal profile as per the crime type and region. The system will speed-up the fraud analysis process and digitizes it so that multiple organizations can benefit from this system at the same time. Such a system may help the law enforcers to reduce frauds by deploying resources effectively and preventing criminals from committing crimes thereby providing security to citizens

Screenshots:

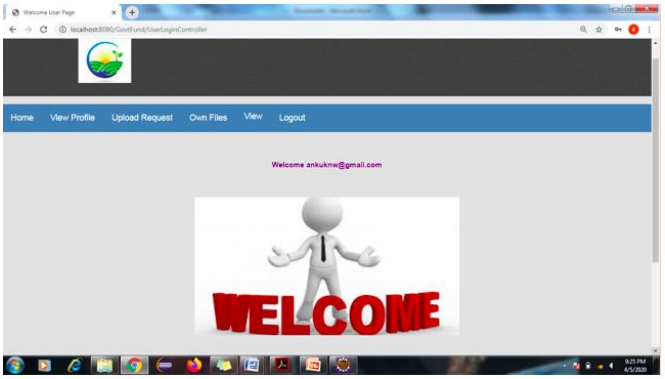
1. Home page: -



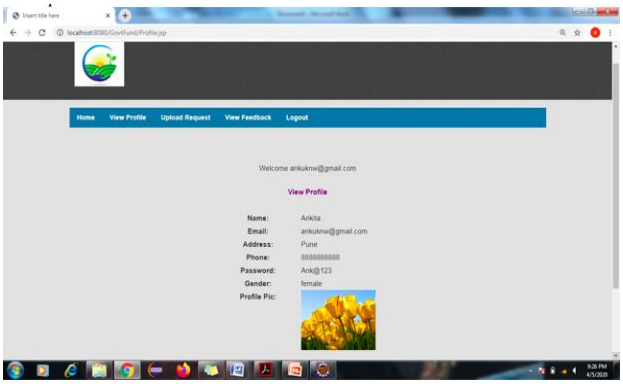
2. Login form: -



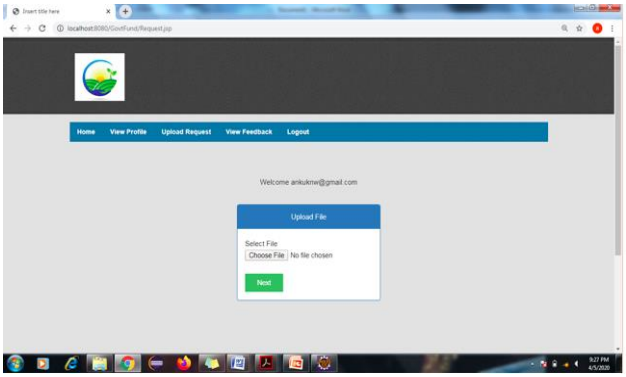
3. After Login Welcome Page: -



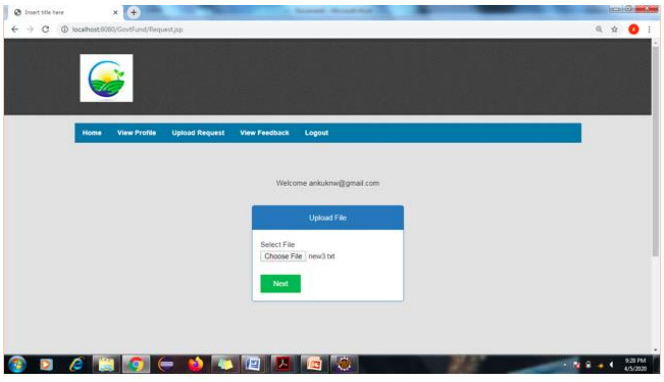
4. View Profile: -



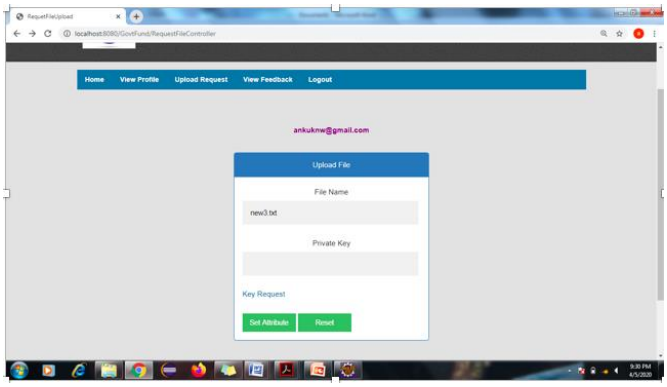
5. Upload Request: -



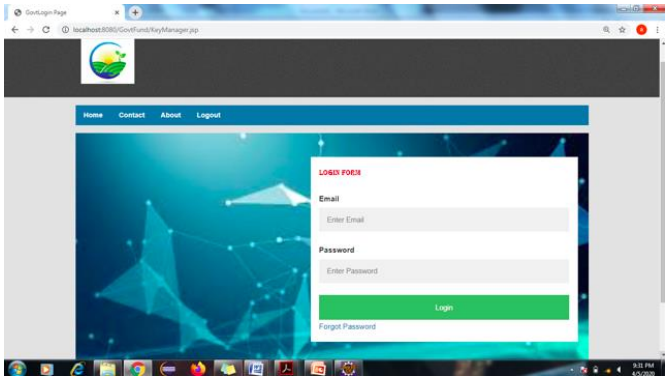
6. File Select for Uploading: -



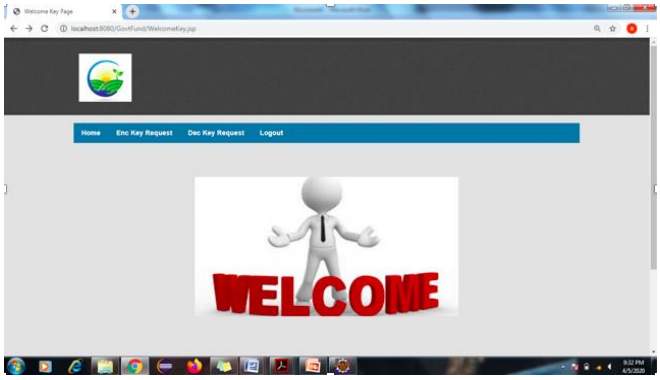
7. Send Key Request: -



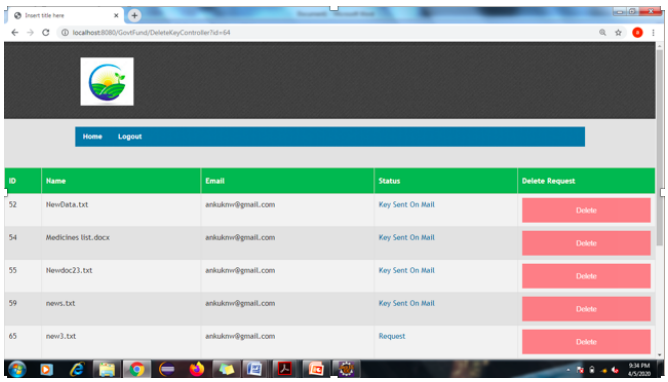
8. Key Manager Login Form: -



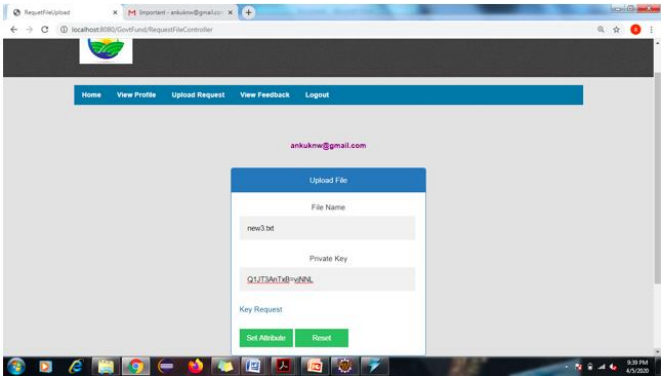
9. After Login: -



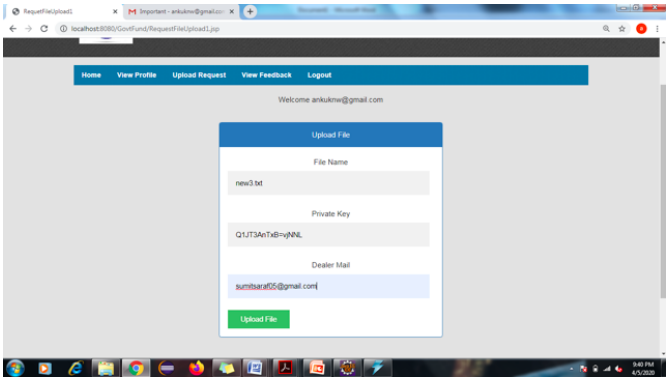
10. Encryption Key Request: -



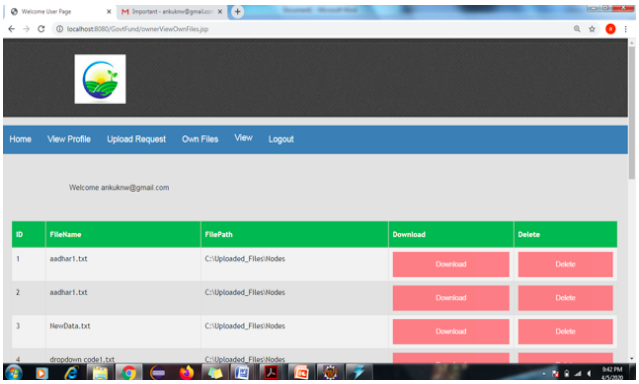
11. Enter key which is sent on the email id: -



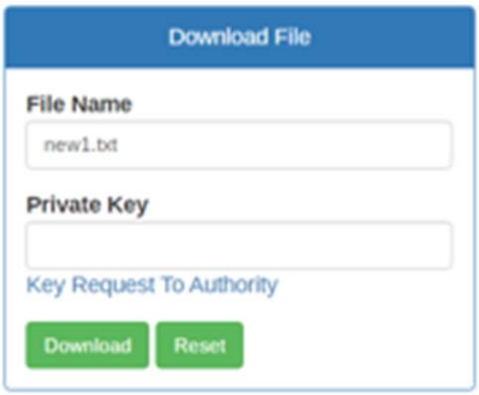
12. Next page enter email id to which file will be sent and upload it.



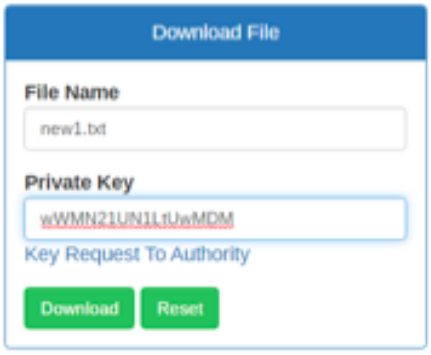
13. View files to download



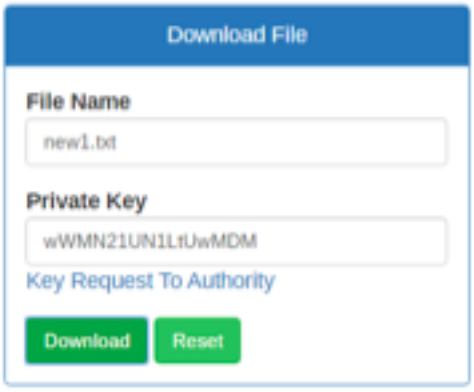
14. When click on download



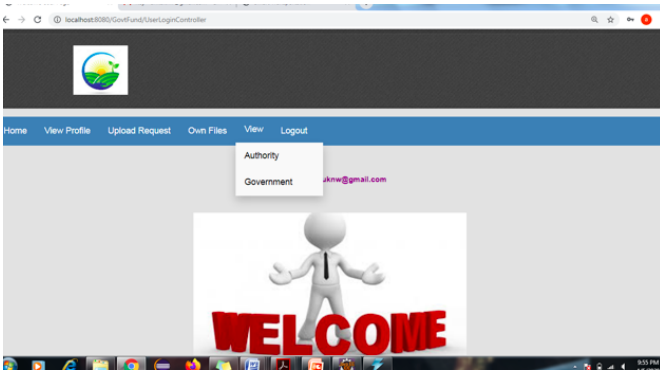
15. Enter key to download file



16. Click on download then file will be downloaded



17. View Details:



18. Next page show list of users

XI. CONCLUION

When considering building blockchain applications, we also have to consider the access and privacy challenges. Then, with other additional improvements, this blockchain model can provide transparency in all government transactions, without any discrepancy. Due to the decentralized ledger, all transactions can be verified and cannot be modified. The money that is released can be tracked, and anyone can find out how it is being used. Such a blockchain will surely reduce the prevalent corruption in this country and create a huge positive impact on its economic development.

XII. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on “Government Fund Distribution and Tracking system”. We would like to thank Prof. Gourav Tiwari, Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Prof. Monika Dangore, Project Coordinator who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

XIII. REFERENCES

[1]. Jiafu Wan, Jiapeng Li, Muhammad Imran, Di Li, Fazal-e-Amin, “A Blockchain-Based Solution for Enhancing Security and Privacy in Smart Factory”,IEEE Transactions on Industrial Informatics Volume: 15, June 2019.

[2]. Antonios Litke, Dimosthenis Anagnostopoulos, Theodora Varvarigou, “Blockchains for Supply Chain Management: Architectural Elements

and Challenges Towards a Global Scale Deployment", MDPI January 2019.

[3]. Mrs. R.Meenatkshi , Mrs. K.Sivaranjani, "A Comparative Study on Fraud Detection in Financial Statement using Data Mining Technique", International Journal of Computer Science and Mobile Computing, Vol.5 Issue.7, July- 2016, pg. 382-386.

[4]. Analysis KK Tangod, GH Kulkarni, "Detection of Financial Statement Fraud using Data Mining Technique and Performance",International Journal of Advanced Research in Computer and Communication Engineering Vol. 4, Issue 7, July 2015 .

[5]. Chi Harold Liu, Senior Member, IEEE, Qiuxia Lin, Shilin Wen. "Blockchain-enabled Data Collection and Sharing for Industrial IoT with Deep Reinforcement Learning", IEEE Transaction on Industrial Volume: 15, Issue: 6 , June 2019

[6]. Apoorva Mohite, Ajay Acharya, "Blockchain for government fund tracking usingHyperledger", IEEE Transactions on Fuzzy Systems, April 2018.

[7]. Ning Wang, Jing-Chao Sun, Meng JooEr,"Tracking-Error-Based Universal Adaptive FuzzyControl for Output Tracking of Nonlinear Systemwith Completely Unknown Dynamics" ,IEEEAPRIL 2017.

[8]. Adam Ghandar, Zbigniew Michalewicz, Ralf Zurbruegg, Chee Cheong,"Index Tracking Fund Enhancement Using Evolving Multi-CriteriaFuzzy Decision Models",IEEE Congress on Evolutionary Computation.

[9]. Shangping Wang, Dongyi Li, Yaling Zhang, Juanjuan Chen, "Smart Contract-Based Product Traceability System in the Supply Chain Scenario", IEEE Access, 2019.

[10]. M. Nakasumi, "Information Sharing for Supply Chain Management Based on Block Chain Technology," in 2017 IEEE 19th Conference on Business Informatics (CBI), Thessaloniki, Greece, Jul. 2017.

[11]. M. Kim, B. Hilton, Z. Burks, and J. Reyes, "Integrating Blockchain, Smart Contract-Tokens, and IoT to Design a Food Traceability Solution," in 9th IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), Univ British Columbia, Vancouver, Canada, Nov. 2018.

[12]. Z. Li, H. Wu, B. King, Z. Ben Miled, J. Wassick, and J. Tazelaar, "A Hybrid Blockchain Ledger for Supply Chain Visibility," in 2018 17th International Symposium on Parallel and Distributed Computing (ISPDC), Geneva, Switzerland, Aug. 2018.

[13]. T. Bocek, B. B. Rodrigues, T. Strasser, and B. Stiller, "Blockchains everywhere - a use-case of blockchains in the pharma supply-chain," in 2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM), Lisbon, Portugal, Jul. 2017.

[14]. X. Ye, Q. Shao, and R. Xiao, "A supply chain prototype system based on blockchain, smart contract and Internet of Things," Science & Technology Review, vol. 35, no. 23, pp. 62–69, 2017.

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Enhanced Secure Data Sharing Over Cloud Using ABE And BRA Algorithm

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ABSTRACT

Cloud Computing provides a convenient way of sharing of data, which brings various benefits for both the society and individuals. Security is becoming a wide necessity in our day-to-day life. Data security is the most obliged security of all. The data in our system is opened to high potential risks. Due to many security reasons we adopt diverse methods. Now everyone is being dependent on the cloud platform for security and storage but even it is vulnerable to various threats. The data inside cloud is not well-secured as it can be accessed by anyone who would have our credentials. But there exists, a resistance for the users to directly outsource shared data to the cloud server as the data often contains valuable information. So we propose an Enhanced Security to the data using encryption- The ciphertext-policy (CP) attribute-based encryption (ABE) (CP-ABE) and Byte Rotation Algorithm emerging as a promising technology for allowing users to conveniently access data in cloud computing, giving security to outsourced information, while thinking that client is not stressed while transferring their classified information. Moreover, the privacy of the users are protected in this scheme. The security and performance analysis shows the schemes are secure, efficient and privacy preserving.

Keywords: Cloud computing, CP, ABE, Encryption, Decryption, Privacy preserving.

I. INTRODUCTION

Cloud computing has introduced the new method for computing and related problems like data privacy, data security in cloud. It offers development environment, allocation and reallocation of assets when needed, storage and interacting facility. The cloud computing is composed of shared computing resources and services that deliver the resources through which users can access the structures, hardware, applications, and services on request which are independent of locations. It contents the on-demand requests of the user. It simplifies the sharable resources “as-a-service” ideal. For the association, the cloud offers data access to move their data totally. Here comes the assistance of the Cloud Computing i.e. It condenses the total of hardware that could have been used at user completion. As there is no essential for the collection of data at user’s end because it is already at some other situation. So as an alternative of buying the complete infrastructure required to run theprocesses and save bulk of data which you are just renting the assets according to your requirements. CLOUD computing is rapidly emerging technology and on-demand storage and computing services for customers

Security Issues Within The Cloud:

Organizations which are having low budget can now utilize high computing and storage services without investing in the infrastructure and maintenance. However, the loss of control over data and computation raises many security concerns for organizations, the wide adaptability of the public cloud. The loss of control over data and the storage platform also motivates cloud customers to maintain and have control over data (individual data and the data shared among a group of users through the public cloud) Moreover, the privacy and confidentiality of the data is also recommended to be cared for by the customers. The confidentiality management by a customer ensures that the cloud does not have any information about the customer data. The data encryption is done before storing to the cloud. The access control, key management, encryption, and decryption processes are handled by the customers to ensure data security. However, when the data is shared among a group, the cryptography services need to be flexible enough to handle different users, exercise the access control, and manage the keys in an effective manner to safeguard data confidentiality. A separate key for every user is a cumbersome solution.The changes in the data require the decryption of all of the copies of the users and encryption again with the modified contents. The existing and legitimate group members might show illegitimate behaviour to manipulate the data. The data can be decrypted, modified, and re-encrypted by a malicious insider within a group. Consequently, a legitimate user in the group may have the access to certain unauthorized files within the group. On the other hand, it is necessary for a user to possess a key to conduct various operations on the data. The possession of the key also implicitly proves the legitimacy of a user to operate on the data. Nevertheless, simultaneously dealing with both the issues related to the key is an important issue that needs to be addressed effectively.

II. Literature Review

These are various surveys which we are studied

A. Lightweight Secure Data Sharing Scheme for Mobile Cloud Computing

A lightweight information sharing plot (LDSS) for portable distributed computing. It receives the CP-ABE, an entrance control innovation utilized as a part of typical cloud condition, be that as it may, changes the structure of access control tree to make it reasonable for versatile cloud situations. LDSS moves a vast segment of the computational serious access control tree change in CP-ABE from cell phones to outer intermediary servers. Moreover, to lessen the client renouncement cost, it acquaints property depiction ends with execute apathetic disavowal, which is a prickly issue in pro-gram-based CP-ABE frameworks. The trial comes about demonstrate that LDSS can successfully lessen the overhead on the cell phone side when clients are sharing information in portable cloud situations.

B. Low Latency for File Encryption and Decryption Using BRA Algorithm in Network Security.

Data security is significant deterrent in various zones like military, bank application, educational organizations. Document is forward starting with one area then onto the next area in the organized. Numerous programmers are unlawfully get to the data. To give answer for this issue many creators has presented diverse calculations and the strategies. The distinctive calculations like DES, triple DES and AES accomplish greater security, however it sets aside more opportunity for encryption and decoding records. This algorithm gives greater security and takes littlest measure of time for record encryption and decoding. This encryption can apply on various sorts of records like contents, pictures, sounds, and video records. In the Byte Rotation Encryption Algorithm include two procedures, one is the irregular key era procedure is utilized. What's more, second is parallel encryption and decoding the process utilizing multi-threading procedure.

C. Analysis of multi-threading time metric on single and multi-core CPUs with Matrix multiplication.

With the landing of multi-centre CPUs, to accelerate execution of frame-works utilizing parallelism is prompting new approaches. Prior techniques to actualize parallelisms in applications were constrained to either utilization of excess equipment assets or the direction level parallelism (ILP). This requested the need of part the undertaking or process into little sections that can keep running in parallel in the errand's unique circumstance, and strings have been presented. It is normal that the quantity of centres per processor would duplicate with increment in silicon do- main on chip. Keeping in mind the end goal to achieve most extreme centre usage of equipment, programming needs to nourish. Multi-threading is prevalent approach to enhance application execution speeds through the parallelisms. As each string has its possess autonomous asset for assignment execution, various procedures can be executed parallel by expanding number of strings. Parallelism is the running of strings in the meantime on centres of a similar CPU. Multi-threading is famous approach to enhance application execution speeds through parallelisms. As each string has its claim free asset for assignment execution, various procedures can be executed parallel by expanding number of strings. Parallelism is the running of strings in the meantime on centres of a similar CPU.

III. ALGORITHMS USED

A. Attribute Based Encryption Algorithm:

Step 1: Start

Step 2: Generating the symmetric key for the register users.

Step 3: A set of user attributes is supplied to the input of the private key generation, and the output of the algorithm turns user's private key.

Step 4: The input is fed to the encryption function which it is necessary to encrypt, a set of attributes, decryption of data will be done by owner, and randomly selected number, and the output will be obtained encrypted data.

Step 5: A set of user attributes AU and the encrypted data are supplied to the input of the decryption function, and the output will be obtained decrypted message.

Step 6: Safe data retrieval.

Step 7: End

B. Byte Rotation Algorithm:

Step 1: Start

Step 2: The Data is partitioned into fixed length of blocks. These blocks are represented by matrix Mp.

Step 3: The numerical values is assigned to the data in sequence.

Step 4: The value of Key matrix is randomly selected from the given range.

Step 5: Calculate the Transpose matrix of data block matrix Mp which is denoted by Mt.

Step 6: Calculate the encrypted key matrix Kc .

Step 7: Add both matrix Mt and Kc. The resultant matrix is denoted by Cpk.

Step 8: Rotate the first 3 row horizontally of Cpk matrix. The resultant matrix will be matrix Chr.

Step 9: Rotate the first 3 column of Chr matrix. The resultant matrix is denoted by Cvr.

Step 10: Replace the numerical values of Cvr matrix by the corresponding blocks.

C. Mathematical Model

1. Input: Collection of different types of dataset e.g.- docx, pdf, xlsx, etc.

2. Output: Encode/Decode information as per request

3. Methodology:

Attribute Based Encryption Algorithm

Byte Rotation Encryption Algorithm

4. Function:

(a) Authentication of users

(b) Encoding data

(c) Decoding data

(d) Serial operation

(e) Parallel operation

5. System Description:

Let S be the Whole system which consists:

S= {m, ƛ, s, x, r, P}

(a) m=Total cores available on multicore system 'S'

(b) ƛ= arrival time of each task which want to execute on multicore system.

(c) s=Execution speed of 'm' cores on multicore system 'S'

Now,

Total task execution time(x)= r/s

Here,

x=Execution time

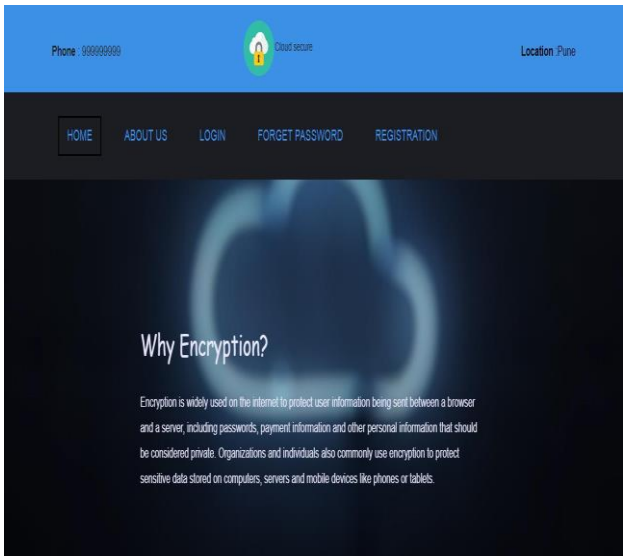
s=Execution speed

r=Total speed rate of task

IV. RESULTS AND DISCUSSION

In several distributed systems a user should only access data, If a user possess a certain set of credentials or attributes. Currently, the only method is to employ a trusted server to store the data and mediate access control. However, if any server which is storing the data is compromised, then the confidentiality of the data will be compromised.

HOME PAGE



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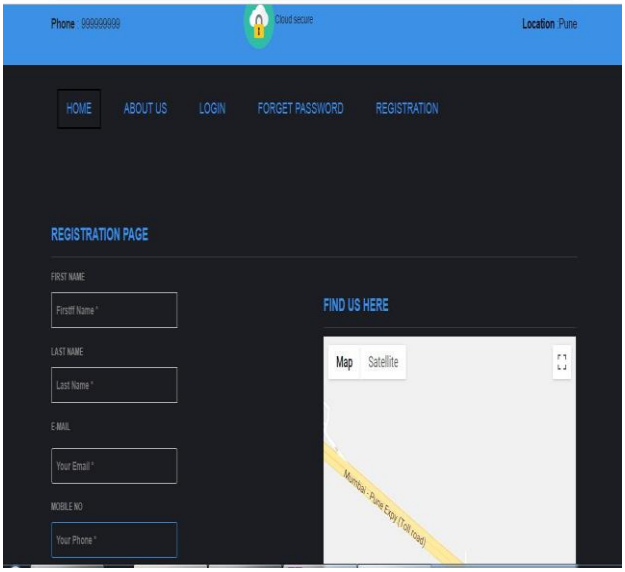

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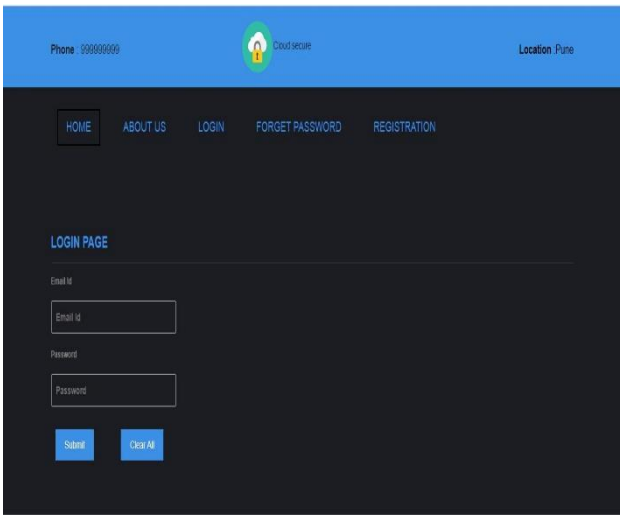
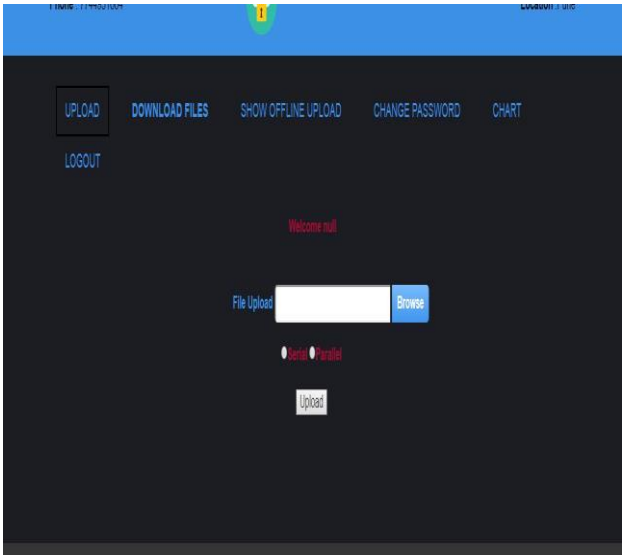
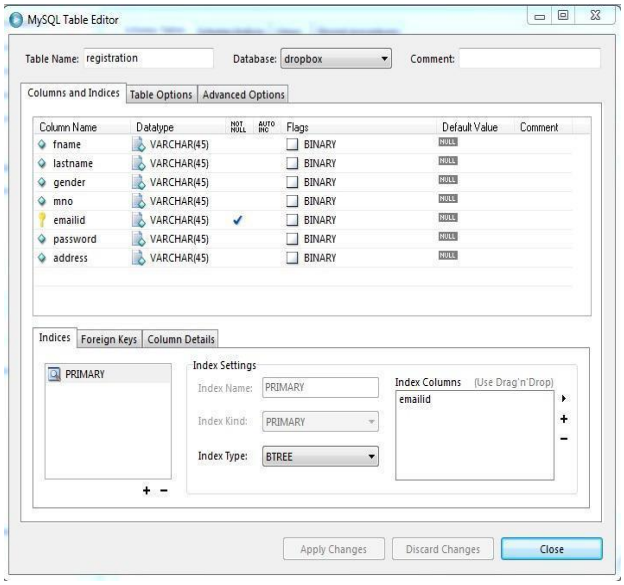


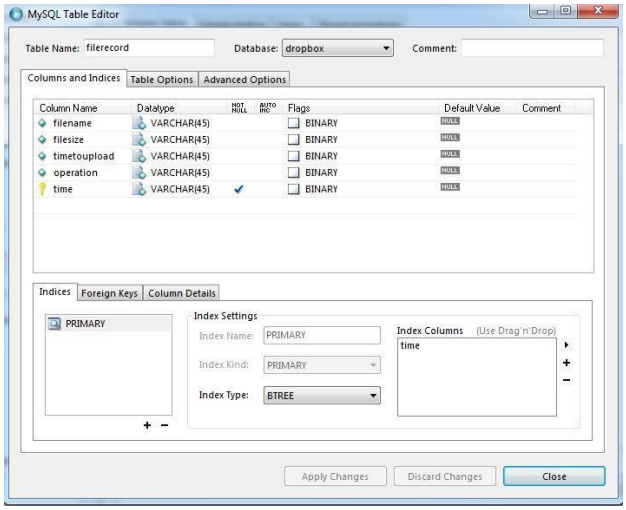
USER DASHBOARD



USER REGISTRATION DETAIL



UPLOADED FILE DETAIL



In this paper we are presenting a system for realizing complex access control on encrypted data that we call ciphertext-policy attribute-based encryption. The encrypted data can be kept confidential even if the storage server is untrusted; moreover, our methods get secure against collusion attacks. In previous attributes where used to describe the encrypted data and built policies into user's keys in attribute-based encryption systems while in our new system attributes are used to describe a user's credentials, and a party encrypting data determines a policy for who can decrypt.

V. ADVANTAGES

1. Beneficial for Cryptosystem Application Execution.
2. It will help to Reduce Time Complexity for Security Mechanism.
3. It also can Easily Utilize Computational Power of a system.
4. Trained Existing Kernel Execution for Throughput Gains.
5. Can achieve Profitable Ratio for Cryptosystem Approaches

VI. LIMITATIONS

1. Multi-core System Required for Execution.
2. Achieve Cryptosystem Profit Gains Only.
3. Internal Based Parallelism Execution Only.

VII. FUTURE WORK

In Future we can develop mobile application for mobile computing using distributed network. We can develop a multi-cloud system. This will make system more prone to failures. As well as we can apply hybrid encryption algorithm for better security and efficiency.

VIII. CONCLUSION

Data which is available in the cloud can be at risk if not handled or protected in a rightful manner. This paper discusses various risks and security threats to data in the cloud and given an overview of three types of security concerns. The major concerns of this paper was data security and its malicious threats and solutions in cloud computing. Data has been discussed along with the techniques which are efficient for encrypting the data in the cloud. To build a cost effective and secure data sharing system in cloud computing, we proposed the notation called

ABE- Attribute-based encryption is a type of public-key encryption, and ciphertext policy.

IX. ACKNOWLWDEGEMENT

We as team have taken efforts in this project, be that as it may would not have been conceivable without the caring and help of numerous people and associations. We are highly indebted to Mrs. Ajita Mahapadi for her guidance and constant supervision as well as for providing necessary information regarding the project & also for her support in completing the project. We would like to express my gratitude toward our Head of Department for kind co-operation and encouragement which helped us in completion of this project. Furthermore, We would also like to acknowledge with much appreciation the crucial role of the staff of DYPSOE Lohegaon, who gave the permission to use all required things to complete our project. We also are deeply grateful to the Principal of DYPSOE, Dr. Ashok Kasnale support and for providing necessary guidance and all the Staff of the department concerning project's implementation and the motivating environment.

X. REFERENCES

[1] Auditing and Resisting Key Exposure on Cloud Storage Akshata M. Bhand, D. A. Meshram Student, ME (IT) , RMD Sinhgad School of Engineering,Pune, Assistant Professor, ME (IT), RMD Sinhgad School of Engineering, Pune,2017

[2] Strong Key-Exposure Resilient Auditing for Secure Cloud Storage Jia Yu, and Huaqun Wang - IEEE TRANSACTIONS ON INFORMATION FORENSICS AND SECURITY, VOL. , NO., 2016

[3] Enabling Cloud Storage Auditing with Key-Exposure Resistance Jia Yu, Kui Ren, Senior Member, IEEE, Cong Wang, Member, IEEE and Vijay Varadharajan, Senior Member, IEEE , IEEE.

[4] Analysis of multi-threading time metric on single and multi-core CPUs with Matrix multiplication Dhruva R. Rinku, Dr. M Asha Rani 3rd International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB17)

[5] V. Maitri, Dattatray S. Waghole, Vivek S. Deshpande, IEEE Senior Member, \Low latency for _le encryption and decryption using BRA algorithm in network security", 2015 International Conference on Pervasive computing.

[6] Auditing and Resisting Key Exposure on Cloud Storage Akshata M. Bhand, D. A. Meshram Student, ME (IT) , RMD Sinhgad School of Engineering,Pune, Assistant Professor, ME (IT), RMD Sinhgad School of Engineering, Pune,2017

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[10] V. Maitri, Dattatray S. Waghole, Vivek S. Deshpande, IEEE Senior Member, \Low latency for _le encryption and decryption using BRA algorithm in network security", 2015 International Conference on Pervasive computing.

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Detection of Driver Drowsiness Using Eye Blink Sensor

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ABSTRACT

Nowadays, drowsy driving has become a leading cause of accidents. The mechanism for detecting fatigue and sleepiness while driving has been categorized into three broad approaches, including vehicle-based, physiological-based, and behavior-based approaches. By the study of these measurement methodologies and comparing them, we came up with some new ideas to measure the drowsiness of a person on the road using more advanced techniques, more reliability, low complexity, etc. This system is developed using various sensors like eye blink sensor, alcohol sensor, fire sensor and raspberry pi microcontroller. If the driver is found drowsy he will be alerted by buzzing alarm. Driver gets distract when an object or event draws a person's attention away from the driving task. Alcohol consumption also results in the same effects. The paper leads to the solution for preventing the accidents happening due to these effects of alcohol consumption and drowsiness.
Keywords: Drowsiness, Eye blink sensor, Driving, Vibrator, Buzzing Alarm.

I. INTRODUCTION

The increased usage of vehicles has led to increased chaos on the roads. Increased chaos has led to increased number of accidents. According to WHO report of 180 countries, shows that the total number of deaths occurring in accidents are 1.25 million per year. For any vehicle accidents driver's faults are the most accountable aspect to cause dangerous problems to the society. Many drivers cannot control the vehicles due to different reasons it may cause severe accidents and sometimes death. Various reasons for these accidents are alcohol consumption, over speeding and many distractions like talking while driving and texting. One of the important factor is sleeping on the wheel. Nowadays, drowsy driving has become a leading cause of accidents.

The primary purpose of the system is to develop a system that can reduce the number of accidents happening due to driver drowsiness. The primary purpose of the system is to develop a system that can reduce the number of accidents happening due to driver drowsiness. With our three monitoring steps we can provide a more accurate detection .The first application is to detect the eye blink of the driver, eye blink sensor is continuously monitor the eye blink movement. Then next we will detect the alcohol content. And this paper also deals with temperature sensor, in case of any fire inside the vehicle.

II. METHODS AND MATERIAL

A. *Problem Definition*

Driver drowsiness detection is car safety technology which helps to save the life of driver by preventing accidents when the driver is getting drowsy.

B. *Mathematical Model*

S={s, e, X, MSG, Sc, Fl, SF}

Where,

s=Initial state

e=end state

X={IR, Alcohol, VS, TS, Thres}

Where,

IR=output coming from eye blink sensor

Alcohol= output coming from alcohol sensor

VS= output coming from vibrator sensor

TS= output coming from temperature sensor

Thres=threshold value

MSG={Tmsg, Buzzer}

Where,

Tmsg=The message transmitted to the vehicle owner

Buzzer=the output of the buzzer alarm

Sc= denotes that the user has successfully reached destination

Fl= denotes a failure case which says the system did not detect any anomaly.

SF=denotes that accident occurred and the situation is detected quickly and informed to the concerned owner with location.

There are some steps to implement this system are as follows:

Step 1:

Obtaining values from each sensor and comparing them with reference values.

Step 2:

The values obtained will be pass to the microcontroller.

Step 3:

Microcontroller passed the received values as input to output devices.

Step 4:

The output devices then carry out the functionalities such as slowing down the vehicle speed, alerting the drivers, notifying the owner and also displaying message on the LCD.

C. *Architecture diagram*

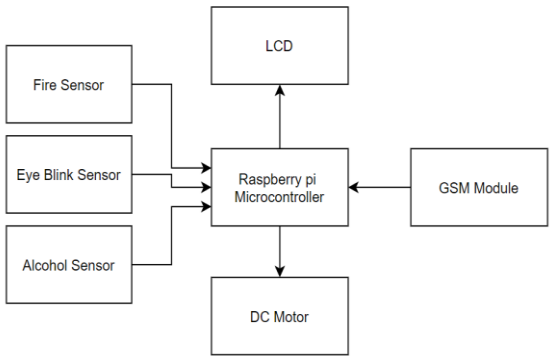

Fig 1. Block Diagram of the system

System architecture shows the connectivity of sensors to the microcontroller and from microcontroller to the output devices. The input receive from the sensors is send to the microcontroller for processing and to generate the output which will further proceed to the output devices. Microcontroller needs 5V power supply to start execution.

D. *System Requirements*

Hardware Requirement:

- Raspberry pi 3 Microcontroller
- 16*2 Alphanumeric LCD
- Eye Blink Sensor
- Motor
- SIM 800L GSM Model
- Alcohol Sensor
- Fire sensor

Software Requirement:

- Python
- Raspbian Operating System
- Android studio

III. RESULTS AND DISCUSSION

[1] Suggest Detection of driver drowsiness using eye blink sensor. In this system if the driver becomes drowsy the eye blink sensor frame vibrates attached to the vehicle and also the LCD displays the warning messages. The wheel is slowed or stopped depending on the condition. The LCD display warning messages.

Advantages:

The LCD display warning messages.

Disadvantages:

There is no alert system for the driver.

[2] Suggest Vehicle accident prevention using sensor. This project monitors and detects accident and minimize the number of accidents. The device prototype supports quality, low cost, flexibility and user safety. The work presence design of a lower power embedded system and its combination with different sensors.

Advantages:

The device prototype supports quality, low cost, flexibility and user safety.

Disadvantages:

There is no accident prevention system.

[3] Suggest Microcontroller based car safety system. This project involves measure and control eye blink using IR sensor. We can park the vehicle automatically by using automatic braking system which will slow down the vehicle.

Advantages:

Automatic parking system for the vehicle by first using automatic barking system.

Disadvantages:

There is no alert system, if driver gets drowsy and there could be difficulty to find the parking location on highways.

[4] Suggest Drunken driving detection and prevention models using IOT. This paper proposed a system to safeguard drunken drivers especially at night. It analyses the alcohol concentration and hence undertakes protective measures such as speed reduction, triggering an alarm, informing the traffic control, activation of auto piolet.

Advantages:

Speed reduction when the driver are drunken.

Disadvantages:

No message will send to the owner of car.

[5] Suggest Accident prevention using eye blink sensor. This project has proposed a design and implementation of accident prevention using eye blink sensor with PIC16F77A microcontroller successfully.

Advantages:

Accident prevention successfully.

Disadvantages:

As PIC16F77A microcontroller get used the system will be less efficient.

[6] Suggest Smart car for driver. This project design a system which can be used for security purpose of driver to caution the driver if any fire accident or any gas leakage.

Advantages:

Achieved security of the drivers.

Disadvantages:

No preventions system is there in this paper.

[7] Suggest Road accident prevention and control. This system works when the driver closes the eyes for around 30sec and also there is a vibrator present at the back of the seat, the vibrator vibrates and the braks is also applied gradually after 50sec.

Advantages:

Automatic brakes are applied when the driver's eyes are found automatically closed for about 30sec.

Disadvantages:

This system is not efficient at night.

[8] Suggest Accident prevention system using eye blink sensor. In this system obstacle detecting sensor is used to detect the objects and obstacle's in front of sensor in a narrow angle useful in robotics application.

Advantages:

Useful in robotics application.

Disadvantages:

Less efficient as real time application.

[9] Suggest Accident prevention using eye blink sensor. This project is developed to keep the vehicle secure and protect it by the occupation of the intruders. It uses eye blink sensor, 8051 microcontroller.

Advantages:

It will keep the vehicles secure and protect it by the occupation of the intruders.

Disadvantages:

No accident prevention system is provided.

[10] Suggest An IOT based smart system project for accidents prevention and detection. This system validate the driver by viewing his driving license using RFID and also monitors distances between automobile and use V2V communication.

Advantages:

Validate the driver by viewing his driving license using RFID.

Disadvantages:

No system is develop to detect the driver drowsiness. And to prevent the accidents.

IV. RESULT

This system detects whether the driver is feeling drowsy or not .If the driver is drowsy ,then the system will alert the driver through buzzing alarm.

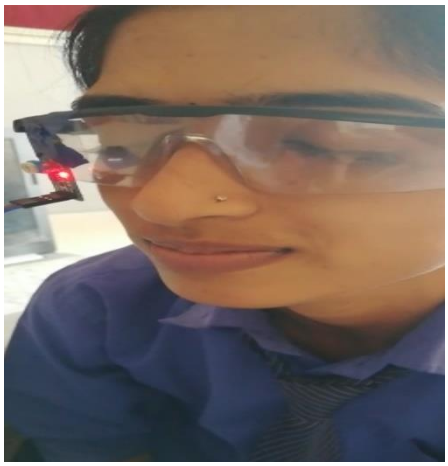

Fig 2.detects the drowsy driver

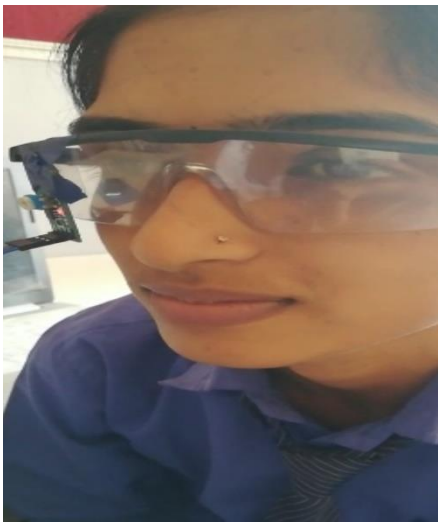

Fig 3.driver is alert

But if the driver is not drowsy,the system will continuously check whether driver is sleeping or not.The system will also check alcohol presence and fire presence in the vehicle .If any one is detected it will alert the driver by buzzing the alarm, and sending an alert message to the owner of the car .

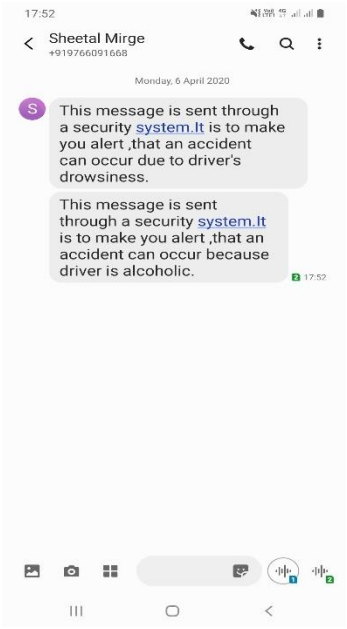

Fig 4 .the message received from gsm module

Below graph depicts the accuracy of the system in comparison with systems using web cam .As working of web cam varies with the amount of light present, web cam doesn't work properly in the night light .But this system works in every possible situation ,because working of eye blink sensor is independent of amount of light present.

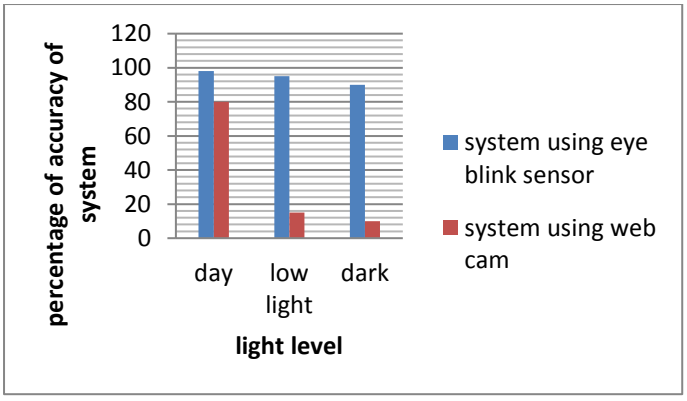

Fig 5.Accuracy of this system in comparison with the system using webcam

V. CONCLUSION

Nowadays, people have become more prone to accident. So, we as an engineer need to take action against this and look for the desired solution. For the safety of the human being some automation is made. The purpose of such a model is to advance a system to detect fatigue symptoms in drivers and alert the driver by buzzing the alarm to avoid accidents.

VI. REFERENCES

[1]. Pragyaditya Das, S. Pragadeesh, "Microcontroller based car safety system: implementing drowsiness detection and vehicle–vehicle distance detection in parallel", in IJSTR , Volume 4, Issue 12, December 2015.

[2]. G.Keerthi Bhavani, Shailaja Reddy, "Vehicle accident prevention using sensors." In IJCMS Volume 7, Issue 2, February 2018.

[3]. Kusuma KumariB.M, Sampada Sethi, Nishant Kumar, "Detection of driver drowsiness using eye blink sensor." In IJET Volume 7, Issue 3.12,2018.

[4]. Suparana Sahabiwas ,Souravsaha, "Drunken driving detection and prevention models using Internet if Things.", IN IEEE 2016.

[5]. M Hemamalini , M Sathis Kumar, "Accident prevention using eye blink sensor " In APJR , Volume 1, Issue L2, June 2017.

[6]. Shashidhara M, C N Shruthi, "Smart car for driver alert "In IJARSE Volume 7, Issue 2, April 2018.

[7]. Prashant Sharma, Tanupriya, "Road accident prevention and control", InIJEECS, Volume 5, Issue 4, April 2016.

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Information Leakage in Cloud Data Warehouse

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ABSTRACT

Now today's entire world has we many issues in internet security and privacy. Research survey discusses regarding privacy and security is based on the use of internet in travelling, E-Commerce site, social media, banking, study etc. Existing system also often faces the problems with the privacy of the entire network system and stored private data.To conquer these issues, increment generally utilized application and information intricacy, so web administrations have plan to a multi-layered framework wherein the web server runs the application front-end rationale and information is recover to a database or record server. Intrusion detection system plays a key role in computer security technique to analysis the data on the server. This problem overcome in proposed Duel Security technique is introduced based on ecommerce application. For data security we use the message digest algorithm, an in built web server of windows platform, with database My SQL Server. In this paper proposed system monitoring both web request and database requests. Most of the people do their transaction through web based server use. For that purpose duel security system is used. The duel security system is used to identify & prevent attacks using Intrusion detection system. Duel security prevents attacks and prevents user account data from unauthorized updating from his/her account.

Keywords : Duel security, MD algorithm, Intrusion detection, multi-tier web application, data leakage detection.

I. INTRODUCTION

Presently day's database security is a significant part of every single association. Database is utilized for the store information in database isn't adequate for any association, since they need to manage all issues identified with database, from which one of the primary issue is database security. In this paper we plan with the fundamental methodology that decides if information put away in database is altered or not. Any business can't manage the cost of the danger of an unapproved client watching or changing the information in their databases. Web administrations are broadly utilized in informal organization by individuals. Web administrations and applications have gotten prevalent and furthermore their multifaceted nature has expanded. The vast majority of the errand, for example, banking, long range informal communication, and internet shopping are done and straightforwardly rely upon web. As we are utilizing web administrations which is available wherever for individual just as corporate information they are being assaulted effectively. Aggressor assaults backend server which gives the helpful and significant data in this way separating front end assault. Information spillage is the enormous issue for businesses and various organizations. It is exceptionally hard for any framework director to

discover the information leaker among the framework clients. It is making a genuine danger to associations. It can devastate organization's image and its notoriety.

Interruption Detection System inspects the assault exclusively on web server and database server. So as to ensure multi-layered web benefits a proficient framework call Intrusion Detection System is expected to recognize assaults by mapping web solicitation and SQL inquiry, there is immediate causal connection between solicitation got from the front end web server and those produced for the database backend. Dynamic site permit determined back end information change through the HTTP solicitations to incorporate the parameters that are variable and rely upon the client input. In view of which the mapping between the web and the database rang from one to numerous as appeared in the mapping model.

The MD5 calculation is a broadly utilized hash capacity delivering a 128-piece hash esteem. Not withstanding the way that MD5 was from the start proposed to be used as a cryptographic hash work, it has been found to encounter the evil impacts of expansive vulnerabilities.It can in any case be utilized as a checksum to confirm information honesty, yet just against unexpected defilement.

MD5 was structured by Ronald Rivest in 1991 to supplant a previous hash work MD4. The truncation "MD" means "Message Digest."

SQL infusion is a code infusion system, used to assault information driven applications, in which loathsome SQL proclamations are embedded into a passage field for execution (for example to dump the database substance to the assailant). SQL infusion must adventure a security helplessness in an application's product, for instance, when client info is either mistakenly separated for string strict departure characters inserted in SQL explanations or client information isn't specifically and out of the blue executed. SQL infusion is for the most part known as an assault vector for sites however can be utilized to assault any kind of SQL database.

SQL infusion assaults enable assailants to parody character, alter existing information, cause revocation issues, for example, voiding exchanges or evolving balances, permit the total exposure of all information on the framework, obliterate the information or make it generally inaccessible, and become chairmen of the database server.

To make a framework for interruption discovery on static and dynamic website pages (making session ID's for every client containing the web front end[HTTP] and back end[SQL server]) additionally make it ready to keep those interruptions from assaulting the pages and it ought to have the option to discover the culprit.

II. LITERATURE SURVEY

X. Chen, J. Li, X. Huang, J. Mama, and W. Lou," New Publicly Verifiable Databases with Efficient Updates", 2015, in this paper creator has built up a model which thought of unquestionable database (VDB) empowers an asset compelled customer to safely redistribute a huge database to an untrusted server so it could later recover a database record and update it by doling out another worth. Likewise, any endeavor by the server to alter the information will be distinguished by the customer. Creator proposes another VDB system from vector duty dependent on the possibility of responsibility official. The development isn't just open unquestionable yet in addition secure under the FAU assault. Moreover, he demonstrates that our development can accomplish the ideal security properties.

Anmin Fu, Shui Yu, Yuqing Zhang, Huaqun Wang, Chanying Huang, "NPP: A New Privacy-Aware

Public Auditing Scheme for Cloud Data Sharing with Group Users", 2016, this paper creator structure another protection mindful open reviewing system for shared cloud information by developing a homomorphic evident gathering mark. In contrast to the current arrangements, our plan requires in any event bunch chiefs to recoup a follow key agreeably, which wipes out the maltreatment of single-authority control and gives non-frameability. In addition, our plan guarantees that gathering clients can follow information changes through assigned twofold tree; and can recoup the most recent right information square when the present information square is harmed. What's more, the conventional security investigation and exploratory outcomes show that our plan is provably secure and proficient.

Ekta Naik, Ramesh Kagalkar, "Distinguishing and Preventing Intrusions In Multi-level Web Applications", 2014, In this paper, creator proposes executed twofold gatekeeper utilizing web data and administration supervisor Furthermore, it measure the restrictions of any multitier IDS regarding instructional meetings and usefulness inclusion. I am executing the aversion procedures for assaults. I am additionally discovering IP Address of interloper. A system Intrusion Detection System can be characterized into two kinds: inconsistency recognition and abuse discovery. Peculiarity discovery initially requires the IDS to characterize and described the right and satisfactory static structure and dynamic conduct of the framework, which would then be able to be utilized to recognize unusual changes or atypical conduct.

V. Vu, S. Setty, A.J. Blumberg, and M. Walfish, "A half breed architecturefor intuitive unquestionable calculation", 2013, this work is promising yet experiences one of two issues: it is possible that it depends on costly cryptography, or else it applies to a confined class of calculations. More regrettable, it isn't in every case clear which convention will perform better for a given issue. He depict a framework that (a) broadens upgraded refinements of the non-cryptographic conventions to an a lot more extensive class of calculations, (b) utilizes static examination to flop over to the cryptographic ones when the non-cryptographic ones would be progressively costly, and (c) consolidates this center into a fabricated framework that incorporates a compiler for a significant level language, a circulated server, and GPU speeding up. Trial results show that our framework performs preferable and applies all the more generally over the best in the writing.

S. Pearson and A. Benameur, "Protection, security, and trust issues emerging from distributed computing", 2010, Cloud processing is a rising worldview for enormous scale frameworks. It has the upside of diminishing expense by sharing processing and capacity assets, joined with an on-request provisioning instrument depending on a compensation for every utilization plan of action. These new highlights directly affect its planning yet additionally influence conventional security, trust and protection components. A significant number of these components are never again satisfactory, yet should be reconsidered to fit this new worldview. In this paper he survey how security, trust and protection issues happen with regards to distributed computing and talk about manners by which they might be tended to.

III. EXISTING SYSTEM

In Existing System we often face the problems with the privacy of the network system and private data. There are some security issues like data modification can be done by attackers using unauthorized access. It will be the loss of business person because restore facility for modified data is not available.

The attacker objective for using the data tempering and injection technique is lies in gaining control over

the application database. In a web based application environment, most of the web based applications, social web sites, banking websites, online shopping websites works on the principle of single entry point authentication which requires user identity and password.

A user is known by the system supported his identity.This process of validation based on user name and password, is referred as authentication.

In general shopper send a communications protocol request to net|theonline|the net} server and web server successively send it to the information layer.
Database end contains relational tables so queries will be proceeding and result will be send to the web server.
So entire method is information driven and every information contains several tables that ar why SQLIA may be simply doable at this level.

SQL Injection could be a basic attack used for principally 2 intentions: 1st to realize unauthorized access to a information and second to retrieve data from information.

Function primarily based SQL Injection attacks ar most vital to note as a result of these attacks don't need information.

IV. PROPOSED SYSTEM

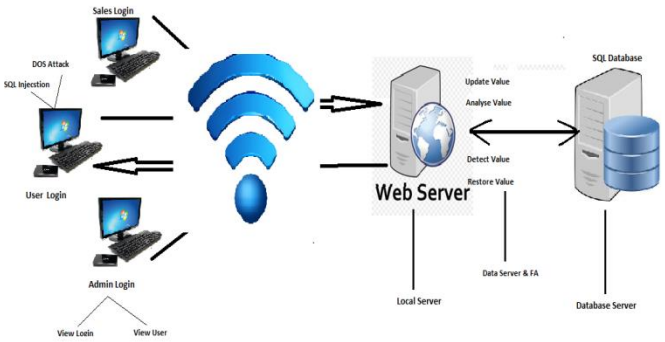


Fig 1. System architecture

Module Explanation:

Client Module:
Client can approve login get to. He can refresh all close to home data. He additionally can offer position to created secure encryption process.

Deals Department:
Deals office fill in as a programmer. Here programmer changes the database estimation of any item without confirmation.

Administrator Module:
Administrator is the approved individual, he check all the client action records just as profile. He likewise watch the hardening on changing the qualities from information base.

Synopsis:
First of all regularly database motors are turned over and altering location is instated when assault is played out a spring up worth is created at the administrator's board and the information worth is reestablished effectively.

V. ALGORITHM

Algorithm: Message Digest 5(MD5)

Input: Input data D = D1, D2, D3,.., Dn saves into the hash table.

Step 1: Arrange all input data into matrix format (save into log files).
Step 2: Consider m as a selected data act as a new selected data.
Step 3: m position gets changed after allocated time period.
Step 4: If () data get hacked.
Step 5: Data leakage is occurs.
Step 6: We have to check the leakage data and prevent

Step 7: Using Revert back function we have to get original data.

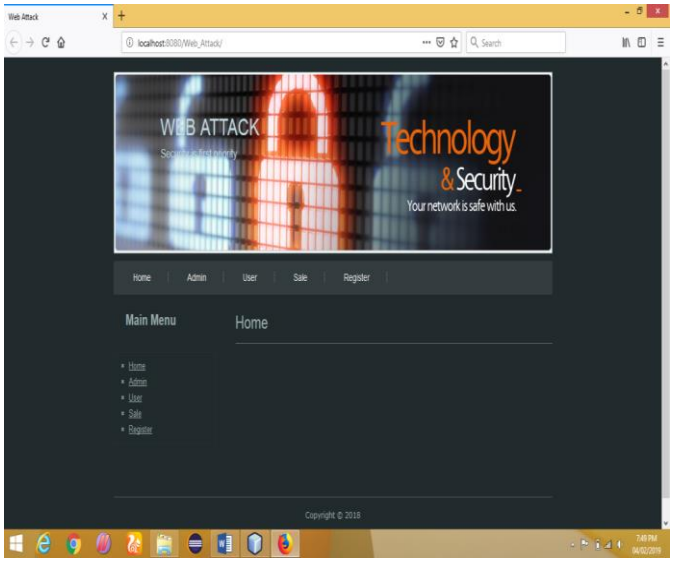
Step 8: When user calls that corrupted file, hash function gives to user a previous data.

Step 9: Return True.

VI. RESULT

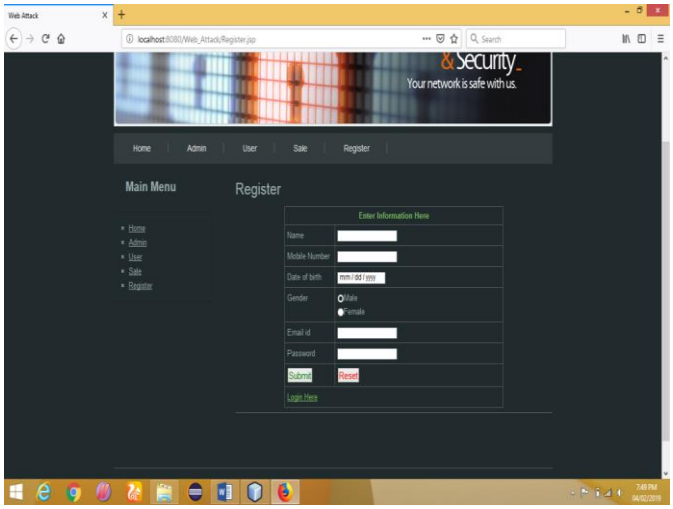
SCREEN SHOTS OF MODULES

1. HomePage:

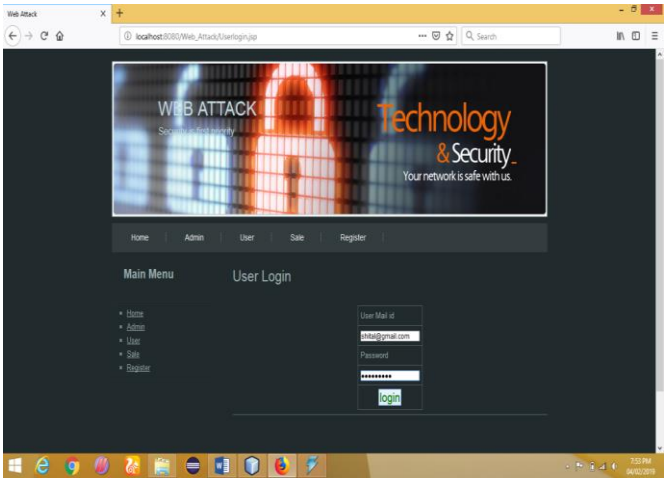


2. Register:

User registers and then login into web application.

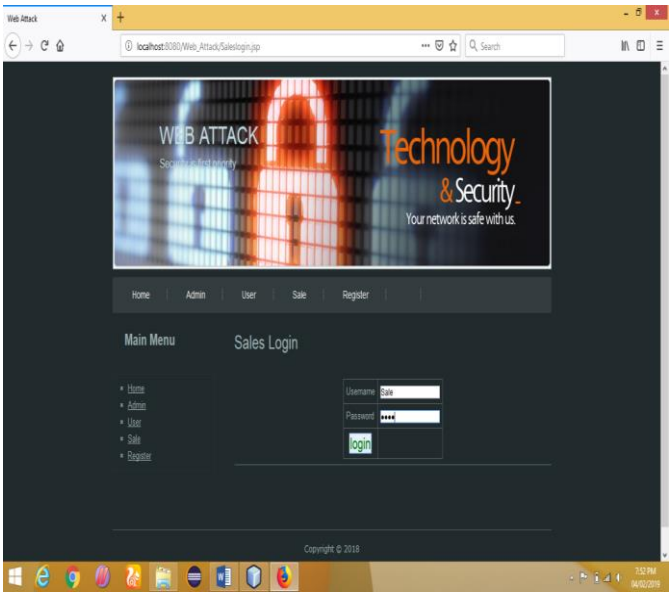


3. User Login:

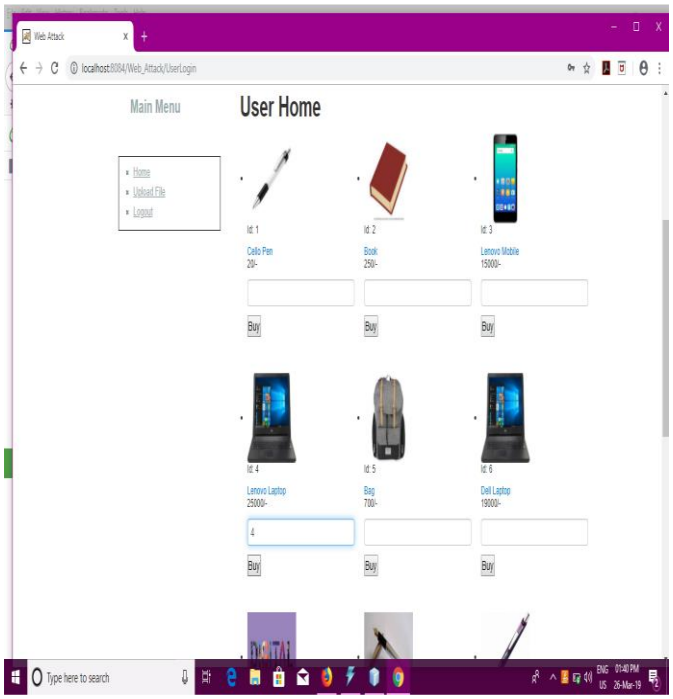


4. AdminLogin:

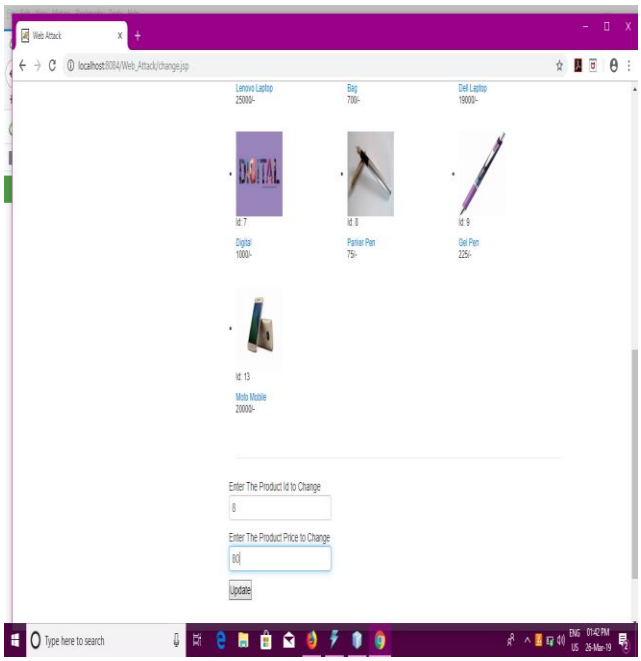
5. Sales Login:



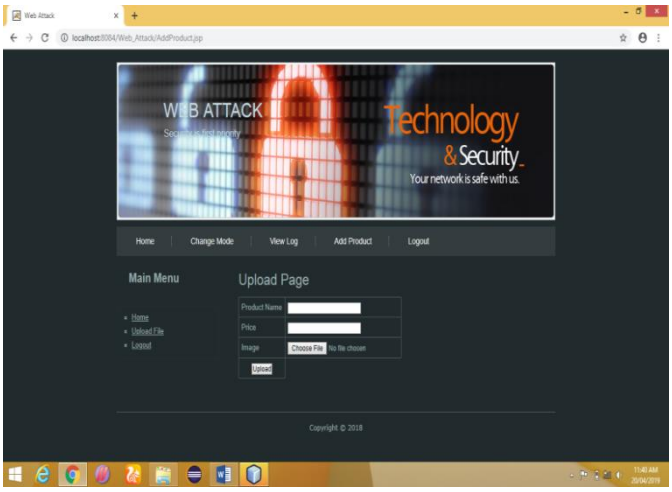
6. UserHome:



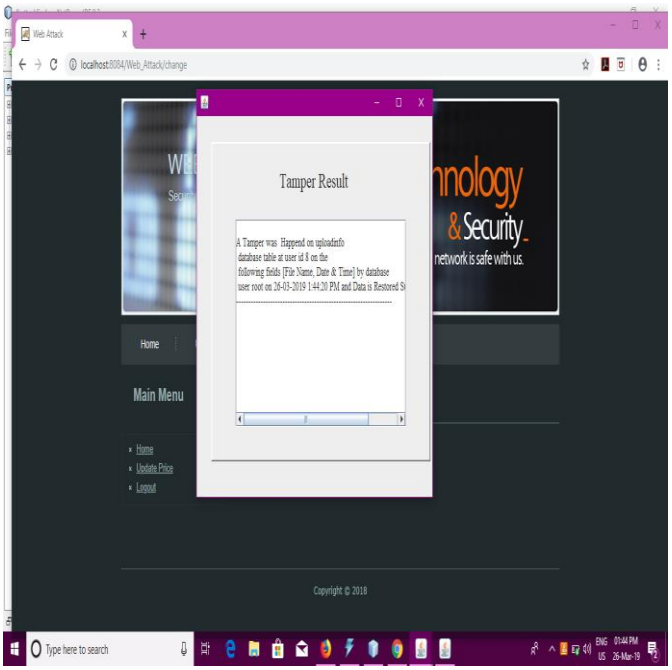
7. Sales Home :



8. Admin Home:

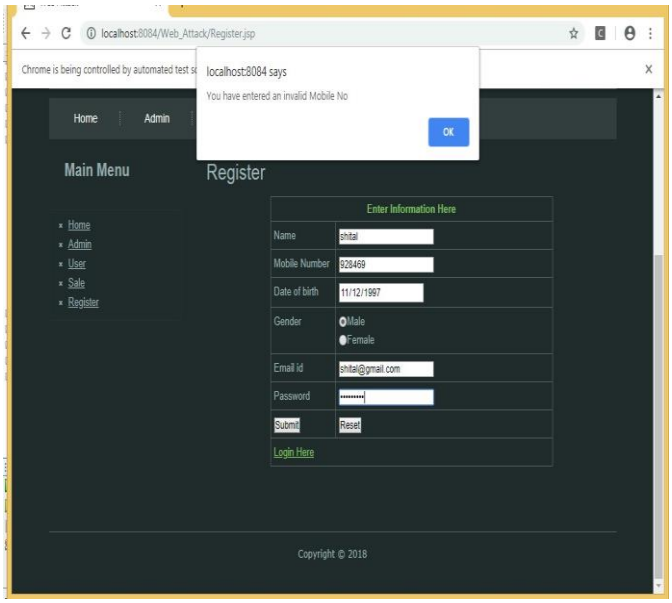


9.Tamper Result :

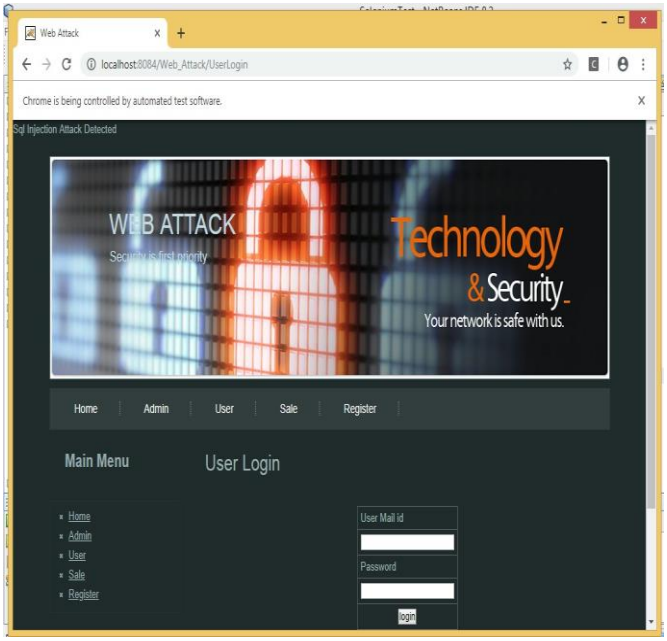


SELENIUMTESTING RESULTS :

1.Checking validity of registration page :



2. SQL Injection Attack Detected:



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It gives us a great pleasure in presenting the paper on "Information Leakage in Cloud Data Warehouse".We would like to take this opporunity to thank Prof. Niyamat Ujloomwale Of Computer Engineering Department,DYPSOE,Pune For giving us all the help and support we need during course of the paper writing work.we are really grateful to him.Our pecial thanks to Dr. Ashok Kasnale,DYPSOE who motivated us and createda healthy environment for us to learn in the best possible way.We also thank all the Staff Membersof our college for their support and guidance.

VII. CONCLUSION AND FUTURE SCOPE

Conclusion:

This is an Application of Modified data detection system through unauthorized access. By using MD5 algorithm we are restoring modified data in cooperation the front end web (HTTP) requests and back end DB (SQL) queries.

Future Scope:

In future we can analyze the phishing attack and cross site scripting attack can be installed on wide range of machines having different operating systems and platforms. In our future we work on global server to analysis the temper server.

VII. REFERENCES

[1]. X. Chen, J. Li, X. Huang, J. Ma, and W. Lou,New Publicly Verifiable Databases with Efficient Updates, IEEE Transactions on Dependable and Secure Computing, In press, 2015.

[2]. Anmin Fu, Shui Yu, Yuqing Zhang, Huaqun Wang, Chanying Huang, "A New Privacy-Aware Public Auditing Scheme for Cloud Data Sharing with Group Users" IEEE, 2016.

[3]. Ekta Naik, Ramesh Kagalkar, "Detecting and Preventing Intrusions In Multi-tier Web Applications", International Journal of Scientific & Engineering Research, Volume 5, Issue 12, December-2014.

[4]. V. Vu, S. Setty, A.J. Blumberg, and M. Walfish,A hybrid architecturefor interactive verifiable computation, IEEE Symposium on Securityand Privacy (SP), pp.223-237, IEEE, 2013.

[5]. S. Pearson and A. Benameur. "Privacy, security, and trust issues arising from cloud computing." Proc. Cloud Computing and Science, pp. 693–702, 2010.

[6]. NIST. "Top 10 cloud security concerns (Working list)."http://collaborate.nist.gov/twiki-cloud computing /bin /view/CloudComputing. Accessed February 2017.

[7]. M. O'Neill. "SaaS, PaaS, and IaaS: a security checklist for cloud models." http://www.csoonline.com /article/660065/saas-paas-and-iaas-a-security-checklist-for-cloud-models. Accessed August, 2015.

[8]. S. Garfinkel and M. Rosenblum. "When virtual is harder than real: security challenges in virtual machines based computing environments." Proc. 10th Conf. Hot Topics in Operating Systems, pp. 20–25, 2005.

[9]. S. T. King, P. M. Chen, Y-M Wang, C. Verbowski, H. J. Wang, and J. R. Lorch. "SubVirt: Implementing malware with virtual machines." Proc. IEEE Symp. Security and Privacy, pp. 314 – 327, 2006.

[10]. M. Price. "The paradox of security in virtual environments." Computer, 41(11):22–28, 2008.

[11]. J. Luna, N. Suri, M. Iorga andA. Karmel. "Leveraging the potential of cloud security service level agreements through standards." IEEE Cloud Computing, 2(3):32–40, 2015

[12]. P. Mell. "What is special about cloud security?" IT-Professional, 14(4):6–8, 2012. http://doi. ieeecomputersociety.org/10.1109/MITP.2012.84.Acces ed August 2015.

[13]. S. Pearson and A. Benameur. "Privacy, security, and trust issues arising from cloud computing." Proc. Cloud Computing and Science, pp. 693–702, 2010.

[14]. D. C. Marinescu, Cloud Computing; Theory and Practice, 2nd Ed. Morgan Kaufmann, San Francisco, Ca., 2017.

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CNN Based Diabetic Detection Using Thermal Images

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ABSTRACT

Diabetic Retinopathy is one of the serious issues around the world. That can make significant debilitation the eyes, including a lasting loss of vision. Early discovery of eye maladies builds the endurance rate by effective treatment. The proposed approach is to investigate AI system to distinguish DR utilizing Thermography pictures of an eye and to present the impact of warm variety of variation from the norm in the eye structure as a finding imaging methodology which are valuable for ophthalmologists to do the clinical determination. Warm pictures are pre-handled, and dependent on surface highlights from dark pictures, factual highlights from RGB and HSI pictures are extricated and arranged utilizing classifier with different blend of highlights. After that we utilize the pictures to our CNN classifier model and recognize the Diabetic Retinopathy.
Keywords : Diabetic Retinopathy, Infrared Thermography, CNN.

I. INTRODUCTION

Diabetic retinopathy is the most widely recognized intricacy brought about by the diabetes, which influences eyes and results in visual deficiency. It's because of harm of the supply routes and veins situated in the fundus of eye (retina) that are made out of light delicate tissues. In spite of the fact that DR can be pervasive now days, its aversion stays testing. Ophthalmologists normally analyze the nearness and seriousness of DR through visual appraisal of the deformity by direct assessment and by assessment of shading photos. There is huge number of diabetes patients universally, this procedure is costly just as tedious. Robotized DR framework is created to anticipate different related sicknesses that are broke down. Advanced Retinal Thermal pictures are broke down for the arrangement of different phases of Diabetic Retinopathy (DR).

This is a visual difficulty of the eye that influences 75% of diabetic patients prompting visual impairment in the age gathering of 20–64. There are various approaches to analyze DR. The World Health Organization reports that around 347 million individuals on the planet are influenced by DR. Around 366 million grown-ups with diabetes is evaluated by International Diabetes Federation. This figure is relied upon to ascend to 552 million by 2030. Assessed event of sort 2 diabetes mellitus and diabetic retinopathy is very high in India, as indicated by the examinations that have been led up until this point. In view of a study in 2000, the best three nations with most noteworthy number of diabetes mellitus are India (31.7 million), China (20.8 million) and USA (17.7 million). Prepared clinicians are required to look at the shading Thermal photos of retina and identify DR.

This is a viable method for identification yet requires the administration of experienced clinicians for investigation of the photos physically, which is tedious. Rustic regions, where the pace of diabetes is normally high, do not have the skill of well-prepared clinicians and advanced gear that are important for recognition of DR. Better framework with robotized identification systems are currently required to handle the developing number of people with diabetes. An early recognition can turn away or decline the spread of DR which generally may cause visual impairment. The proposed venture distinguishes kind of DR dependent on CNN grouping. The calculation recognizes gatherings of harmed pixels in the macula district and assesses the complete harmed territory in the macula from the shading retinal pictures.

II. Existing System

Detecting DR is a time-consuming and manual process that requires a trained clinician to examine and evaluate digital thermal photographs of the retina. DR is screened manually by ophthalmologist using fundus images due to insufficiently reliable existing automated DR detection systems. However, the manual screening process is the weakest link as it is a complicated and time-consuming process. Also, sophisticated equipment that are necessary for detection of DR.

2.1 Existing System Drawback:

- This method is highly uncomfortable for patient.
- The manual screening process is the weakest link as it is a complicated and time-consuming process.

The manual nature of DR screening methods promotes widespread inconsistency among readers.

III. Proposed System

The proposed framework uses administered AI procedures to order the warm pictures of an eye into "Typical" or “Diabetic Retinopathy". The shading transformation model is essential to separate the necessary highlights. In this work, two change, for example, RGB to Gray and RGB to HSI are done and RGB, Gray and HSI shading model are utilized as an info pictures for highlight extraction module. Highlight Extraction is the most significant advance in the examination of pictures. It is a procedure of get-together recognizable data from the picture itself from an article or gathering of items. Finally step use CNN model and recognize diabetic retinopathy. DR is a progressive condition with micro vascular alterations that lead to retinal ischemia, retinal permeability, retinal neovascularization and macular edema. If left untreated patients with DR can suffer severe visual loss. In developed countries DR constitutes the leading cause of blindness in the working age population and has a considerable economic impact on society especially on healthcare systems. Given that proper management of patients with DR can prevent more than 90% of cases of visual loss, it is extremely important to categorize, classify and stage the severity of DR in order to establish adequate therapy **3.1 System Design:**

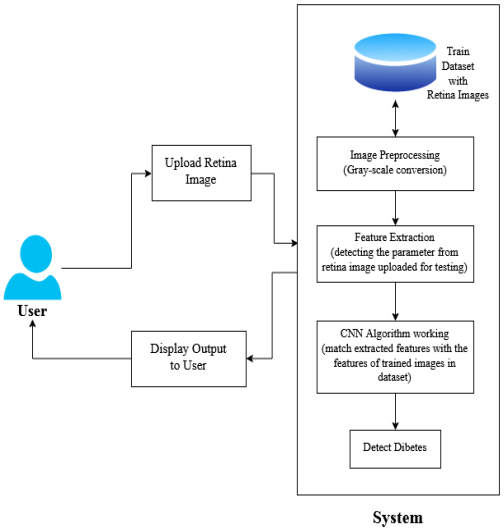


Fig -1: Proposed Methodology

- **Processing Techniques:**

The color conversion model is very important to extract the required features. In this work, two conversion such as RGB to Gray and RGB to HSI are done and RGB, Gray and HSI color model are used as an input images for feature extraction module.

- **Feature Extraction:**

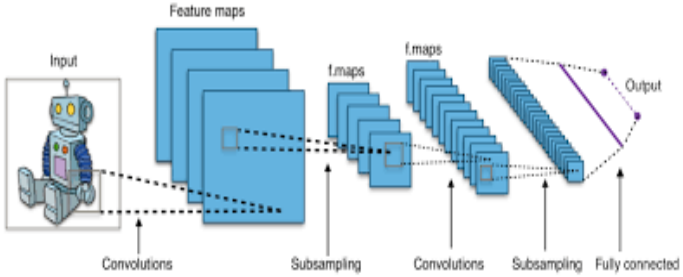
Feature Extraction is the most important step in the analysis of images. It is a process of gathering distinguishable information from the image itself from an object or group of objects. At last step use CNN model and detect diabetic disease.

IV. Future Scope

- The system could also be extended to detect other retinal diseases like glaucoma, age-related macular degeneration.
- In future, the algorithm could however be developed for the detection of dark lesions such as hemorrhages in addition to micro-aneurysms detection.
- The system could be extended to segmentation of color fundus videos and optical coherence tomographic images.

3.2 CNN (Convolutional Neural Networks) Algorithm:

In AI, Convolutional Neural Networks (CNN or ConvNet) are unpredictable feed forward neural systems. CNNs are utilized for picture arrangement and acknowledgment in light of its high exactness. It was proposed by PC researcher Yann LeCun in the late 90s, when he was roused from the human visual impression of perceiving things. The CNN pursues a various leveled model which takes a shot at structure a system, similar to a pipe, lastly gives out a completely associated layer where every one of the neurons are associated with one another and the yield is handled.



V. MATHMATICAL MODEL

Let 'S' be the system

S = {I, P, O}

Where,

I = {Input to the system. User gives Retina Image to the system for processing.}

P = {P1, P2, P3}

P1 = {Image Preprocessing}

P2 = {Apply Filtering Techniques, CNN}

P3 = {Detect Diabetes}

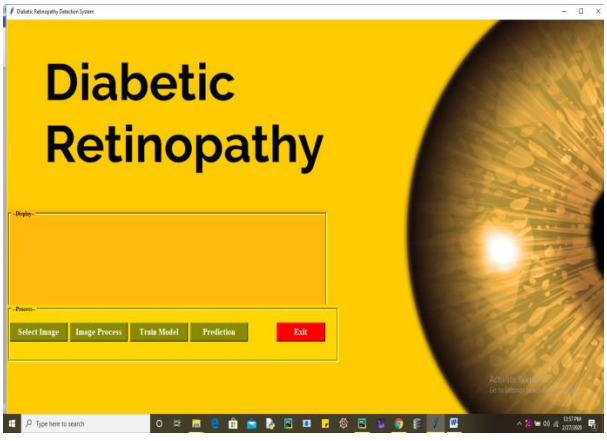
O = {User will get the Output. Whether the user has diabetes or not.}

VI. ADVANTAGES

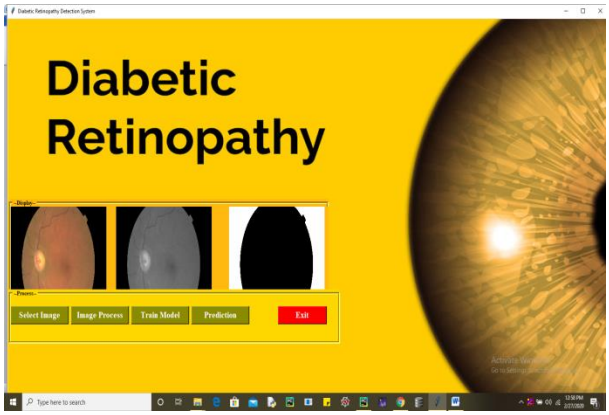
1. Easily detect Diabetic Eye Disease.
2. Help to improve diabetic person.

VII. SCREESHOTS

1.INPUT



2.OUTPUT



VIII. CONCLUSIONS

In the proposed work, a non-intrusive system has been displayed to assess the nearness of diabetic retinopathy. The order of diabetic sick and typical eye IR pictures is done through CNN (Convolution Neural Network) classifier utilizing different blend of surface and factual highlights. The recreation results show that the classifier in the location of diabetic retinopathy performed in the acknowledged level and give precision, affectability, particularity utilizing CNN classifier.

IX. ACKNOWLEDGEMENT

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III. REFERENCES

[1]. Ling Dai,Ruogu fang,Huating Li,Xuthong Hou,Bin Sheng,Qiang Wu, Weiping Jia,Clinical Report Guided Retinal Microaneurysm Detection with Multi-Sieving Deep Learning”.2017 IEEE.

[2]. Arun Govindaiah,Md.Akter Hussain,Roland Theodore Smith,and Alauddin Bhuiyan,” Deep Convetional Neural Network Based Screening And Assessment Of Age-Related Macular Degeneration From Fundus Images”.2018 IEEE 15th International Symposium on Biomedical Imaging(ISBI 2018).

[3]. Isabel N. Figueiredoa, Susana Mouraa,J´ulio S. Nevesa, Lu´ıs Pintoa, Sunil Kumarb, Carlos M.Oliveirac, Jo ao D. Ramosc “Automated retina identification based on multiscale elastic registration”, Computers in Biology and Medicine 00 (2016) 19.

[4]. N. Selvarasu, AlameluNachiappanand N. M. Nandhitha. , “Euclidean Distance Based Color Image Segmentation of Abnormality Detection from Pseudo Color Thermograph”, International Journal of Computer Theory and Engineering, Vol. 2, No.4, pp. 514 – 516, August 2010.

[5]. Padmapriya Nammalwar, Venkateswaran Narasimhan, Toshita KannanandSindhuMadhuriMorapakala, “Noninvasive Glaucoma Screening Using Ocular Thermal Image Classification”, CIT. Journal of Computing and Information Technology, Vol.25, No.3, pp. 227–236, September 2017.

[6]. HarshvardhanG, Venkateswaran N and Padmapriya N, “Assessment of Glaucoma with Ocular Thermal Images using GLCM Techniques and Logistic Regression classifier”, IEEE WiSPNET 2016 conference, pp.15341537, June 2006.

[7]. U. RajendraAcharya, Jen Hong Tan, Vidya S, Sharon Yeo, Cheahoon Too, Wei Jie Eugene Lim, Kuang Chua Chua, Louis Tong, “Diagnosis of

response and non-response to Dry Eye treatment using infrared thermography images", Elsevier, Infrared Physics & technology, Vol. 67, pp. 497503, September 2014.

[8]. L. Breiman, "Random Forests," Mach. Learn., vol. 4, pp. 5–32, 2001.

[9]. D. Rumelhart, G. Hinton, and R. Williams, "Learning internal representations by error propagation," 1985.

[10]. C. Cortes and V. Vapnik, "Support-Vector Networks," Mach. Learn., vol. 297, pp. 273–297, 1995.

[11]. A. J. Hanley and J. B. McNeil, "The Meaning and Use of the Area under a Receiver Operating Characteristic (ROC) Curve," Radiology, vol. 143, pp. 29–36, 1982.

[12]. C. Van Rijsbergen, Information retrieval. London, 1979.

[13]. A. D. Fleming et al., "Automated microaneurysm detection using local contrast normalization and local vessel detection," IEEE Trans. Med. Imaging, vol. 25, no. 9, pp. 1223–1232, 2006.

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Fake News Detection Using Machine Learning

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ABSTRACT

Information preciseness on Internet, especially on social media, is an increasingly important concern. We get various kind of information on our mobile devices on various Social Media platforms and Instant Messaging platforms. Many of which is news that has been posted or forwarded without verifying its authenticity. Spread of fake news is a growing concern for all the economics around the world. In this paper, we propose a method for "fake news detection" that can be used to verify the news authenticity. This method uses Web Scraping, Text Similarity to label the data as REAL or FAKE. The application will be supported on Android and iOS platform as well as web. The results may be improved by applying several techniques that are discussed in the paper. Received results suggest, that fake news detection problem can be addressed with machine learning methods.

Keywords : Machine Learning; Web Scrapping; Data Gathering; Sentiment Analysis; Text Similarity.

I. INTRODUCTION

Modern life has become quite convenient and therefore the individuals of the planet have to be compelled to impart the Brobdingnagian contribution of the net technology for communication and knowledge sharing. There is no doubt that internet has made our lives easier and access to surplus information viable. But this information can be generated and manipulated by common folks in bulk and the spread of such data is reckless due to the presence of social media. Platforms like Facebook and Twitter have allowed all kinds of questionable and inaccurate "news" content to reach wide audiences without proper monitoring. Social media users bias toward basic cognitive process what their friends share and what they scan notwithstanding believability permit these faux stories to propagate wide through and across multiple platforms and increase their credibility. Google and Facebook have now begun testing out new tools to help users better spot and flag fake news sites. Google is currently exclusion hoax sites from its advertising platform and is testing fact-checking labels in Google News, and Facebook is implementing a new system for users and fact checkers to report suspicious stories.

In this domain, computational machine learning algorithms have proven useful where data volumes overwhelm human analysis abilities. This paper describes a simple fake news detection method based on one of the machine learning algorithms – naïve Bayes classifier. The goal of the research is to examine how naïve Bayes works for this particular problem, given a manually labeled news dataset, and to support the idea of using artificial intelligence for fake news detection. Further, this technique can easily be applied to social platforms like Facebook and Twitter

by adding recent news and enhancing the dataset on a regular basis.

Web Scrapping is a technique employed to extract large amounts of data from different websites and to store as desired. This extraction of data is used to withdraw truthful information from reliable sources which in turn will update the dataset in real time. These sources are often news websites which are relied upon worldwide for authentic news and have good credibility.

A. NAIVE BAYES CLASSIFIER

In machine learning, naive Bayes classifiers are a family of simple probabilistic classifiers based on applying Bayes theorem. It predicts relationship probabilities for each class such as the probability that given record or data point belongs to a particular class. Naive Bayes classifier assumes that each one the options square measure unrelated to every alternative. Presence or absence of a feature doesn't influence the presence or absence of the other feature. It is not a single algorithm for training such classifiers, but a family of algorithms based on a common principle of the number of times a particular event has occurred.
Naive Bayes has been studied extensively since the Nineteen Fifties. It was introduced under a different name into the text retrieval community in the early 1960s and remains a popular baseline method for text categorization which is the problem of deciding documents as happiness to at least one class or the opposite withword frequencies as the features. With appropriate preprocessing, it is viable in this domain with more advanced methods including support vector machines resulting in improved accuracy.

B. SUPPORT VECTOR MACHINE

In machine learning, support-vector machines (SVMs, also support-vector networks)are supervised learning models with associated learning algorithms that analyze data used for classification and regression analysis. Given a set of training examples, each marked as belonging to one or the other of two categories, an SVM training algorithm builds a model that assigns new examples to one category or the other, making it a non-probabilistic binary linear classifier (although methods such as Platt scaling exist to use SVM in a probabilistic classification setting). An SVM model is a representation of the examples as points in space, mapped so that the examples of the separate categories are divided by a clear gap that is as wide as possible. New examples are then mapped into that same space and predicted to belong to a category based on the side of the gap on which they fall.

C. CLUSTERING

"Clustering" is process of grouping similar entities together. The goal of this unsupervised machine learning technique to seek out similarities within the datum and group similar data points together. Grouping the similar types of news based on their meaning and the source credit worthiness, this will give us underlying patterns of different data.

D. WEB SCRAPPING

Web Scraping may be a technique utilized to extract giant amounts of information from websites. The data which is extracted from any web source is saved to a local file in our computer or to a database in a table format.
The data available on these websites do not offer the functionality to save a copy for personal use. The only possibility then is to manually copy and paste the info - a awfully tedious job which might take several hours or generally days to complete. Web Scraping is that the technique of automating this method in order that rather than manually repetition the info from websites, the online Scraping software system can perform a similar task at intervals a fraction of the time. Here we are using web scraping technique to obtain news articles from websites of trusted news agencies. They are labeled as "REAL". In this way, we can update our database by keeping track of the

recently happening events and can also check the truthfulness of the freshly posted content on Facebook using the model. Basically, the use of web scraping is to modernize the dataset we have with newly happening events.

E. PRE-TRAINED SENTENCE ENCODER

The Universal Sentence Encoder encodes text into high dimensional vectors which will be used for text classification, semantic similarity, clustering and other natural language processing tasks. For Example Google Sentence Encoder is a simpler Deep Averaging Network (DAN) where input embeddings for words and bigrams are averaged together and passed through a feed-forward deep neural network.

F. SIAMESE MANHATTAN LSTM(MaLSTM)

Siamese is that the name of the overall model architecture where the model consists of two identical sub networks that compute some kind of representation vectors for two inputs and a distance measure is used to compute a score to estimate the similarity or difference of the inputs. MaLSTM (Manhattan LSTM) just refers to the fact that they chose to use Manhattan distance to compare the final hidden states of two standard LSTM layers. Manhattan distance slightly outperforms other reasonable alternatives such as cosine similarity.

I. LITERATURE SURVEY

Saeed Abu-Nimeh, Thomas Chen[1] published a paper on Proliferation and Detection of Blog Spam. The objective if this project is to prevent and detect spam.They used Support Vector Machine to classify whether the post is a spam or not. Also they used the source IP to check for prior spams. Marco Ramilli[2] published a paper on Comment Spam Injection Made Easy in IEEE journathe main objective of this paper is to check the authenticity of the data that is published on various online platforms.Qianqian Wang, Bin Liang,Wenchang Shi,Zhaohui Liang, Wei Sun[3]published a paper on Detecting spam comments with malicious users' behavioral characteristics solves the problem by using naïve bayes algorithm to detect the spam comments on various sites. This also takes into consideration of the pattern in which some users post spam comments. Amir A. Sheibani[4] published a paper Opinion mining and opinion spam: A literature review focusing on product reviews in IEEE journal that detects thefake reviews posted on online ecommerce websites. This is done by mining the opinion along with taking consideration of buyer habit and if they might have actually purchased and used this product.

II. COMPARATIVE ANANLYSIS OF THE SYSTEMS

Sr. No.	Paper Name	Author	Objective	Limitations
1.	Proliferation and Detection of Blog Spam	Saeed Abu-Nimeh, Thomas Chen	Method for preventing and mitigating such spam were broadly surveyed	Blog spammers likely operate from a couple of collocation facilities.
2.	Comment Spam Injection Made Easy	Marco Ramilli	Guaranteeing the authenticity of the published data	Trace a possible path resulting in a simpler solution.
3.	Detecting spam comments with malicious	Qianqian Wang, Bin Liang,Wenchang Shi,Zhaohui Liang, W	Propose several heuristic methods to detect	The preliminary evaluation of the proposed detection methods shows promising result.

	users' behavioral characteristics	ei Sun	spam comments	
4.	Opinion mining and opinion spam: A literature review focusing on product reviews	Amir A. Sheibani	To detect and flag fake reviews posted	Results are not Refined

III. ALGORITHM

A. FETCH DATA AND PRE-PROCESSING

Input: Link or text data
Output: Processed Data

Steps:

1. Scrap the source for raw data
2. Remove stop words from the data
3. Remove links and other unnecessary data
4. Tokenization of data
5. Calculate Term Frequency and Inverse Term Frequency matrix (TF-IDF)

B. EXTRACT SUMMARY

Input: Processed data
Output: Summary of data

Steps:

1. Score each sentence based on score of word from TF-IDF matrix
2. Calculate the average score
3. Multiply the average score with relevant factor and return all the sentences whose score is above the multiplied value

C. SENTIMENT ANALYSIS OF DATA

Input: Summary of data
Output: Sentiment of the data

Steps:

1. Classify data using various Naïve Bayes and Support Vector Machine models
2. Send the prediction to voting class
3. Return the most voted sentiment

D. FETCH SIMILAR DATA

Input: Summary of data
Output: Summary of similar data

Steps:

1. Crawl web for similar data based on geography and other meta data
2. Pre-process the data
3. Extract its summary

E. COMPARE DATA FOR SIMILARITY

Input: Source data, Similar fetched data
Output: Real or Fake label

Steps:

1. Convert data into vector of features
2. Compare source data with similar fetched data by measuring distance between their features.
3. Return Real or Fake label depending on similarity result

IV. RESULT

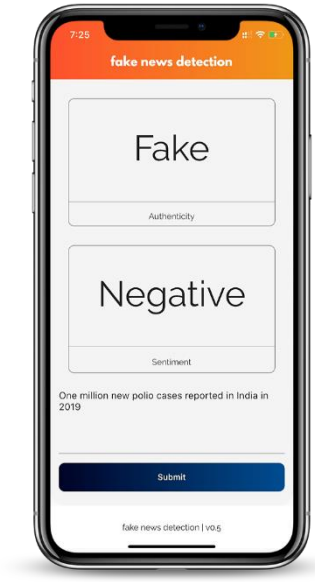

Fig. 1 Raw Text Input

In the above image we have supplied raw text data to the application and we get the result and sentiment

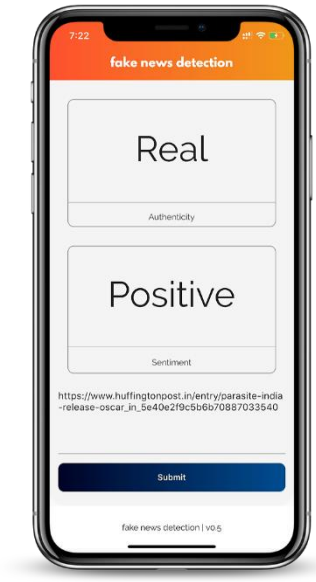

Fig. 1 URL Input

In the above image we have supplied URL of the source to the application and we get the result and sentiment of source data

V. ADVANTAGES

i. Takes semantic similarity into consideration
ii. Pays attention to the context

VI. LIMITATIONS

i. Cannot take historical data into consideration

VII. FUTURE WORK

i. Ability to check authenticity of images and videos

VIII. CONCLUSION

We study the various machine learning techniques such as Naïve Bayes, Support Vector machine, text similarity methods like MaLSTM and Sentence encoder to predict if the news is true based on the priors and studying the pattern of news article for prior spread of fake news. We will use Clustering to gather the data and group them based on the credit worthiness of the source and sentiment of the news. All the data for the news will be scraped off the websites of news publication and various other sources.

IX. ACKNOWLEDGEMENT

It gives us a great pleasure in presenting the paper on “Fake news detection”. We would like to take this opportunity to thank Dr. Panjak Agarkar, Head of Computer Engineering Department, DYPSOE, Pune for giving us all the help and support we need during course of the Paper writing work. We are really grateful to him. Our special thanks to Dr. E B Khedkar, Director DYPTC who motivated us and created a healthy environment for us to learn in the best possible way. We also thank all the staff members of our college for their support and guidance.

X. REFERENCES

[1]. Saeed Abu-Nimeh, Thomas Chen "Proliferation and Detection of Blog Spam" http://ieeexplore.ieee.org/document/8100379/

[2]. Marco Ramilli "Comment Spam Injection Made Easy" http://ieeexplore.ieee.org/document/4784952/

[3]. Qianqian Wang, Bin Liang, Wenchang Shi, Zhaohui Liang, Wei Sun "Detecting spam comments with malicious users' behavioral characteristics"http://ieeexplore.ieee.org/document/5689532/

[4]. Amir A. Sheibani "Opinion mining and opinion spam: A literature review focusing on product reviews"http://ieeexplore.ieee.org/document/6483152/

[5]. Yinfei Yang and Amin Ahmad "Multilingual Universal Sentence Encoder for Semantic Retrieval"https://ai.googleblog.com/2019/07/multilingual-universal-sentence-encoder.html

[6]. Wael Gomaa and Aly Fahmy "A Survey of Text Similarity Approaches" https://www.researchgate.net/publication/259181798_A_Survey_of_Text_Similarity_Approaches

[7]. Chapman, S. (2006). " SimMetrics : a java & c# .net library of similarity metrics", http://sourceforge.net/projects/simmetrics/

[8]. Peterson, J. L. (1980). Computer programs for detecting and correcting spelling errors, Comm. Assoc. Comput. Mach., 23:676-687

[9]. Patwardhan, V. (2003). Incorporating dictionary and corpus information into a context vector measure of Minnesota, Duluth.

[10]. Leacock, C. & Chodorow, M. (1998). Combining local context and WordNet sense similarity for word sense identification. In WordNet, An Electronic Lexical Database. The MIT Press.

[11]. Mukherjee A, Liu B, Glance N (2012) Spotting fake reviewer groups in consumer reviews In: Proceedings of the 21st, International Conference on World Wide Web, WWW '12, 191–200.. ACM, New York, NY, USA.

[12]. Liu B (2014), "The science of detecting fake reviews", http://content26.com/blog/bing-liu-the-science-of-detecting-fake-reviews/.

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Anomaly Based Intrusion Detection System Using Soft Computing and Data Mining Approach

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ABSTRACT

Data and application security is most essential in today environment due to highly resource utilization in network environment. Various network attacks detection and prevention techniques has already introduced by various researchers in many existing systems. Two identification of malicious behaviour from large traffic and take action against such request is the part of IDS. Various machine learning techniques also already developed to generate strong rules with different Optimization algorithms. But still IDS facing some issues like unknown attack detection accuracy, low accuracy for network attacks etc. However, cyber security threats are also growing as the contact points to the Internet are increasing. A significant security issue today is the intrusion detection system (IDS). A Network Intrusion Detection System (NIDS) helps system administrators to detect violations of network security within their operations. However, many problems arise when a robust and efficient NIDS is developed for unexpected and unforeseeable attacks. In this work, a deep learning based approach implement for effective and flexible NIDS. It is confirmed that the deep neural network is effective for NIDS through the performance test. System uses Recurrent Neural Network (RNN) which is supervised learning algorithm to detect known and unknown attacks into the both environments. Initially, Data pre-processing has done with Weka tool and define standard technique to eliminate unwanted records for attribute values. The proposed RNN algorithm works in both models for training and testing respectively. In first section we train the model with different network intrusion data sets (KDD CUP99, NSLKDD, ISCX, NB-15 etc.). Once a rule has created system deals with testing model an imbalance data generation environment. The partial implementation introduce proposed RNN provides better accuracy then other machine learning techniques. Additionally, we are evaluating and comparing different deep learning algorithms, namely RNN, CNN, DNN and PNN algorithm on cloud environment to detect intrusion in the network.

Keywords: Intrusion Detection System, Data Mining and IDS, KDD, WSN Trace Dataset

I. INTRODUCTION

The Intrusion detection system is defined as the system or software tool to detect unauthorized access to a network or computer system. Intrusion is a malicious, harmful entity which is responsible for network attack. This entity violates integrity, confidentiality and availability of a system resource. IDS is capable of detecting all types attack like malicious, harmful attack, vulnerability, data driven attacks and host based attacks.

Basically Intrusion Detection System (IDS) classified into two types- Host Based Intrusion Detection System (HIDS) and Network based Intrusion Detection System (NIDS). Today's system security foundation promisingly relies on Network intrusion detection Framework (NIDS)

[3,4,5]. NIDS gives security from known intrusion assaults. It is unrealistic to stop interruption assaults, so associations should be prepared to handle them. IDS is a cautious component whose main role is to keep work based on every conceivable assault on a framework. IDS is a procedure used to distinguish suspicious movement both at system and host level. Two principle methods of IDS used for accessing purpose are abnormality identification and abuse location. The oddity identification model depicts the typical conduct of a client to recognize the current client's irregular or unaccustomed activity.

II. METHODS AND MATERIAL

The proposed system works with deep learning approach. Program first collects examination data from various online and offline outlets. Once the data is collected through the program it applies pre-process and feature extraction. After the rules are created and stored into local database directory called as Background rules (BK Rules). Background rules are given as an input to the deep learning approach for the classification of sub attack. In this work, The RNN algorithm was applied to pre-processing distilled data to create a learning model, and the entire KDD Cup 99 dataset was used for testing. In the end, the accuracy, detection rate, and false alarm rate were determined to assess the detection efficiency of the RNN model.

The main objectives of this project are itemized as follows:

- The classification of attacks based on their characteristics is presented. Different components that make the detection of low-frequency attacks (like U2R and R2L, Worms, Shell Code etc.) hard to accomplish by machine learning strategies are examined and techniques are proposed for enhancing their detection rate.
- The discourse of different existing literature for intrusion detection is provided, featuring the key characteristics, the detection mechanism, feature selection is employed, attacks detection capability.
- The critical performance analysis of different intrusion detection techniques is provided with respect to their attack detection ability. The limitations and comparison with different methodologies are additionally talked about. Various suggestions are provided for enhancement in each category of techniques.
- Future headings of Deep learning are provided for intrusion detection applications.
- To generate strong and dynamic rules depending upon the real time behavior of the packet in training phase

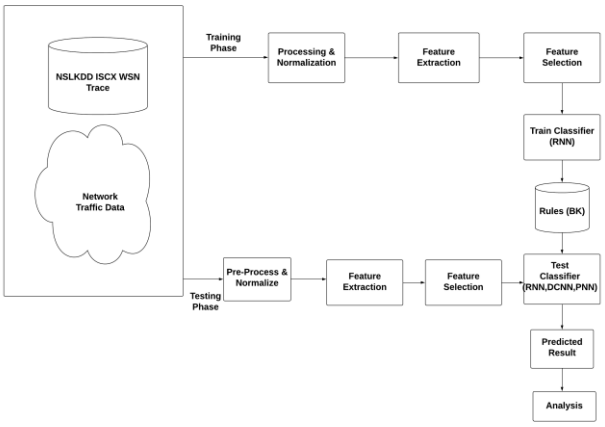

Figure 1: Proposed System Architecture

Training Phase:

Step 1: To generate the rules based on supervised learning algorithm we used synthetic dataset like KDDCup99, NSLKDD, ISCX and WSN Trace etc.

Step 2: Select features for each selected instances and execute the train classifier to generate the training rules.

Step 3: The result of training modules called as training rules or policies which has stored in repository those defined as Background Knowledge (BK).

System Testing Phase:

Step 1: System accumulate the network traffic data from network audit log data or NSLKDD

Step 2: Read each input packets from network environment and apply various machine learning as well as deep learning algorithm (RNN).

Step 3: RNN has apply to generate the runtime weight for each input packet and validate with the quality threshold.

Step 4: Classify the detected packet as master attack like DoS, PROBE, U2R, R2L, Network attacks etc), and finally also shows the subtype of attack for respective class.

Weight calculation using deep learning Algorithm (RNN)

Input: Train dataset which already store. Background knowledge by train classifier TD[], test dataset includes multiple pdf'sTestDb[], and desired threshold for validate the current weight.

Output: Hash_Map<class_label, sim_weight> all objects which having similarity weight larger than desired threshold.

Step 1: Read each test object using below function

$$testFeature(m) = \sum_{m=1}^{n} (.featureSet[A[i] \dots \dots .A[n] \leftarrow \text{TestDBLits})$$

Step 2: Extract each feature as a hot vector or input neuron from $testFeature(m)$ using below equation.

$$\text{Extracted\_FeatureSetx[t……n]} = \sum_{x=1}^{n}(t) \leftarrow testFeature\ (\text{m})$$

Extracted_FeatureSetx[t] contains the feature vector of respective domain

Step 3: extract each train objects using below function

$$trainFeature(m) = \sum_{m=1}^{n} (.featureSet[A[i] \dots \dots .A[n] \leftarrow \text{TrainDBList})$$

Step 4: extract features from each test set as best features for specific document object $testFeature(m)$ using below function.

$$\text{Extracted\_FeatureSetx[t……n]} = \sum_{x=1}^{n}(t) \leftarrow testFeature\ (\text{m})$$

Extracted_FeatureSetx[t] contains the feature vector of respective domain.

Step 5: Evaluate each test vector with entire train features and generate weight for respective instance

$$weight = calcSim\ (\text{FeatureSetx} \,||\, \sum_{i=1}^{n} \text{FeatureSety[y]})$$

Step 6: Return object [label] [weight]

- **MATHEMATICAL MODEL**

1) Let S be the system: Such that,

S= {Sys1,Sys2, Sys3, Sys4}

S1= Data preprocessing

S2= Feature Selection and Normalization

S3= Deep Learning Model

S4= Analysis

2) Let S1 be a data preprocessing phase:

S1= {TrainDB}

$$MI(x{:}c) = \sum_{k=0}^{n} (k=0)P(X=x, C=c).\log\left(P(X=x, C=c)\right)/\left(P(X=x)P(C=c)\right))$$

Where,

MI= preprocess Information

C= Class which can either be normal or anomaly

X= set of x vectors

3) Let S2 be a feature selection and normalization phase: S2= F1,F2, F3,..,Fn
F= All features in TrainDB
Policy for attribute selection:
Info = {protocol; service; duration; flag; srcbyte;dstbyte}
Where,
Info= Information feature selection

4) Let S3 be the deep learning model:
S3= {Test-Db, Packet(i), class}
Class= normal, anomaly
Packet= Network traffic packets
5) Let S4 be the analysis phase:
S4={Accuracy, Detection Rate}
Find accuracy of each classifier M.
Compare accuracy of each individual classifier with D.
Where,
D= deep learning model
Select best classifier model, i.e. M=D.
System basically consists of three phases like training phase,
testing phase and analysis phase. Here is the set dependency of the entire system.
System = {Train, Test, Analysis}
Train = {preprocess, feature extract, deep learning}
Test = {Pattern Match, Th, Weight, Subclass}
class = {Input →Bk-Rules→ Weight} {Normal; Attack} {sub attacks}
Analysis ={dos, probe, U2R, R2L, Normal, unknown

III.RESULTS AND DISCUSSION

The proposed, current machine learning algorithm and the deep learning algorithms were used in two different ways by the Project. We have also introduced computational research in base system which can recommend algorithms with KDDCUP99 data set and power-contributing architecture incorporated with deep learning algorithms with custom network audit dataset. The program measured the consistency of the description and the time complexity in the same setting. Figure 2 above demonstrates the classification performance of data collection by KDDCUP using the density-based approach of the machine learning algorithm program Figure 3 used to classify and predict the precision of the proposed system using different methods like RNN algorithm.

Existing System Results

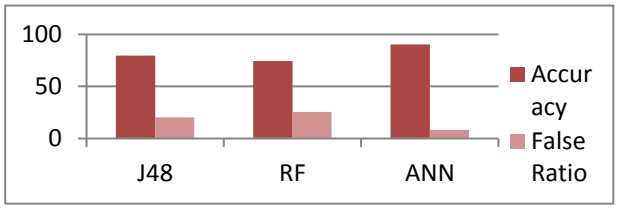

Figure 2:Detectionaccuracy for KDD :CUP99dataset using machine learning

The above figure 2 Shows accuracy of kddCup 99 results classification, with five different classes. Average software output is around the algorithm for the machine learning 88.50% for all classes.

Proposed Result

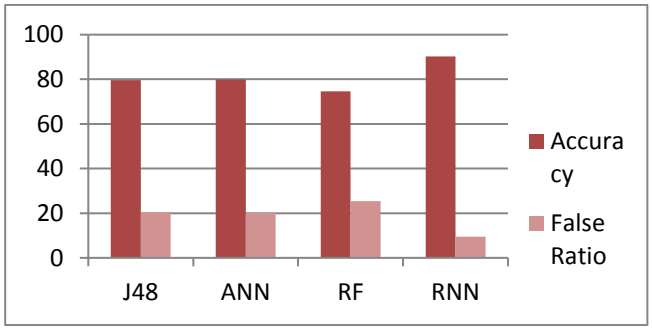

Figure 3 : Detection accuracy various network dataset using deep learning (RNN)

The above figure 3 Shows average efficiency of identification in various databases, of (n) different classes. The system's mean performance with the machine learning algorithm is around 95% for all (n) classes.

IV.CONCLUSION

In this work, we proposed a deep learning based RNN-IDS method to proposed effective intrusion detection system. We utilized the synthetic based intrusion dataset - NSL-KDD to evaluate anomaly detection accuracy. In future, we plan to implement an IDS using deep learning technique on cloud environment. Additionally, we Evaluate and compare different deep learning technique, namely. RNN, DNN, CNN and PNN on NSL-KDD dataset to detect intrusions in the network. The system basically works like machine learning as well as reinforcement algorithm to evaluate the unknown instances during the data testing. The effective rule system provides better classification and detection accuracy for classes. Various datasets are used for experiment analysis to evaluate the algorithm performance with multiple test and conclude we get result on satisfactory level.

V. REFERENCES

[1] Salo, Fadi, et al. "Data Mining Techniques in Intrusion Detection Systems: A Systematic Literature Review." IEEE Access 6 (2018): 56046-56058.

[2] Vinayakkumar, R., et al. "Deep Learning Approach for Intelligent Intrusion Detection System." IEEE Access 7 (2019): 41525-41550.

[3] Weiwei Chen, Fangang Kong, Feng Mei, GuiginYuan, Bo Li, “a novel unsupervised Anamoly detection Approach for Intrusion Detection System”, 2017 IEEE 3rd International Conference on big data security on cloud, May 16-18,2017, Zhejiang, China.

[4] Zaman, Marzia, and Chung-Horng Lung. "Evaluation of machine learning techniques for network intrusion detection."NOMS 2018-2018 IEEE/IFIP Network Operations and Management Symposium.IEEE, 2018.

[5] Zhang, Hao, et al. "Real-time Distributed-Random-Forest-Based Network Intrusion Detection System Using Apache Spark." 2018 IEEE 37th International Performance Computing and Communications Conference (IPCCC). IEEE, 2018.

[6] Nathan Shone , Tran Nguyen Ngoc, Vu DinhPhai , and Qi Shi. Deep Learning Approach to Network Intrusion Detection”. IEEE Transactions on emerging topics in computational intelligence. VOL. 2, NO. 1, FEBRUARY 2018.

[7] Guangzhen Zhao, Cuixiao Zhang* and LijuanZheng.”Intrusion Detection using Deep Belief Network and Probabilistic Neural Networks”.IEEE International Conference on Computational Science and Engineering (CSE) and IEEE International Conference on Embedded and Ubiquitous Computing (EUC).2017.

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