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Remote Vehicle Tracking System using GSM Modem and Google MAP

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ABSTRACT

As the number of urban vehicles grows rapidly with the development of the economy, people are getting more concerned about vehicle theft prevention, which creates broader market prospects for vehicle anti-theft products. Various vehicle anti-theft devices have been jumped up lately, however the result is still disappointing for all kinds of devices have its drawbacks. Domestic and overseas vehicle anti-theft products are technologically classified into three categories: mechanical lock devices, car alarm system, and vehicle tracking/recovery systems, mainly aiming at preventing cars to be broken in and driven away. To address the limitations of existing vehicle tracking/alarming systems, we propose an anti-theft system mainly based on GPS and GSM system, designed and realized by integration of traditional anti-theft alarm, GPS, GSM SMS system and mobile phone android applications. The owner will receive a short message sent by GSM module as soon as the car is stolen, then he can use android mobile phone application to track down the car. Compared with traditional vehicle anti-theft systems which require customers to install software and track the location of the car on computers, our system use android mobile phone as client terminal, offering customers with more immediate, convenient and cheaper service. Additionally, since we use the free Google Map for location, which means that customers simply have to pay for WAP data traffic and SMS costs. Among them, SMS module costs less than ￥5. 00 monthly if the owner has ordered text message packages launched by mobile telecommunication carriers. For further development, manufacturers cooperating with mobile telecom carriers can allow customers to send and pick up messages at very low price.

Keywords: GPS, GSM, Bluetooth, IOT, Freegoolemap Locking

I. INTRODUCTION

In the final few decades, India has got along at such a tremendous rate that many companies have strongly established themselves here. These companies take a vast measure of men with them. Arranging transportation to such a huge mass is a cumbersome task involving many intricacies. Broadly speaking, this transport is set up through the local transport vendors on a yearly contract basis; recently happen mishaps such as burglary, assault cases, etc. The growth of satellite communication technology is easy to place the vehicle locations. Vehicle tracking systems have taken this technology into the daily life of the common individual. Today GPS used in automobiles, ambulances, fleets and police vehicles are common sights along the roads of developed nations. All the existing technology support tracking the vehicle station and status The GPS/GSM Based System is one of the most important systems, which integrate both GSM and GPS technologies. It is necessary due to the many of applications of both GSM and GPS systems and the wide usage of them by millions of people throughout the globe [1]. This system designed for users in land, building and shipping business, provides real-time data such as location, speed and anticipated arrival time of the user is moving vehicles in a concise and easy-to-understand format. This arrangement may also useful for communication process among the two peaks. Currently GPS vehicle tracking ensures their safety as travelling. This vehicle tracking system found in clients vehicles as a theft prevention and delivery device. Vehicle owner or Police follows the signal emitted by the tracking scheme to locate a robbed vehicle in parallel the stolen vehicle engine speed going to decrease and pushed to off. After switch of the locomotive, the motor cannot restart without permission of password. This system established for the four wheelers, Vehicle tracking usually used in

navy operators for navy management functions, routing, send off, on board information and protection. The applications include monitoring driving performance of a parent with a teenage driver. Vehicle tracking systems accepted in consumer vehicles as a theft prevention and retrieval device. If the theft identified, the scheme sends the SMS to the vehicle owner. Later on that vehicle owner sends the SMS to the controller, issue the necessary signs to block off the motor. In this composition, the reviewed related technology in section 3. The vehicle tracking and engaging schemes

II. METHODS AND MATERIAL

Existing Method

The commonly used vehicle tracking/recovery systems is based on radio signals such as the LoJack tracking system, the ProScout GPS Vehicle Tracking System, the TravelEyes2 Vehicle Tracking System and hence along. Later on a vehicle has been stolen; the owner can report the problem to the police or the GPS tracking office. The wireless transmitter or the GPS device in the car will send wireless signals which can be plucked up by the tracking device. The wireless signals can be utilized to pinpoint the location and lead police to rapid recovery. Nevertheless, these schemes have high monetary value and often come with a monthly monitoring fee.

Disadvantages

- These car alarm systems do not handle large regions; the field is scarcely less than 100m.
- Once the car is stolen, the proprietor and the police cannot go after the placement of it.

Survey of the Related Work

In [2], the hardware and software of the GPS and GSM network were acquired. The proposed GPS/GSM based System has the two constituents, foremost is a mobile unit and another is holding station. The organization processes, interfaces, connections, data transmission and receipt of information among the fluid unit and command stations are running successfully. These solutions are compatible with GPS technologies.

In [5], this system provided vehicle cabin safety, security based on embedded system by changing the existing modules. This method monitors the level of the toxic gases such as CO, LPG and alcohol within the vehicle provided alert information as alarm during the dangerous places. The SMS sends to the authorized person through the GSM. In this method, the IR Sensor used to detect the static obstacle in front of the vehicle and the vehicle stopped if any obstacle detected. This is avoiding accidents due to collision of vehicles with any static obstacles.

In [8] this paper, the proposed tracking system based on cloud computing infrastructure. The sensors are used to monitor the fuel level, driving conditions, and speed of the vehicle. All the data transferred to cloud server-using GSM enabled device. All the vehicles equipped with GPS antenna to locate the place. To avoid the drunk and drive, the alcohol sensor installed to monitor the driver position. The proposed technology significantly avoids the accident in highways.

III. RESULTS AND DISCUSSION

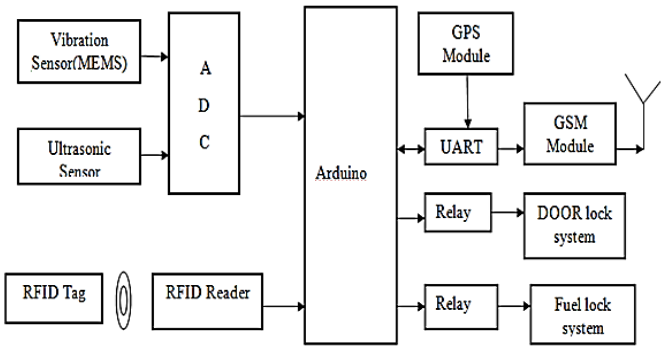
A. Proposed Method

We propose an anti-theft system mainly based on GPS and GSM system, designed and realized by integration of traditional anti-theft alarm, GPS, GSM SMS system and mobile phone android applications. The RFID tag is continuously read with the use of an RFID reader. While getting authenticated by the user the lock system didn't execute. For authorized use the password set by the user. If the entered password is mismatched means automatically we will generate a notification through Short message. In addition, of the fuel and door lock extracted automatically. Ultrasonic sensors are used to identify potholes and humps and also to measure their depth and height respectively. IR Sensor is used to detect the object in front of the Vehicle.

Advantages

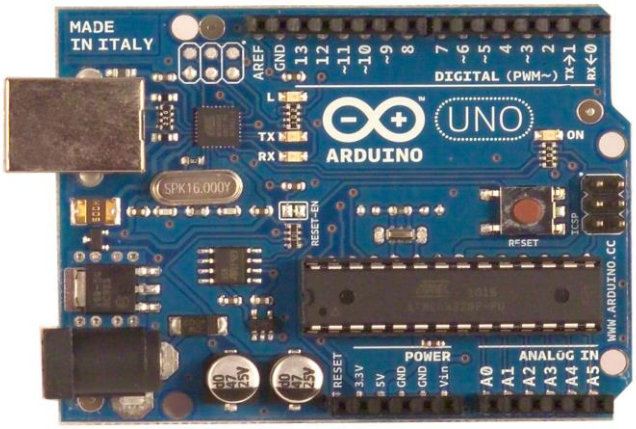
The owner put up simply use mobile phone to locate and monitor the car in real time

B. Block Diagram



Arduino:

The Arduino UNO is a microcontroller board based on the ATmega328. It accepts 14 digits Input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connector, a power jack, an ICSP header, and a reset button.It carries everything needed to hold up the microcontroller; simply join it to a data processor with a USB cable or power it with an AC-to-DC adapter or battery to generate gone. The UNO differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial convertor. "UNO" means one in Italian and is named to cross off the forthcoming expiration of the Arduino 1.0. The UNO and version 1.0 will be the reference versions of the Arduino, moving ahead. The UNO is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with old variants.



GPS Technology:

The Global Positioning System (GPS) is a satellite-based navigation system consists of a network of 24 satellites located in area. The organization provides essential information to military, civil and commercial users around the universe and which is freely accessible to anyone with a GPS receiver. GPS operates in any weather circumstances at anywhere in the cosmos. Normally, no subscription fees or system files to use GPS. A GPS receiver must be locked on to the signal of at least three satellites to estimate 2D position (latitude and longitude) and rail movement. With four or more satellites in view, the receiver can specify the user's 3D position (latitude, longitude and elevation). Once the vehicle position has been found out, the GPS unit can specify other information like, speed, distance to destination, time and other. The GPS receiver is applied for this research work to discover the vehicle position and provide information to a responsible person through GSM technology

GSM Modem:

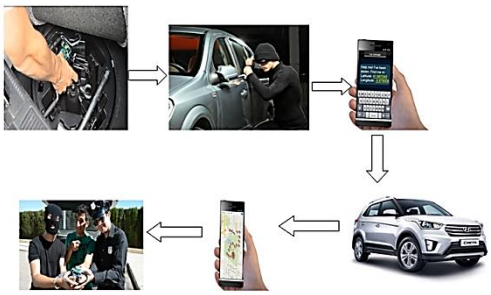
The GSM modem is a specialized case of modem which accepts a SIM card works on a subscriber's mobile number over a network, just like a cellular phone. It is a cell phone without a presentation. Modem sim300 is a triband GSM/GPRS engine that works on EGSM900MHz, DCS1800MHz and PCS1900MHz frequencies. GSM Modem is RS232-logic level compatible, i.e., it takes-3v to -15v as logic high and +3v in +15 as a logic low. MAX232 is used to convert TTL into RS232 logic level converter used between the Arduino and the GSM board. The signal at pin 11 of the Arduino is sent to the GSM modem through pin 11 of

max232. This signal is received at pin2 (RX) of the GSM modem. The GSM modem transmits the signal from pin3 (TX) to the Arduino through MAX232, which is received at pin 10 of IC1 [9].

Features of GSM

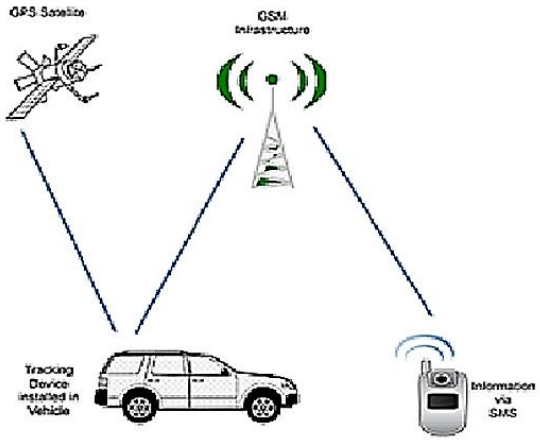
- Single supply voltage 3.2v-4.5v
- Typical power consumption in SLEEP Mode: 2.5mA
- SIM300 tri-band
- MT, MO, CB, text and PDU mode, SMS storage: SIM card
- Supported SIM Card: 1.8V,3V

C. Project Overview



In Vehicle tracking project, you can track the localization of your Vehicle. This project gives Minute-by-minute updates about vehicle location by sending SMS through GSM modem. This SMS contains longitude and latitude of the position of the vehicle. Arduino is the central processing unit CPU of our labor. Arduino gets the coordinates from GPS modem and then it sends this data to the user in Text SMS. GSM modem is used to send this information via SMS. SMS will be sent to the owner of the vehicle. GPS based Vehicle tracking system is required in many situations, like in case of car theft detection. Car tracking using GPS project will be useful when our car is stolen. Besides, if someone wants to track school bus of their children, at that time it will be helpful to ascertain out the location of the children. One more situation is when some company wants to track the position of the cab or transport bus of the employee then in this case this vehicle tracking system will be really utilitarian.

In GPS tracking system the position of the vehicle is transmitted to a remote spot and it is done by GSM modem. Global Positioning System (GPS) modem requires minimum 3 satellites to calculate the precise position. This modem communicates only in single way with 8051 microcontroller. This implies that it can simply send data to the microcontroller. GPS Modem does not welcome any information from the microcontroller. At the same time GPS modem does not send data to Satellite, it only receives signal from the satellites Vehicle tracking project, you can track the location of your Vehicle. This project gives Minute-by-moment updates about vehicle location by sending SMS through GSM modem. This SMS contains longitude and latitude of the position of the vehicle. Microcontroller is the central processing unit CPU of our labor. Microcontroller gets the coordinates from GPS modem and then it sends this data to the user in Text SMS. GSM modem is used to send this information via SMS. SMS will be beamed to the proprietor of the vehicle.



The vehicle owner receives the SMS that his vehicle is stolen. Then he can send back an SMS to the GSM modern to step the engine. Here, GSM Modern is interfaced to the PIC microcontroller that receives the message, the O/P of which activities a mechanism

deactivates the ignition of the vehicle resulting in stopping the vehicle. This project uses a specify the ON/OFF condition of the vehicle. Therefore, the owner of the vehicle from anywhere can deactivate the engine of the vehicle. Further, his proposed system can be developed by interfacing a GPS system, which will give the exact location of the vehicle in terms of the longitude and latitude. Further, this data can be sent to the vehicle owner through an SMS who can enter these values on google maps to get the vehicle location.

D. Future Scope

So, these are GPS and GSM based vehicle theft control system projects by implementing these vehicle security system projects, a vehicle can be protected from the theft, in future this anti-theft system for the motorcar will be enhanced to operate as an integrated-data-security for car communication system. it would ascertain that all the information exchanged within the vehicle and outside the vehicle is protected.

IV. CONCLUSION

In this work, we have suggested a novel method of vehicle tracking and locking systems used to track the theft vehicle by using GPS and GSM technology. This system puts into the sleeping mode vehicle handled by the owner or authorized persons; otherwise goes to dynamic mode. The manner of operations changed by persons or remotely. When the theft identified, the responsible people send SMS to the gimmick, then release the command signals to block the engine motor. After that, all the doors locked. To spread out the doors or to restart the engine authorized person needs to record the password in this method, easily track the vehicle seat and the doors

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