

REAL TIME VEHICLE TRACKING SYSTEM USING GSM AND GPS WITH FUEL AND SPEED INDICATOR

Mr. Manojkumar Lokhnade
Department of Electronics and Telecommunication Engineering
Vishwabharati Academy College of Engineering, Ahmednagar- 414201[MS], India.
Savitribai Phule Pune University

Prof. V. G. Puranik
Department of Electronics and Telecommunication Engineering
Vishwabharati Academy College of Engineering, Ahmednagar- 414201[MS], India.
Savitribai Phule Pune University

ABSTRACT

Currently almost of the public having an own vehicle, theft is happening on parking and sometimes driving insecurity places. The safe of vehicles is extremely essential for public vehicles. Vehicle tracking and locking system installed in the vehicle, to track the place and locking engine motor. The place of the vehicle identified using Global Positioning system (GPS) and Global system mobile communication (GSM).

These systems constantly watch a moving Vehicle and report the status on demand. When the theft identified, the responsible person send SMS to the microcontroller, then microcontroller issue the control signals to stop the engine motor. Authorized person need to send the password to controller to restart the vehicle and open the door. This project also indicates speed of vehicle which can be calculated by using distance and time. This is more secured, reliable and low cost.

KEYWORDS: Vehicle Tracking, Fuel and Speed indicator, GSM and GPS

INTRODUCTION

In the last few decades, India has progressed at such an enormous rate that many companies have strongly established themselves here. These companies bring a huge amount of workforce with them. Arranging transportation to such a huge mass is a cumbersome task involving many intricacies. Generally, this transport is arranged through the local transport vendors on a yearly contract basis, recently happen mishaps such as burglary, rape cases etc. The development of satellite communication technology is easy to identify the vehicle locations. Vehicle tracking systems have brought this technology to the day-to-day life of the common person. Today GPS used in carsambulances; fleets and police vehicles are common sights on the roads of developed countries. All the existing technology support tracking the vehicle place 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 world. This system designed for users in land construction and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy-to-read format. This system may also useful for communication process among the two points.

Currently GPS vehicle tracking ensures their safety as travelling. This vehicle tracking system found in clients vehicles as a theft prevention and rescue device. Vehicle owner or Police follow the signal emitted by the tracking system to locate a robbed vehicle in parallel the stolen vehicle engine speed going to decreased and pushed to off. After switch of the engine, motor cannot restart without permission of password. This system installed for the four wheelers,

Vehicle tracking usually used in navy operators for navy management functions, routing, send off, on board information and security. The applications include monitoring driving performance of a parent with a teen driver. Vehicle tracking systems accepted in consumer vehicles as a theft prevention and retrieval device. If the theft identified, the system sends the SMS to the vehicle owner. After that vehicle owner sends the SMS to the controller,

issue the necessary signals to stop the motor. In this proposed work, a novel method of vehicle tracking and locking system used to track the theft vehicle by using GPS and GSM technology.

This system puts into sleeping mode while the vehicle handled by the owner or authorized person otherwise goes to active mode, the mode of operation changed by in person or remotely. If any interruption occurred in any side of the door, then the IR sensor senses the signals and SMS sends to the microcontroller. The controller issues the message about the place of the vehicle to the car owner or authorized person. When send SMS to the controller, issues the control signals to the engine motor. Engine motor speeds are gradually decreases and come to the off place. After that all the doors locked. To open the door or restart the engine, authorized person needs to enter the passwords. In this method, tracking of vehicle place easy and doors locked automatically, thereby thief cannot get away from the car.

LITERATURE REVIEW

Chen, H., Chiang, Y. Chang, F., H. Wang, H.[1]The hardware and software of the GPS and GSM network were developed. The proposed GPS/GSM based System has the two parts, first is a mobile unit and another is controlling station. The system processes, interfaces, connections, data transmission and reception of data among the mobile unit and control stations are working successfully. These results are compatible with GPS technologies.

Asaad M. J. Al-Hindawi, Ibraheem Talib [2] A vehicle tracking system is an electronic device, installed in a vehicle to enable the owner or a third party to track the vehicle's place. This paper proposed to design a vehicle tracking system that works using GPS and GSM technology. This system built based on embedded system, used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). This design will continuously watch a moving Vehicle and report the status of the Vehicle on demand.

Kunal Maurya, Mandeep Singh, Neelu Jain [3] Face Detection System used to detect the face of the driver, and compare with the predefined face. The car owner is sleeping during the night time and someone theft the car. Then Face Detection System obtains images by one tiny web camera, which is hidden easily in somewhere in the car. Face Detection System compared the obtained images with the stored images. If the images don't match, then the information sends to the owner through MMS. The owners get the images of the thief in mobile phone and trace the place through GPS. The place of the car and its speed displayed to the owner through SMS. The owner can recognize the thief images as well as the place of the car and can easily find out the hijackers image. This system applied in our day-to-day life.

Vikram Kulkarni & Viswaprakash Babu [4] This system provided vehicle cabin safety, security based on embedded system by modifying 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 situations. 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.

V. Ramya, B. Palaniappan, K. Karthick [5] This system provided vehicle cabin safety, security based on embedded system by modifying 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 situations. 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.

Kai-Tai Song, Chih-Chieh Yang [6] He have a designed and built on a real-time visual tracking system for vehicle safety applications. In this paper built a novel feature-based vehicle-tracking algorithm, automatically detect and track several moving objects, like cars and motorcycles, ahead of the tracking vehicle. Joint with the concept of focus of expansion (FOE) and view analysis, the built system can segment features of moving objects from moving background and offer a collision word of warning on real-time. The proposed algorithm using a CMOS image sensor and NMOS embedded processor architecture. The constructed stand-alone visual tracking system validated in real road tests. The results provided information of collision warning in urban artery with speed about 60 km/hour both at night and day times.

SYSTEM DESIGN

The Block diagram of Vehicle tracking and locking system based on GSM and GPS technology is shown in the figure1. It consist the Amplifier, ADC, Microcontroller, LCD, Fuel level sensor, GPS receiver, GSM modem, MAX 232.

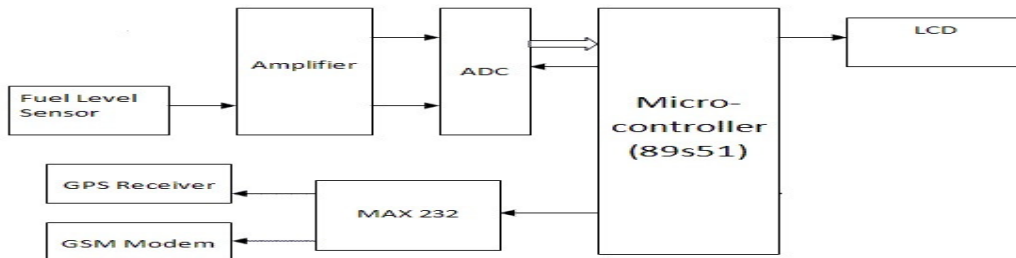


Figure 1: Block diagram of Vehicle tracking and locking system based on GSM and GPS

GPS TECHNOLOGY

The Global Positioning System (GPS) is a satellite-based navigation system consists of a network of 24 satellites located into orbit. The system provides essential information to military, civil and commercial users around the world and which is freely accessible to anyone with a GPS receiver. GPS works in any weather circumstances at anywhere in the world. Normally no subscription fees or system charges to utilize GPS. A GPS receiver must be locked on to the signal of at least three satellites to estimate 2D position (latitude and longitude) and track movement. With four or more satellites in sight, the receiver can determine the user's 3D position (latitude, longitude and altitude). Once the vehicle position has been determined, the GPS unit can determine other information like, speed, distance to destination, time and other. GPS receiver is used for this research work to detect the vehicle location and provide information to responsible person through GSM technology.

DESIGN OF TRACKING SYSTEM

In this Paper it is proposed to design an embedded system which is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global system for mobile communication (GSM). In this Device AT89s51 microcontroller is used for interfacing to various hardware peripherals. The current design is an embedded application, which will continuously monitor a moving Vehicle and report the status of the Vehicle on demand. For doing so an AT89C51 microcontroller is interfaced serially to a GSM Modem and GPS Receiver. A GSM modem is used to send the position (Latitude and Longitude) of the vehicle from a remote place. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle. The GPS modem gives many parameters as the output, but only the NMEA data coming out and sent to the mobile at the other end from where the position of the vehicle is demanded. When the request by user is sent to the number at the modem, the system automatically sends a return reply to that mobile indicating the position of the vehicle in terms of latitude and longitude. The project is vehicle positioning and navigation system we can locate the vehicle around the globe with micro controller, GPS receiver, GSM modem. Microcontroller used is AT89C51. The code is written in the internal memory of Microcontroller i.e. ROM. With help of instruction set it processes the instructions and it acts as interface between GSM and GPS with help of serial communication of AT89s51. GPS always transmits the data and GSM transmits and receive the data.

In this study, the disc brake materials taken under study are Gray cast iron, Structural steel, Aluminum and High-speed steel(HSS). These materials are investigated in order to find the possible consequences of wear and friction. The diameter and the length of the pins are 10 mm and 30 mm respectively. For the same surface conditions, the top surfaces of each pin are finished with abrasive paper. The wear rate will be relatively small in most of the machinery and engineering tool. For measuring wear, we are using some apparatus and instruments which give results about the wear rate in the tools and machinery.

One or more sensors connected to one or more fuel tanks that indicate current fuel level(s) in the tank(s). theft of fuel from stationary tanks and transport tankers is on the rise. To help reduce losses, costs, delays and damage to reputation, more and more companies are looking for solutions to monitor fuel levels during both storage and transportation. A real-time remote fuel-level monitoring solution is an option for managers who need to know exactly when and where fuel losses are occurring. In addition to notification of a sudden change in fuel level, a well-

designed remote monitoring solution is able to provide other valuable information, such as how much fuel is lost as well as GPS location of incidents when the loss occurs during transportation

HARDWARE ASSEMBLING AND TESTING:

First step, we need to make single side PCB layout for the given circuit diagram. After made the PCB the following process is required to complete the project.

Assemble all the components on the PCB based on circuit diagram. TX and RX pins of the GSM modem to pins 13 and 14 of MAX 232 and insert a valid SIM in the GSM modem.

1. Connect the GPS module according to circuit diagram.
2. This project implemented and tested successfully by us.

This system is very useful and secure for car owners

A software simulator is a computer program running on an independent hardware and it simulates the CPU, the instruction set and the I/O of the target microcontroller. Simulators offer the lowest-cost development tools for microcontroller-based systems and most companies offer their simulator programs free of charge. The user program operated in a simulated environment where the user can insert breakpoints within the code to stop the code and then analyse the internal registers and memory, display and change the values of program variables and so on.

CONCLUSION

In this paper, we have proposed 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 active mode. The mode of operations changed by persons or remotely. When the theft identified, the responsible people send SMS to the micro controller, then issue the control signals to stop the engine motor. After that all the doors locked. To open the doors or to restart the engine authorized person needs to enter the passwords. In this method, easily track the vehicle place and doors locked. In our project the security system is based on embedded control which provides security against theft. The GSM modem provides information to the user on his request. The owner can access the position of the vehicle at any instant. He sends a message in order to lock the vehicle. The GPS receiver on the kit will locate the latitude and longitude of the vehicle using the satellite service.

REFERENCES

- [1] Chen, H., Chiang, Y. Chang, F., H. Wang, H. (2010). Toward Real-Time Precise Point Positioning: Differential GPS Based on IGS Ultra Rapid Product, SICE Annual Conference, The Grand Hotel, Taipei, Taiwan August 18-21.
- [2] Asaad M. J. Al-Hindawi, Ibraheem Talib, "Experimentally Evaluation of GPS/GSM Based System Design", Journal of Electronic Systems Volume 2 Number 2 June 2012
- [3] Kunal Maurya, Mandeep Singh, Neelu Jain, "Real Time Vehicle Tracking System using GSM and GPS Technology- An Anti-theft Tracking System," International Journal of Electronics and Computer Science Engineering, ISSN 2277-1956/V1N3-1103-1107
- [4] Vikram Kulkarni & Viswaprakash Babu, "embedded smart car security system on face detection", special issue of IJCCT, ISSN(Online):2231-0371, ISSN(Print):0975-7449, volume-3, issue-1
- [5] V. Ramya, B. Palaniappan, K. Karthick, "Embedded Controller for Vehicle In-Front Obstacle Detection and Cabin Safety Alert System", International Journal of Computer Science & Information Technology (IJCSIT) Vol 4, No 2, April 2012.
- [6] Kai-Tai Song, Chih-Chieh Yang, of National Chiao Tung University, Taiwan, "Front Vehicle Tracking Using Scene Analysis", Proceedings of the IEEE International Conference on Mechatronics & Automation 2005.
- [7] Chen Peijiang, Jiang Xuehua, "Design and Implementation of Remote monitoring system based on GSM," vol.42, pp.167-175. 2008.
- [8] Albert Alexe, R. Ezhilarasie, "Cloud Computing Based Vehicle Tracking Information Systems", ISSN: 2229 - 4333 (Print) | ISSN: 0976 - 8491 (Online) IJCST Vol. 2, Issue 1, March 2011