GPS & GSM based any vehicle tracking and security system

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Abstract— In this Project 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).This system is very useful for car theft situations (alarm alert, engine starting, localizing), for adolescent drivers being watched and monitored by parents. (Speed limit exceeding, leaving a specific area), as well as for human and pet tracking. It also used for safe transportation in industries.

A good number of tracking systems had so far been developed with a wide range of tracking facilities. But the operation cost of most of these systems is higher which prevents from widespread use. On the other hand, the rate of car theft, asset theft, child kidnapping in many countries are increasing at a higher rate. The objective of this research is to reduce the cost of the tracking system using the latest technologies and making it available to the common people.

Key words: GSM and microcontroller interfacing, vehicle security system, tracking system, GSM based security.

I. INTRODUCTION

Of all the applications of GPS, Vehicle tracking have brought this technology to the day-to-day life of the common man. Today GPS fitted cars, ambulances, fleets and police vehicles are common sights on the roads of developed countries. Known by many names such as Automatic Vehicle Locating System (AVLS), Vehicle Tracking and Information System (VTIS), Mobile Asset Management System (MAMS), these systems offer an effective tool for improving the operational efficiency and utilization of the vehicles.

GPS is used in the vehicles for both tracking and navigation. Tracking systems enable a base station to keep track of the vehicles without the intervention of the driver whereas navigation system helps the driver to reach the destination. Whether navigation system or tracking system, the architecture is more or less similar. The navigation system will have convenient, usually a graphic display for the driver which is not needed for the tracking system.

II. DESCRIPTION

There is a drastic increase in the number of vehicles in these days which also cause a steep Rise in the number of accidents with a lot of people losing their lives. According to the World Health Organization, an estimated 1.2 million people lose their lives every year due to car accidents. India's road accident records 16 % of the world's road accident deaths, whereas India has only 1 % of the world's road vehicles. It is due to the increase in the number of vehicles without a subsequent increase in the road facilities required for it. In most of the accident cases, the victims lose their lives because of the unavailability of medical facilities at the right time. In large companies with a large number of vehicles, the drivers use the company's vehicles even for their own purposes and impact a loss to the company. To solve problems like these, this project came into existence.

This project is mainly used to track the position of the Vehicle by the owner or can also be used in the public transportation system by the people to know the location of the buses or trains. In case of any accident, the system sends automated messages to the pre-programmed numbers. We can send messages to any number of mobiles. The owner of the vehicle, Police to clear the traffic, Ambulance to save the people can be informed by this device. This uses a GPS (Global Positioning System) to know the exact position of the vehicle with an accuracy of a few feet. GSM is used to receive SMS from the user and reply the position of the vehicle through a SMS. For example, a luxury hotel in Singapore has been known to install vehicle tracking system in their limousines to ensure they can welcome their VIPs when they reach the hotel. Vehicle tracking systems have also been used in food delivery and car rental companies.

III. BLOCK DIAGRAM OF PROJECT

In this project 8051 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.
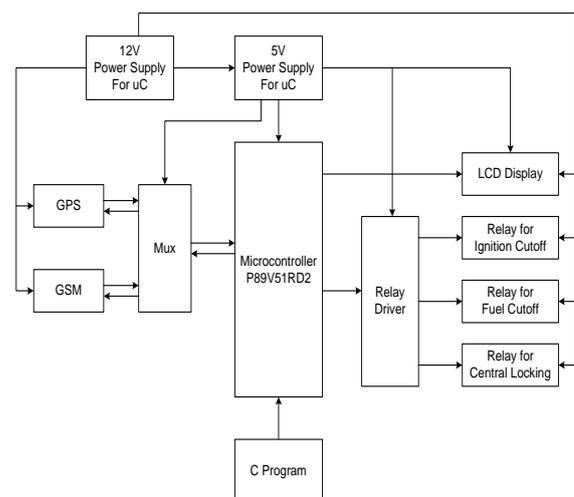

Fig. 1: Block diagram of project

For doing so an 8051 microcontroller is interfaced serially to a GSM Modem and GPS Receiver. The GPS receiver will continuously give the data i.e. the latitude and longitude indicating the position of the vehicle and time and send it to microcontroller. A GSM modem containing a SIM card of valid service provider is used to send the position (Latitude

and Longitude) of the vehicle from a remote place. The GPS modem gives many parameters as the output, but only the NMEA data coming out is read and displayed on to the LCD. The same data is sent to the mobile at the other end from where the position of the vehicle is demanded.

The hardware interfaces to microcontroller are LCD display, GSM modem and GPS Receiver. The design uses RS-232 protocol for serial communication between the modems and the microcontroller. A serial driver IC MAX 232 is used for converting TTL voltage levels to RS-232 voltage levels. A program has been developed which is used to locate the exact position of the vehicle.

IV. LIST OF COMPONENT OF PROJECT

A. Hardware:

GSM Modem SIM 300

GPS Modem

Microcontroller

MAX 232

RS 232

Voltage regulator IC

B. Software:

Keil uVision 3.0

Flash magic

V. CONCLUSION

We have been able to develop the project. We are able to control the security the vehicle and control theft of the vehicle. It can respond us like giving location where it is whenever we lost our vehicle and if we want to control also it can be possible. That system can find the accident which happened to our vehicle and will inform to relate one with location of our vehicle where accident made.

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