REAL TIME WEB BASED TRACKING SYSTEM USING GSM AND GPS TECHNOLOGY

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ABSTRACT

Vehicle navigation is one of the most important applications in the era of navigation which is mostly used by fleet owners. Therefore the efficiency of maps given to the fleet owners has a great importance in the navigation system. The proposed system is very efficient which uses the GPS and Google earth maps to help the fleet owners in navigation. This system continuously monitors the path of the vehicle on PC with Google Earth Application. The GPS-GSM integrated structure is designed to track the vehicles by Google earth application and provides the most up-to-date information about the ongoing trips. The vehicle tracking system combines the installation of an electronic device in the vehicle, and the vehicle information can be viewed in the electronic maps. The Microcontroller is used to receive data from GPS and to transfer the latitude and longitude to PC and the map is generated using Google Earth Information. It could be used as a valuable tool for real time traveler. The current system can be able to provide the monitoring from anywhere .The main features of system include Real time tracking, Data backup, Internal battery backup and Theft Identification. Thus this type of system will provide security for passengers by continuous monitoring of taxi by the owner when implemented. The main advantages are Cost Effective, Reliable and are mainly used in Automobile applications and safety applications.

Key Words – GPS,GSM, Microcontroller, vehicle, PC, Google earth map.

I. INTRODUCTION

In this urban life transportation is very common. A lot of mishappenings occur on the road every day .Therefore the need of security and monitoring is developed. To resolve such problems, a system is developed using GPS and GSM technologies. Real time web based tracking system using GSM and GPS technology will provide effective, real time vehicle location, mapping and reporting this information value to the fleet owners.

The various problems that we face are: In critical condition (when vehicle is stolen) one is confused what to do, if one has something expensive and if he wants to check it regularly. All these problems are overcome by the system. This system has Global Positioning System (GPS) which will receive the coordinates from the satellites among other critical information. Tracking system is very important in modern world. This can be useful in soldier monitoring, tracking of the theft vehicle and various

other applications. The system is microcontroller based that consists of a global positioning system (GPS) and global system for mobile communication (GSM). This project uses only one GPS device and a two way communication process is achieved using a GSM modem. GSM modem, provided with a SIM card uses the same communication process as we are using in regular phone.
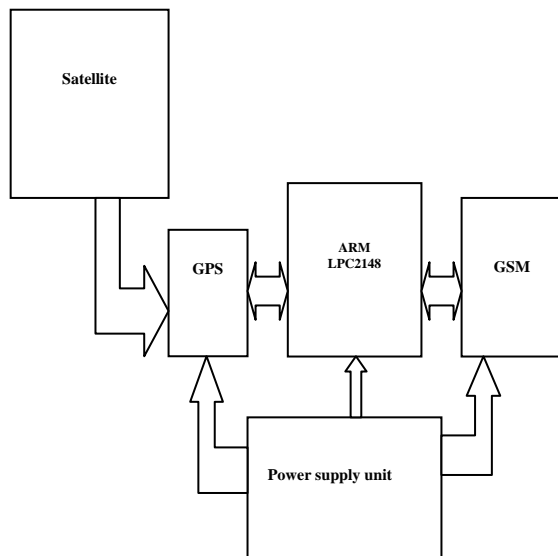

Fig:1 Block diagram

II. LITERATURE SURVEY

Real-time tracking and management of vehicles has been a field of interest for many researchers and a lot of research work has been done for tracking system. Recently various modules are developed for real time performance monitoring.

The paper presented by Pankaj Verma, J.S Bhatia describes Design and Development of GPS-GSM based Tracking System with Google map Based Monitoring. System uses GPS and GSM technologies. The paper includes the hardware part which comprises of GPS, GSM, At mega microcontroller MAX 232, 16x2 LCD and software part is used for interfacing all the required modules and a web application is also developed at the client side.

The paper presented by S.Srinivasa Rao,Baburao Kodavati describes GSM and GPS Based Vehicle Location and Tracking System. The RF transmitter is attached with the vehicle which has its own identification. This data will be continuously transmitted to the RF receiver connected to the microcontroller (AT89S52). This GPS will be location the position of vehicle and transmit that data to the microcontroller. Suppose the RF receiver not receiving signal from the transmitting unit, receiver unit send the signal to the microcontroller, from that we can identify the theft.

The paper presented by Sowjanya Kotte, Hima Bindhu Yanamadala describes Advanced Vehicle Tracking System on Google Earth Using GPS and GSM. The main aim of this project is designing a system which is capable of continuous monitoring of path of the vehicle on PC with Google Earth Application. Here the important issue is displaying the map on several various scales which are adopted by the users. The GPS-GSM integrated structure is designed to track the vehicles by using Google earth application. The Microcontroller is used to receive data from GPS and to transfer the latitude and longitude to the PC to map by using the VB.

The paper presented by G. Kiran Kumar, Dr.A. Mallikarjuna Prasad describes Public Transportation Management Service using GPS-GSM.

III.OPERATION

a) SYSTEM ARCHITECTURE

Hardware framework for tracking system is shown in Fig 2.System contains high Performance ARM controller, a GPS, and GSM modem and overall system reside into a vehicle. A tracking system will provide effective real time vehicle location reporting .Tracking system will inform where your vehicle is and where it has been, how longer it has been there. The basic function of in vehicle unit is to acquire, Monitor and transmit the position latitude, longitude, time to management center either at fixed interval or on demand. Microcontroller unit form the heart of tracking unit, which acquires and process the position data from the GPS module. The GPS receiver of vehicle terminal receives and resolves the navigation message broadcasted by GPS position satellites, computes the longitude and latitude of vehicle coordinates, transforms it into the GSM message form by GSM communication

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controller, and sends the message to monitoring center via the GSM network.

Fig:2 System Architecture

b) GSM OVERVIEW

GSM (Global System for Mobile communications) is an open, digital cellular technology used for transmitting mobile voice and data services. The first European digital standard, developed to establish cellular compatibility throughout Europe. Its success has spread to all parts of the world andit estimates that 80% of the global mobile market uses the standard. It operates at 900 MHz.GSM is used by over 1.5 billion people across more than 212 Countries and territories.

Fig: 3 GSM antenna

GSM differs from its predecessor technologies in that both signaling and speech channels are digital, and thus GSM is considered as second generation (2G) mobile phone system. It has its baud rate of 9600bps. GSM consists of a SIM CARD holder which is accessed with the help of APN number.

c) GPS OVERVIEW

The Global Positioning System (GPS) is a space-based global navigation satellite system (GNSS) that provides reliable location and time information in all weather and at all times and anywhere on or near the earth when and where there is an unobstructed line of sight to four or more GPS satellites. It is maintained by the United States government and is freely accessible by anyone with a GPS receiver. The GPS project was started in 1973 to overcome the limitations of previous navigation systems, integrating ideas from several predecessors, including a number of classified engineering design studies from the 1960s. GPS was created and realized by the U.S. Department of Defense (USDOD) and was originally run with24 satellites. It became fully operational in 1994.

Fig: 4 GPS antenna

d)MICROCONTROLLER UNIT

LPC2148 is the widely used IC from ARM-7 family. It has8 to 40 kB of on-chip static RAM and 32 to 512 kB of on-chip flash program memory and 128 bit wide interface/accelerator enables high speed 60 MHz operation. Low power real-time clock with independent power and dedicated 32 kHz clock input. UART is used for interfacing the microcontroller with GPS and GSM.

e)WORKING

When an input of 12V is given to the kit, immediately GSM gets started and GPS will start positioning. This system uses ARM-7 (LPC2148) Processor, which collects the positioned values from the GPS. Then it will send the received values to

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GSM to identify the exact location by using Google maps. The communication with the GSM module is based on AT Commands. The information is finally sent to the fleet owners and location is viewed with the help of Google earth maps. The location information can be viewed in Satellite form and also available in data format. The received data will be in the format of (Vehicle Id, Date, Time, Location information).

IV.ADVANTAGES

The system is user friendly, easily installable and easily accessible. It increases the productivity .It provides more Safety and Security than other systems. It gives Information & Communication to the fleet owners. From the remote place we can access the system.

V.APPLICATIONS

It is used for stolen vehicle recovery. It can be implemented in call taxies for security purposes. It can be implemented in Ambulances, in order to track the nearest location.

VI.CONCLUSION

The proposed Real time web based tracking system using GSM and GPS technology presents efficient location of the vehicle on the map. The location of the vehicle is viewed with the help of Google earth maps.GPS and GSM modems are used to track the location of the vehicle and sends the information to the fleet owners.

VII.REFERENCES

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