

Vehicle Blog Box

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Abstract: The present generation requires the information time to time. The use of technology have been increasing day by day. So we are planning for the combination of present technology with the requirement of information transmission, we planned for the creative approach of "Vehicle Tracking System using GPS and GSM". To overcome the drawbacks of the previous methods of paper based and we introduce a project to track a **vehicle using GPS and GSM**. This **Vehicle Tracking System** can also be used for Accident Detection Alert System, Soldier Tracking System and many more, by just making few changes in hardware and software and widely in tracking Cabs/Taxis, stolen vehicles, school/colleges buses etc.

1. INTRODUCTION

College bus Tracking System (VTS) is the technology used to determine the location of a vehicle using different methods like GPS and other radio navigation systems operating through satellites and ground based stations. By following triangulation or trilateration methods the tracking system enables to calculate easy and accurate location of the vehicle. Vehicle information like location details, speed, distance traveled etc. can be viewed on a digital mapping with the help of a software via Internet. Even data can be stored and downloaded to a computer from the GPS unit at a base station and that can later be used for analysis. This system is an important tool for tracking each vehicle at a given period of time and now it is becoming increasingly popular for people having expensive cars and hence as a theft prevention and retrieval device.

i. The system consists of modern hardware and software components enabling one to track their vehicle online or offline. Any vehicle tracking system consists of mainly three parts mobile vehicle unit, fixed based station and, database and software system.

ii. Vehicle Unit: It is the hardware component attached to the vehicle having either a GPS/GSM modem. The unit is configured around a primary modem that functions with the tracking software by receiving signals from GPS satellites or radio station points with the help of antenna. The controller modem converts the data and sends the vehicle location data to the server.

iii. Fixed Based Station: Consists of a wireless network to receive and forward the data to the data center. Base stations are equipped with tracking software and geographic map useful for determining the vehicle location. Maps of every city and

landmarks are available in the based station that has an in-built Web Server.

iv. Database and Software: The position information or the coordinates of each visiting points are stored in a database, which later can be viewed in a display screen using digital maps. However, the users have to connect themselves to the web server with the respective vehicle ID stored in the database and only then she/he can view the location of vehicle traveled.

2. EXISTING SYSTEM

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 location. This paper proposed to design a vehicle tracking system that works using GPS and GSM technology, which would be the cheapest source of vehicle tracking and it would work as anti-theft system. It is 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 design 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 same data is 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 GSM modem, the system automatically sends a return reply to that mobile indicating the position of the vehicle in terms of latitude and longitude in real time.

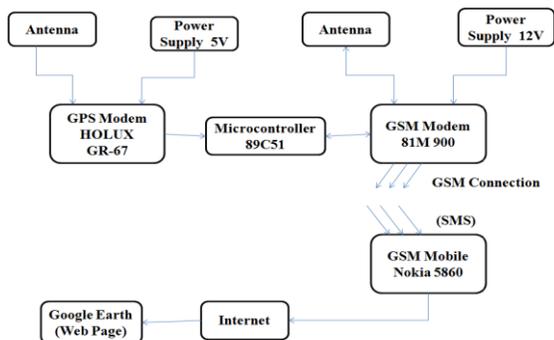


Fig., Block diagram of existing system

In addition, Russia maintains a constellation called GLONASS (Global Navigation Satellite System).



3. PROPOSED SYSTEM

POWER SUPPLY:

The primary function of a power supply is to convert one form of electrical energy into another and, as a result power supplies.

MICROCONTROLLER:

The microcontroller is used to manipulate the serial operation based the program present in the output is taken from one of the four ports.

IV. PROPOSED SYSTEM

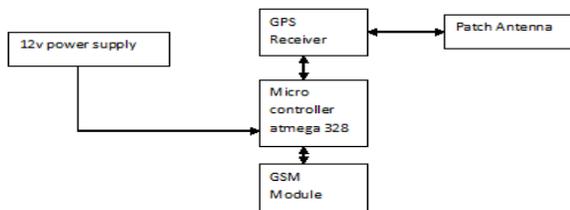


Figure : Block diagram

CRYSTAL OSCILLATOR:

Crystal oscillator is used to produce oscillated pulses which is given to the microcontroller.

GSM MODEM:

Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is the name of a standardization group established in 1982 to create a common European mobile telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz.

GPS RECEIVER:

GPS, in full Global Positioning System, space-based radio-navigation system that broadcasts highly accurate navigation pulses to users on or near the Earth. In the United States' Navstar GPS, 24 main satellites in 6 orbits circle the Earth every 12 hours.

GSM TECHNOLOGY:

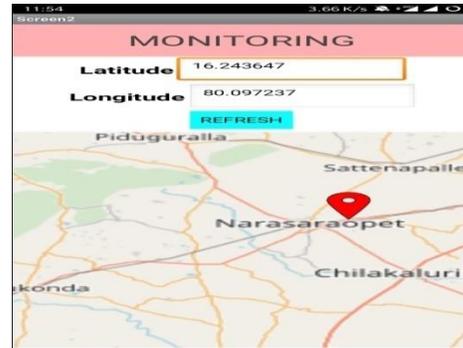
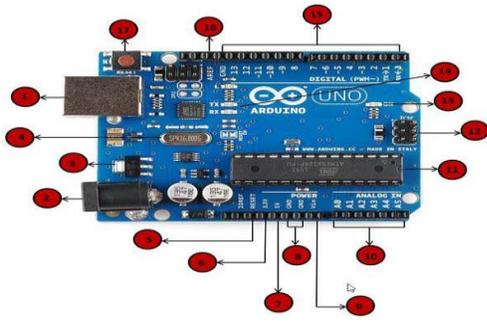
The basis of the GPS is a constellation of satellites that are continuously orbiting the earth. These satellites, which are equipped with atomic clocks, transmit radio signals that contain their exact location, time, and other information. The radio signals from the satellites, which are monitored and corrected by control stations, are picked up by the GPS receiver. A Global Positioning System receiver needs only three satellites to plot a rough, 2D position, which will not be very accurate.



4. HARDWARE IMPLEMENTATION

Arduino Uno Board Description

we will learn about the different components on the Arduino board. We will study the Arduino UNO board because it is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding. Some boards look a bit different from the one given below, but most Arduinos have majority of these components in common.



5. WORKING PROCEDURE

This project clearly uses two main modules of GSM and a microcontroller. The user when sends the messages through his phones those reaches the GSM ,through the AT commands all those messages reaches the microcontroller. That microcontroller takes the data in terms of bits through the Max232.Those information will be transmitted to the Mobile application.

The project titled “tracing down the vehicle using GSM and satellite communication” is a model for vehicle tracking unit with the help of gps receivers and GSM modem. Vehicle Tracking System resulted in improving overall productivity with better fleet management that in turn offers better return on your investments. Better scheduling or route planning can enable you handle larger jobs loads within a particular time. Vehicle tracking both in case of personal as well as business purpose improves safety and security, communication medium, performance monitoring and increases productivity. So in the coming year, it is going to play a major role in our day-to-day living. We have completed the project as per the requirements of our project. Finally the aim of the project i.e. to trace the vehicle is successfully achieved.

6. RESULT



7. CONCLUSION

In this paper we have proposed an anti theft system which can be used to track a vehicle fitted with the proposed device in it. It can also be used in wildlife tracking, asset tracking and in stolen vehicle recovery. In the future we may integrate other related devices in a vehicle such as sensors. We can create a server to see the vehicle route and other information on our computer and we can save the trajectory of it. The sensors installed in our vehicle can report the vehicle information to our server and it can form an intelligent tracking system. There are various reasons why car owners and public vehicle operators prefer to have a GPS. You can determine your location, whether you are travelling locally or in a foreign land, having a GPS is truly an advantage. If you think you are lost, you can use your GPS receiver to know your exact location. Vehicle tracking systems are commonly used by fleet operators for fleet management functions such as routing, dispatch, on-board information and security. Other applications include monitoring driving behavior, such as an employer of an employee, or a parent with a teen driver.

REFERENCE

- [1] A. Goel and V. Gruhn, “Fleet Monitoring System for Advanced Tracking of Commercial Vehicles”, *Proceedings of the 2006 IEEE International Conference on Systems, Man, and Cybernetics (SMC 2006)*, pp. 2517-2522, Taipei, Taiwan, 08.10.2006-11.10.2006.
- [2] Chia-Hung Lien, Chi-Hsiung Lin, Ying-Wen Bai, Ming-Fong Liu and Ming-Bo Lin, “Remotely Controllable Outlet System for Home Power Management,” *Proceeding of 2006 IEEE Tenth International Symposium on Consumer Electronics (ISCE 2006)*, St. Petersburg,Russia, pp. 7-12, June 28-July 1, 2006.

- [3] E. D. Kalpan, Understanding GPS: Principles and Applications, Artech house Publishers, ISBN 0890067937, February 1996.
- [4] Junaid Ali, Shaib Nasim, Taha Ali, Naveed Ahmed and syed Riaz un Nabi, "Implementation of GSM based Commercial Automobile Tracker Using PIC 18F452 and Development of Google Earth Embedded Monitoring Software" *Proceedings of 2009 IEEE student conference on Research and development(SCOReD 2009)*, 16-18 Nov,2009, UPM Serdang, Malaysia
- [5] M. Mcdonald, H. Keller, J. Klijnhout and V. Mauro, "Intelligent Transport Systems in Europe: Opportunity for Future Research" *World Scientific Publishing Company*, ISBN 981270082X, 2006.
- [6] Muhammad Ali Mazidi, Janice Gillspie, Mckinlay, Rolin D., " The Microcontroller in Embedded System: using Assembly and C," *2nd edition published*