

GPS-GSM BASED Vehicle TRACKING SYSTEM WITH GOOGLEMAPMONITORING

Deepti Rawat¹, Dinesh Kumar Yadav², S.K. Mahajan³

*Department of Electronics and Communication Engineering
IIMT College of Engineering, Greater Noida (India)*

ABSTRACT

GPS is one amongst the technologies that measure employed in a large range of applications nowadays. One amongst the applications is pursuit your vehicle and keeps regular watching on them. This pursuit system will inform you the placement and route cosmopolitan by vehicle, which data will be determined from the other remote location. It conjointly includes the net application that gives you precise location of target. This technique permits North American nation to trace target in any weather. this technique uses GPS and GSM technologies. The paper includes the hardware half that includes of GPS, GSM, Atmega microcontroller gamma MAX 232, 16x2 liquid crystal display and code half is employed for interfacing all the desired modules and an internet application is additionally developed at the shopper facet. Main objective is to style a system which will be simply put in and to produce platform for additional improvement.

KEYWORDS:GPS, GSM, Tracking System, AVR

I. INTRODUCTION

In this urban life transportation is extremely common. Lots of accidents occur on the road daily .Therefore the necessity of security and watching is developed. To resolve such issues, a system is developed victimization GPS and GSM technologies and an application is introduced during this analysis work.

Various problems that we face:

1. Incriticalcondition,oneisconfusedwhattodo
2. If one has something expensive and he wants to check itregularly
3. To find the shortest pathavailable

All these problems are overcome by the system.

This system has world Positioning System (GPS) which can receive the coordinates from the satellites among different important data. Pursuit system is incredibly necessary in present time. this will be helpful in soldier watching, pursuit of the thieving vehicle and varied different applications. The system is microcontroller primarily based that consists of positioning system (GPS) and global system for mobile communication (GSM).

This project uses just one GPS device and a 2 manner communication method is achieved employing a GSM electronic equipment. GSM modem, supplied with a SIM card uses an equivalent communication method as we have a tendency to area unit victimization in regular phone. The system is not limited to find the location of the target but also calculates the distance travelled b/w two stations.

This system is user friendly, easily installable, easily accessible and can be used for various other purposes. After installation system will locate target by the use of a Web application (HTML based application) in Google map. The system allows to track the target any time and anywhere in any weather conditions.

II. LITERATURE SURVEY

Real-time chase and management of vehicles has been a field of interest for several analyzers and tons of research work has been in serious trouble chase system. Recently the assorted anti-theft modules like wheel latched instrumentation, network chase system and ancient electronic alarm square measure developed in conjunction with shopper identification and real time performance watching.

The paper conferred by El-Medany, W.; Al-Omary et al describes a true time chase system that gives correct localizations of the self-propelled vehicle with low price. GM862 cellular quad band module is employed for implementation. A watching server and a graphical program on an internet site is additionally developed victimization Microsoft SQL Server 2003 and ASP.net to look at the right location of a vehicle on a selected map. The paper additionally provides info concerning the vehicle standing like speed, mileage. [1]

Hu Jian-ming; Li Jie; Li Guang-Hui describes Associate in Nursing automobile anti-theft system victimization GSM and GPS module. The system is developed victimization high speed mixed sort single-chip C8051F120 and taken automobile is detected by the utilization of vibration detector. The system remains in touch with automobile owner through the GSM module, for the security and dependableness of automobile. [2] Fleischer, P.B.; admiral et al describes development and readying of GPS (Global Positioning System)/GSM (Global System for Mobile Communications) primarily based Vehicle chase and Alert System. this method permits inter-city transport firms to trace their vehicles in period of time and provides security from heist and accident occurrences. [4]

Le-Tien, T.; Vu Phong describes a system supported the world Positioning System (GPS) and international System for Mobile Communication (GSM). It describes the sensible model for routing and chase with mobile vehicle during a massive space outside setting. The system includes the Compass sensor-YAS529 of Yamaha Company and Accelerator sensor-KXSC72050 of Koinix Company to accumulate moving direction of a vehicle. The system can acquire positions of the vehicle via GPS receiver then sends the information to supervised center by the SMS (Short Message Services) or GPRS (General Package Radio Service) service. The supervised center includes of a development kit that supports GSM techniques-WMP100 of the Wavecom Company. Finally, the position of the mobile vehicle is displayed on Google Map. [5]

III.SYSTEMARCHITECTURE

It consists of two units one is transmitting side (vehicle unit) and other one is monitoring side.

3.1Description of transmittingunit:

3.1.1GPS

GPS modules are popularly used for navigation, positioning, time and other purposes. GPS antenna receives the location values from the satellites. GPS gives information about:

- 1) Message transmissiontime
- 2) Position at thattime

3.1.2 GSM

GSM modem is used for transmitting and receiving the data. SIM 300 is a tri- band GSM/GPRS engine. It works on various frequencies i.e. EGSM 900MHz, DCS 1800MHz and PCS 1900MHz.

3.1.3Microcontroller

The system uses a CMOS 8-bit microcontroller. It is based on RISC architecture. It comprises of 16kbytes of flash program memory, 1Kbyte internal SRAM and 512bytes EEPROM.

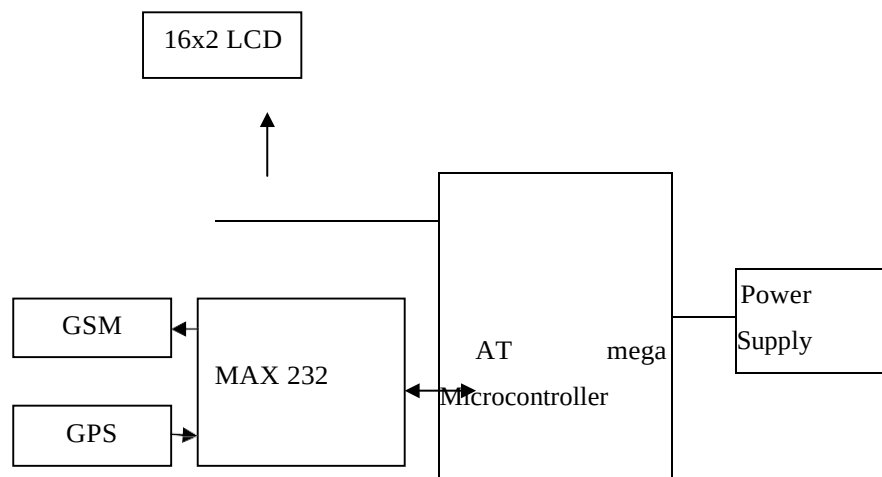


Figure 1.Architecture of transmitting unit

3.1.4MAX232

It is used for GSM, GPS and microcontroller to communicate serially

3.1.516x2LCD

A 16x2 LCD is used for displaying location values. A 9v battery is used to power up the circuit.

3.2 Monitoring unit

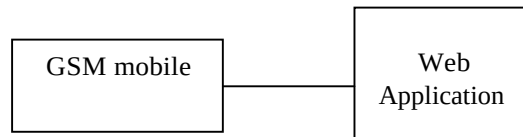


Figure 2. Monitoring unit Architecture

The monitoring unit consists of a GSM mobile and a Web Application. The GSM mobile will acquire the position of the vehicle (longitude and latitude) and the user by typing those co-ordinates in web application own user interface can get the exact location of the vehicle. The web application part is covered later in this paper.

IV. HARDWARE DESIGN

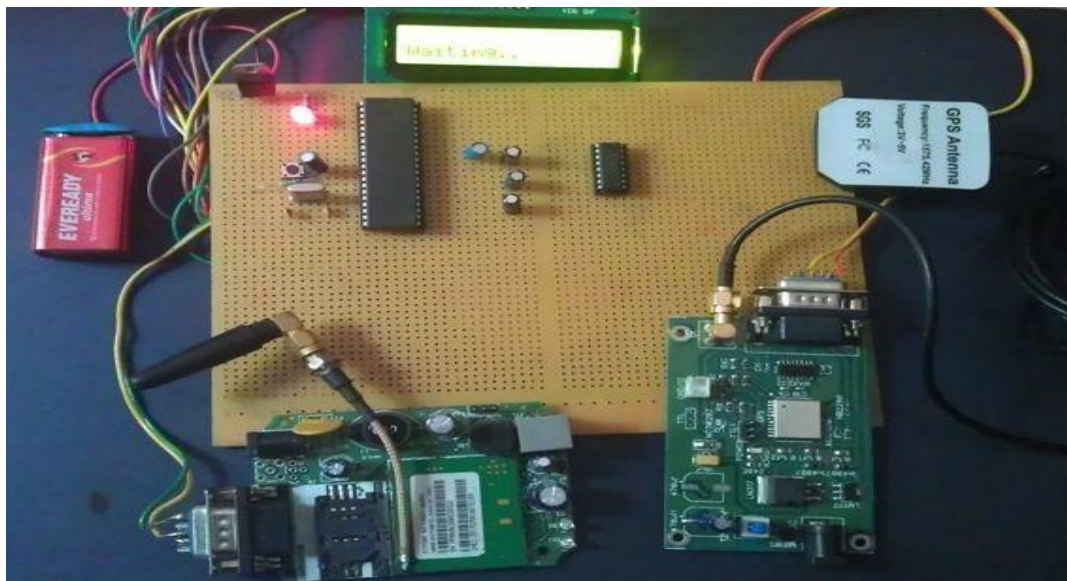


Figure 3. Hardware design

In this we are using a 40 pin Atmega16 microcontroller. It has four input-output ports. Atmega16 microcontroller is the heart of the project that is used for interfacing. Two pins are VCC pins and other two pins are at ground. Pin 9 is reset pin. A crystal oscillator of 12 MHz is connected to the microcontroller. RS-232 protocol is used as serial communication between the microcontroller, GPS and GSM modem. A serial driver MAX232, 16 pin IC is used for converting RS-232 voltage levels into TTL voltage levels. There are four electrolytic capacitors

which are used with MAX232. A 9V battery is used to power the circuit. A 7805 regulator is used to convert 9V into 5V. The microcontroller and MAX232 are powered by 5V. LED indicates the presence of power supply.

V. SOFTWARE PROGRAM

The software programming is done in 'C' language. Data (co-ordinates) received by GPS from the satellites is defined in the software. Decoding the NMEA (National Marine Electronics Association) protocol is the main purpose of developing this software. The mobile number of the users should be included in the software programming in order to receive the location values from the SIM card which we are using in GSM modem. The NMEA protocol consists of a set of messages. These messages are ASCII character set. GPS receives data and presents it in the form of ASCII comma – delimited message strings. '\$' sign is used at the starting of each message.

The locations (latitude and longitude) have the format of ddmm.mmmm, i.e. degrees minutes and decimal minutes. The software protocol consists of the GGA (global positioning system fixed data) and GLL (geographic position latitude/longitude). But in this system we are using CGA only. The flow chart of the system is given as:

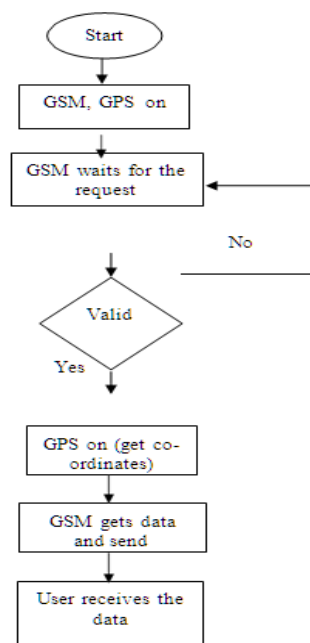


Figure 4. Program flow chart of the tracking system

VI.WEBAPPLICATION

The web application named as 'Tracking System' is shown in figures that represent the complete output of the system. In this system two applications are developed that are linked to each other. First one is used to get the initial position of the vehicle (starting point) and the system will receive the different coordinates (longitude and latitude) switching to the next one will be done to get the distance travelled b/w the two positions. The application will run on WAMP server and will run only if the internet is in use. WAMP server home page is shown in diagram.



Figure 5.WAMP server home page

6.1 Various features of web Application are:

- Both the applications are user friendly, i.e. new users can be easily comfortable.
- Since the applications are HTML based user can easily modify according to his requirements
- Gives the exact location of the target.
- The applications also alert about the distance travelled by the target and also the routes that are possible to reach to the target.

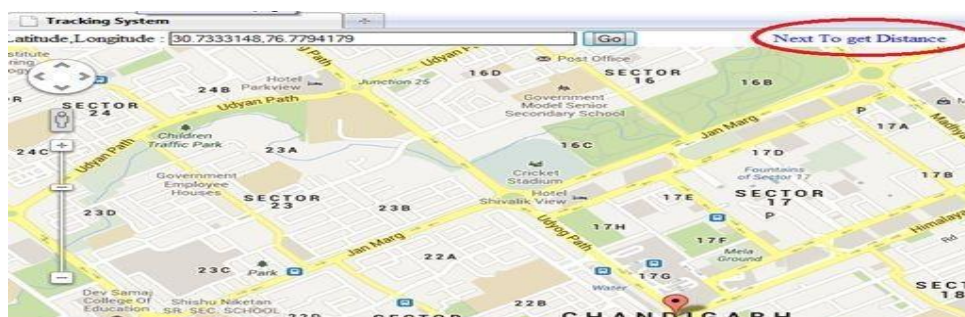


Figure 6.System Application 1

Figure 6 shows the first application where location will be found .As shown in figure by clicking on the 'next' button will open up next page, where the route and the distance travelled will be found. And by clicking on the 'Back' button will open up first one (page) as suggested in the fig.

7. Both the applications are HTML based. PHP is also used for some modifications.

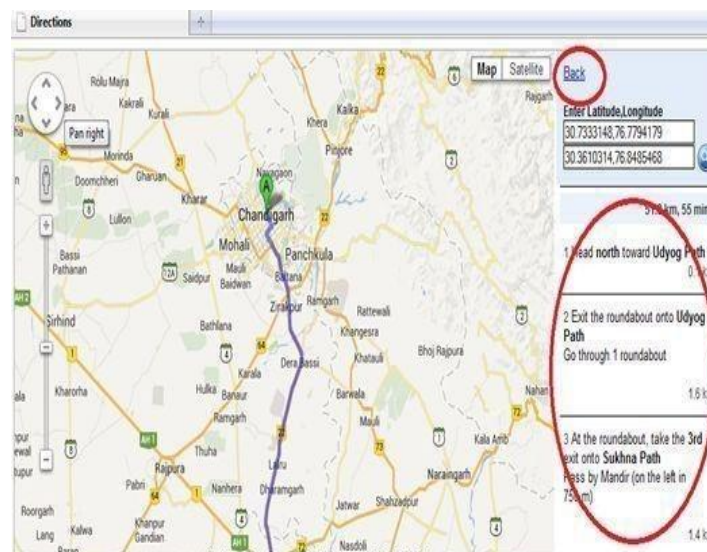


Figure 7. System Application 2

VII. CONCLUSION AND FUTURE SCOPE

The project is all concerning dominant stealing of a vehicle. The system is concerning creating vehicle safer by the utilization of GPS, GSM technology and an internet application. The simulation is completed by PROTEUS package. It also can be helpful for:

1. Oldsters to seem once their kids.
2. To trace animals in jungles
3. Delivery services
4. Cops department and fireplace services

This project may be additional increased by the utilization of camera and by developing a mobile primarily based application to induce the important time read of the vehicle instead to envision it on computer, which might be additional convenient for the user to trace the target.

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