Survey on Monitoring of GPS and GSM Tracking System Using Google Map

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Abstract: GPS is one of the advances that are utilized as a part of countless today. One of the applications is following your vehicle and keeps general checking on them. This following framework can educate you the area and course went by vehicle, and that data can be seen from some other remote area. It likewise incorporates the web application that gives you correct area of target. This framework empowers us to track focus in any climate conditions. This framework utilizes GPS and GSM advances. The paper incorporates the equipment part which contains GPS, GSM, Atmega microcontroller MAX 232, 16x2 LCD and programming part is utilized for interfacing all the required modules and a web application is likewise created at the customer side. Fundamental target is to outline a framework that can be effectively introduced and to give stage to further upgrade.

Keywords: *GPS, GSM, Tracking System*

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1. INTRODUCTION

In this urban life transportation is extremely basic. A great deal of mis-happenings happen out and consistently .Therefore the need of security and checking is created. To determine such issues, a framework is created utilizing GPS and GSM innovations and an application is presented in this examination work.

Different issues that we confront:

1. In basic condition (when vehicle is stolen), one is befuddled what to do
2. In the event that one has something costly and he needs to check it routinely
3. To locate the most limited way accessible

Every one of these issues are overcome by the framework. This framework has Global Positioning System (GPS) which will get the directions from the satellites among other basic data. Following framework is critical in current world. This can be valuable in officer observing, following of the robbery vehicle and different applications. The framework is microcontroller based that comprises of a worldwide situating framework (GPS) and worldwide framework for portable correspondence (GSM). This venture utilizes stand out GPS gadget and a two way correspondence process is accomplished utilizing a GSM modem. GSM modem, furnished with a SIM card utilizes similar correspondence prepare as we are utilizing as a part of standard telephone. The framework is not constrained to discover the area of the objective additionally ascertains the separation voyaged b/w two stations. This framework is easy to use, effectively installable, effortlessly available and can be utilized for different purposes. After establishment framework will find focus by the utilization of a Web application (HTML based application) in Google outline. The framework permits to track the objective whenever and anyplace in any climate conditions.

2. LITERATURE SURVEY

Continuous following and administration of vehicles has been a field of enthusiasm for some scientists and a great deal of research work has been accomplished for following framework. As of late the different against burglary modules like controlling wheel bolted gear, organize following framework and customary electronic alert are produced alongside customer ID and constant execution observing. The paper exhibited by El-Medany, W.; Al-Omary et al depicts a constant following framework that gives precise confinements of the followed vehicle with minimal effort. GM862 cell quad band module is utilized for execution. An observing server and a graphical UI on a site is additionally created utilizing Microsoft SQL Server 2003 and ASP.net to

see the best possible area of a vehicle on a particular guide. The paper additionally gives data viewing the vehicle status, for example, speed, mileage. [1]

Hu Jian-ming; Li Jie; Li Guang-Hui depicts a car hostile to robbery framework utilizing GSM and GPS module. The framework is created utilizing rapid blended sort single-chip C8051F120 and stolen car is identified by the utilization of vibration sensor. The framework stays in contact with car proprietor through the GSM module, for the security and unwavering quality of vehicle. [2]
Fleischer, P.B.; Nelson et al depicts advancement and sending of GPS (Global Positioning System)/GSM (Global System for Mobile Communications) based Vehicle Tracking and Alert System. This framework permits between city transport organizations to track their vehicles progressively and gives security from equipped burglary and mishap events. [4]

Le-Tien, T.; Vu Phung depicts a framework in view of the Global Positioning System (GPS) and Global System for Mobile Communication (GSM). It depicts the down to earth show for steering and following with versatile vehicle in an expansive zone open air environment .The framework incorporates the Compass sensor-YAS529 of Yamaha Company and Accelerator sensor-KXSC72050 of Koinix Company to gain moving bearing of a vehicle. The framework will procure positions of the vehicle by means of GPS collector and after that sends the information to administered focus by the SMS (Short Message Services) or GPRS (General Package Radio Service) benefit. The regulated focus includes an improvement pack that backings GSM systems WMP100 of the Wavecom Company. At long last, the position of the versatile vehicle will be shown on Google Map. [5]

3. SYSTEMARCHITECTURE

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

3.1 Description of transmitting unit:

3.1.1 GPS

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

1) Message transmission time

2) Position at that time

3.1.2 GSM

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

3.1.3 Microcontroller

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

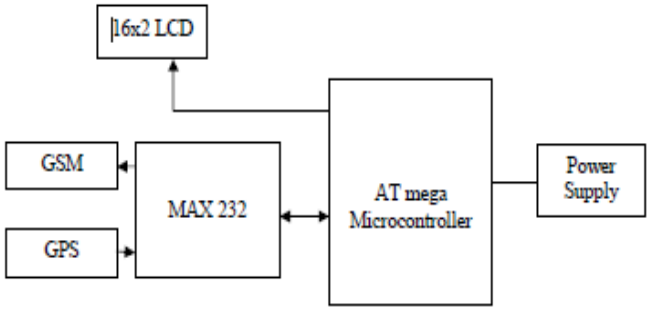

Figure 1.Architecture of transmitting unit

3.1.4 MAX 232

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

3.1.5 16x2 LCD

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

3.2 Monitoring unit

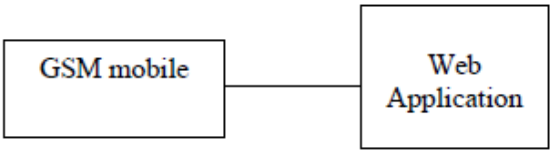

Figure 2.Monitoring unit Architecture

The observing unit comprises of a GSM versatile and a Web Application. The GSM portable will procure the position of the vehicle (longitude and longitude) and after that by writing those co-ordinates in web application proprietor of vehicle can get the correct area of the vehicle. The web application part is secured later in this paper.

4. HARDWARE DESIGN

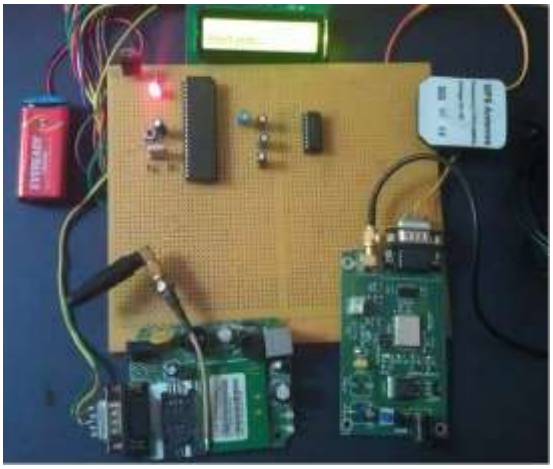

Figure 3.Hardware design

In this we are utilizing a 40 stick ATmega16 microcontroller. It has four input–output ports. ATmega16 microcontroller is the heart of the venture that is utilized for interfacing. Two pins are VCC pins and other two pins are at ground. Stick 9 is reset stick. A precious stone oscillator of 12 MHz is associated with the microcontroller. RS-232 convention is utilized as serial correspondence between the microcontroller, GPS and GSM modem. A serial driver MAX232, 16 stick IC is utilized for changing over RS-232 voltage levels into TTL voltage levels. There are four electrolytic capacitors which are utilized with MAX232. A 9V battery is utilized to control the circuit. A 7805 controller is utilized to change over 9V into 5V. The microcontroller and MAX232 are controlled by 5V. Driven shows the nearness of force supply.

5. SOFTWARE PROGRAM

The product writing computer programs is done in 'C 'dialect. Information (co-ordinates) got by GPS from the satellites is characterized in the product. Deciphering the NMEA (National Marine Electronics Association) convention is the primary motivation behind building up this product. The versatile number of the client ought to be incorporated into the product programming with a specific end goal to get the area values from the SIM card which we are utilizing as a part of GSM modem. The NMEA convention comprises of set of messages. These messages are ASCII character set. GPS gets information and present it as ASCII comma – delimited message strings. "$" sign is utilized at the beginning of every message. The areas (scope and longitude) have the organization of ddmm.mmmm. i.e. .degrees minutes and decimal minutes. The product convention comprises of the GGA (worldwide situating framework altered information) and GLL (geographic position scope/longitude). However, in this framework we are utilizing CGA as it were. The stream graph of the framework is given as:

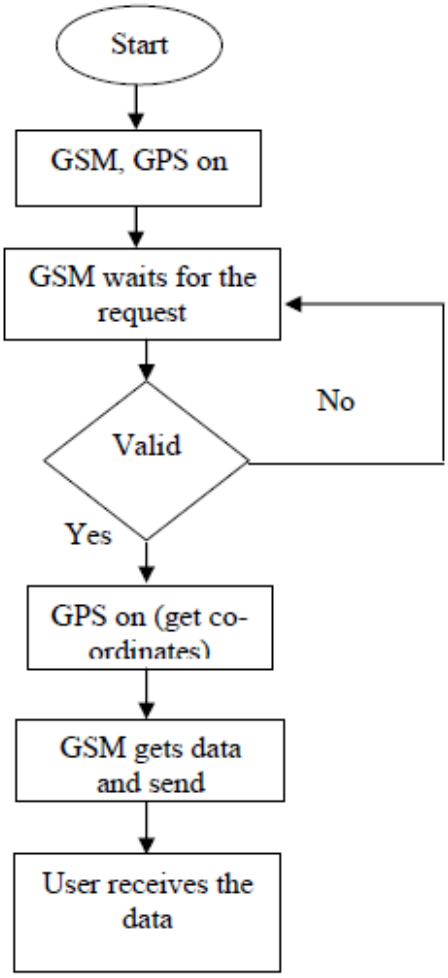

Figure 4.Program flow chart of the tracking system

6. WEBAPPLICATION

The web application named as Tracking System' is appeared in assumes that speaks to the entire yield of the framework. In this framework two applications are created that are connected to each other. Initial one is utilized to get the underlying position of the vehicle (beginning stage) and as framework will get the diverse co-ordinates (longitude and scope) changing to the following one will be done to get the separation voyaged b/w the two positions. The application will keep running on WAMP server and will run just if the web is being used. WAMP server landing page is appeared in chart.

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 hisrequirements

- Gives the exact location of the target.
- The applications also alerts about the distance travelled by the target and also theroutes 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 befound. 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

7. CONCLUSION AND FUTURE SCOPE

The project is all about controlling theft of a vehicle. The system is about making vehicle moresecure by the use of GPS, GSM technology and a web application. The simulation is done byPROTEUS software. It can also be beneficial for:

1. Parents to look after their children.
2. To track animals in jungles
3. Delivery services
4. Cops department and fire services

This project can be further enhanced by the use of camera and by developing a mobile basedapplication to get the real time view of the vehicle instead to check it on PC, which would bemore convenient for the user to track the target.

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