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DESIGN AND DEVELOPMENT OF GPS-GSM BASED TRACKING SYSTEM

Dr. A. N. Nandha Kumar
Professor
Jeppiar Engineering College, TN, India

Abstract:
GPS is one of the expertises that are used in a enormous number of applications today. One of the Applications is tracking the vehicle and keeps continuous monitoring on them. This tracking system can notify the location and route travelled by vehicle, and that information can be observed from any other remote location. This system enables to track target in any weather conditions. This system uses GPS and GSM technologies. The paper includes the hardware part which comprises of GPS, GSM, Atmega microcontroller MAX 232, 16x2 LCD and software part is used for interfacing all the required modules and a web application is also created at the client side. Main objective is to design a arrangement that can be easily installed and to provide platform for further enhancement
Keywords: GPS, GSM, track, vehicle

INTRODUCTION

In this metropolitan life, transportation is very common. A lot of mishappening occurs on the highway every day .Therefore the necessitate of security and monitoring is developed. To resolve such problems, a structure is developed using GPS and GSM technologies and an application is introduced in this research work. Various problems that we face:

1. When vehicle is stolen
2. Safe guard of Expensive and to check it regularly
3. To find the shortest path accessible

All these problems are overcome by the system.

This system has Global Positioning System (GPS) which will obtain the coordinates from the satellites among other critical information. This can be helpful in soldier monitoring, tracking of the theft vehicle and various other applications. The arrangement is microcontroller based that consists of a global positioning system (GPS) and global system for mobile communication (GSM). This project uses only one GPS tool and a two way communication procedure is achieved using a GSM modem. GSM modem, provided with a SIM card uses the message procedure as we are using in regular phone.

The system is not limited to locate the location of the target but also calculates the distance travelled between two stations. Easily installable, easily available and can be used for various other purposes. After installation system will position target by the use of a Web application (HTML based application) in Google map. The system allows to track the target at anytime, anywhere and any weather conditions.

SYSTEM ARCHITECTURE

It consists of two units

1. Transmitting side
2. Monitoring side**.**

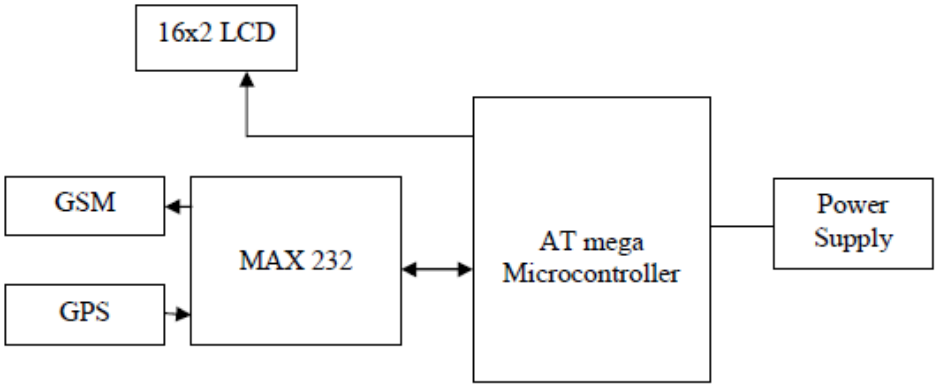

Figure 1.Architecture of transmitting unit

GPS

GPS modules are used for direction-finding, positioning, time and additional purposes. GPS antenna receives the position values from the satellites. GPS gives in sequence about:
1) Message transmission time
2) Position at that time

GSM

GSM modem is used for transmitting and receiving the data. It mechanism on various frequencies 800MHz and PCS 1900MHz.

Microcontroller

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

Monitoring unit

Figure2 Hardware Architecture .The monitoring unit consists of a GSM mobile and a Web function. The GSM mobile will obtain the position of the vehicle (longitude and longitude) and then by typing those co-ordinates in web application proprietor of vehicle can get the exact location of the vehicle.

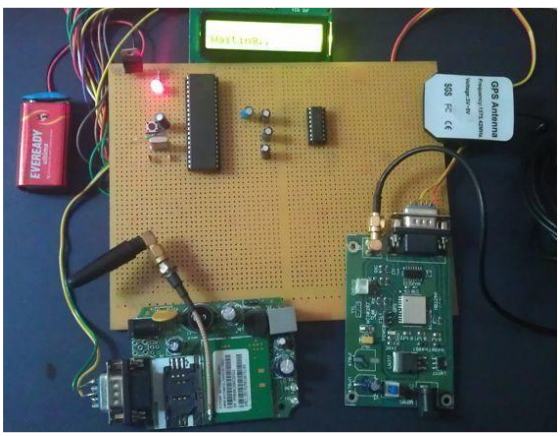

Fig 2 Hardware design

The software programming is done in 'C 'language. Data (co-ordinates) received by GPS from The satellites is defined in the software. The mobile number of the user should be included in the software programming in order to be given the location values from the SIM card which using in GSM modem. GPS receives data and present it in the formof ASCII comma $' sign is used at the starting of each message. The locations (latitude and longitude) have the format of dd mm.mmmm. i.e. .degrees minutes and decimal minutes. The software protocol consists of the GGA (global positioning system fixed International data) and GLL (geographic position latitude/longitude). But in this system we are by means of CGA only. The flow chart of the system is given as:

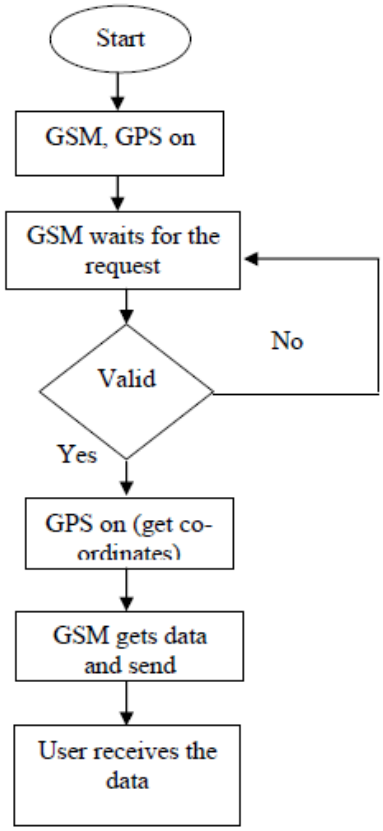

Figure 4.Program flow chart of the tracking system

CONCLUSION

The project is related to controlling and detecting the theft of a vehicle. The system is about manufacture vehicle more secure by the use of GPS, GSM technology and a web application

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