Vehicle tracking GPS system using GSM sim

Minor Project Work Summary Sheet

Submitted by:

Harshit Chopra : 20104013

Kartik Gupta : 20104025

Ayush Sharma : 20104059

Under the supervision of:

Dr. Shardha Porwal

Department of CSE/IT

Jaypee Institute of Information Technology University, Noida

November 2022

MOTIVATION BEHIND THE PROJECT

Real-time tracking data on valuable items and assets has the potential to solve a lot of global issues. The Global Positioning System, or GPS, offers position in any situation utilizing both offline and online methods. The majority of commercially available vehicle tracking technologies are prohibitively expensive. So, we made the decision to create a simple and affordable tracking system on our own. Users have the option to demand a location. The message is safe and encrypted. The client side performs the decryption.

In addition, it can help: 1. Parents who look after their kids. 2. Tracking wildlife in jungles 3. Services for delivery. 4. The police and fire departments.

TYPE OF PROJECT

Research cum development project.

OVERALL DESIGN OF PROJECT

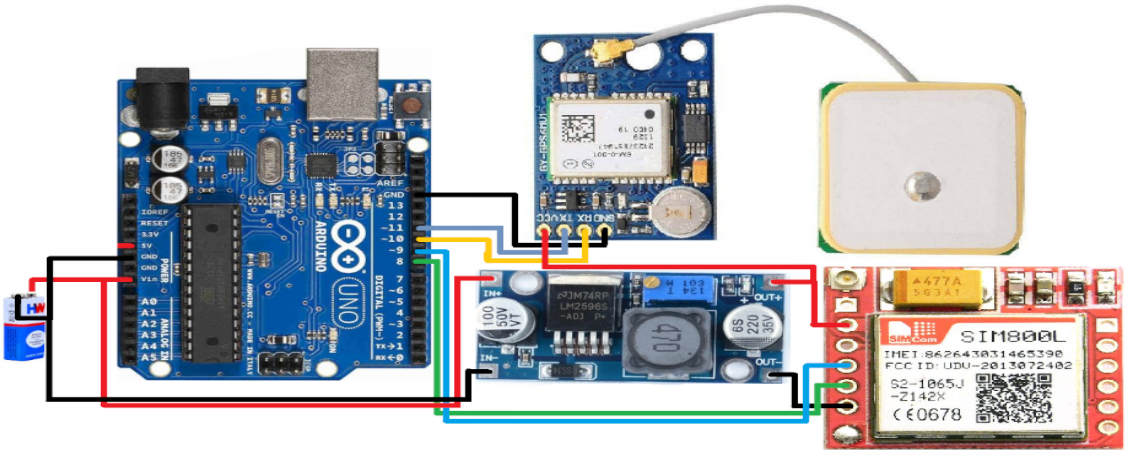

Fig. 1 (Circuit Design)

Arduino UNO: a module-connected programmable open-source microcontroller board.

SIM800L GSM/GPRS: An extremely small GSM modem that can convey the position via SMS is the Module. The operational voltage of the chip is between 3.4V and 4.4V.

GPS Module: The NEO-6M GPS module has the highest level of tracking sensitivity in the industry and can track 22 satellites across 50 channels. The latitude and longitude are sent through SMS.

LM2596S DC-DC Buck Converter Power Supply: The high-precision potentiometer converter step-down the voltage.

Jumper wire: Tie together distant electric circuits used to make printed circuit boards.

9-volt battery: Power source

Arduino IDE: A text editor for writing code, a message area, a text console, a toolbar with buttons for commonly used operations, and a number of menus are all included in the Arduino Integrated Development Environment (IDE). In order to upload programmes and communicate with them, it connects to the hardware.

Android Studio: To create a decryption application used in mobile devices.

FEATURES BUILD, LANGUAGE USED

GPS tracker with sim module sends the encrypted location on demand. Location is decrypted on the client side.

Languages used :

C, JAVA

PROPOSED METHODOLOGY

First we have made a hardware system using a few modules and a microcontroller which can send the location to the desired device.

To fetch the location we used the GPS module which can give longitude and latitude details to the microcontroller.

Microcontroller sends the longitude and latitude information to the desired device using the GSM Module via the 2G network through the sim card installed in the GSM Module.

The device receives the location information in the SMS form .

ALGORITHM/DESCRIPTION OF THE WORK

To send the location information link directly in the SMS app of the device can be read or misused by another one easily.

For that reason we have sent the encrypted information to the device in the form of SMS and the encryption is done on the side of the Arduino .

For decryption we have made an android app that we install in the destination device which can decrypt the received location code or cipher text to the location link or google map link .

DIVISION OF THE WORK AMONG STUDENTS

Harshit Chopra: Arduino code
Kartik Gupta: Connection and arduino code
Ayush Sharma: Connection and Android Studio code

RESULT

The message is sent in an encrypted form. Encryption is done on the side of the Arduino. Decryption is done on the client side through the decrypting application. The location is shown on google maps.

CONCLUSION OF THE REPORT AND FUTURE SCOPE

Any device with a sim card can utilize the GPS tracker gadget, an offline GPS system. An encryption method is used to encrypt the location. With the help of this technology, a user can locate the target people and see their whereabouts on a map of the web application. In the contemporary world, GPS has shown to be one of the greatest tracking technologies. When it comes to security, it has shown to be a useful tool. The system's goal is to increase car security through the use of GPS, GSM, and a web application.

The usage of cameras and the creation of a mobile-based application to obtain a real-time view of the car rather than viewing it on a computer could further improve this project and make it more comfortable for the user to monitor the target.

If our vehicle is in a border area where range will not come it’s difficult to track the vehicle here memory card functionality is used in it. All the dimensions are stored in the memory card and when our vehicle comes in range it shows all the dimensions.