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# Transport Tracking System Using GPS and GSM Module

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**ABSTRACT:** Improving efficiency of operations is one of the greatest challenge today especially in mobile environment such as transportation services and in this paper we are designing a vehicle tracking system which combines the installation of an electronic device in a vehicle with designed android application to track the vehicle's location. The main aim of the device will be collecting the data from field and deliverer's it to server from where it will be fetched by android application and the vehicle real time location can be viewed on google maps in android application using internet.

**KEYWORDS:** GPS, GSM, Tracking System, Android Application and Google Maps.

### I. INTRODUCTION

Transportation plays an important part in our life it is the transportation only which make the people connected from one another but the method available for the vehicular tracking is still complicate we have high speed internet connection available with us therefore in this paper a method for Vehicle tracking is designed which will make tracking easier to the persons of any age groups.

This system will make use of GSM and GPS module to give exact and real time location of vehicle for that we are using a microcontroller along with GSM and GPS module. The GSM module will be provided with a SIM card for communication purpose.

GPS will give the longitude and latitude values and that values are been transmitted to the server with the help of Global Service for mobile (GSM module) once the longitude and latitude value will uploaded on the server the user with the help of android application and internet will able to download it from server and get the real time location of the vehicle.

### II. RELATED WORK

There will be units of this system one is the transmitting (at vehicle) and another for monitoring.

#### 1. Description of Hardware Unit

##### 1.1 GPS

GPS stands for Global positioning system has wide number of application today popularly in the field of navigation etc.

A GPS antenna will receive the longitude and latitude value from satellite about the current location of module along with the UST time and various other parameters.

##### 1.2 GSM

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A GSM module is working as modem for transmitting data to the server. Here we have used SIM 900 which is a Quad Band Module works on various frequency i.e. 850MHz, 900MHz, 1800MHz and 1900MHz.

## 1.2 Microcontroller

The hardware will use Microcontroller MSP-EXP430G2 which is 16-bit microcontroller. It comprises 8kB flash memory, 256B RAM.

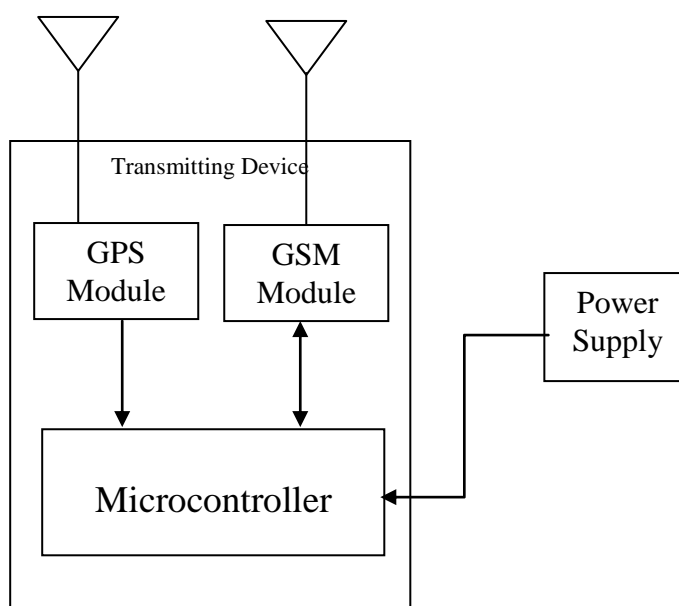


Figure 1. Transmitting unit

Hence the transmitting unit will transmit the data to the server with the help of GSM and GPS as per the diagram shown above (Figure 1). The transmitting unit will be placed somewhere in the vehicle which user want to track and the unit will be given a particular identification number mostly it will be its route or registration number by entering that number in the android application user will get the location of vehicle.

## 1.3 Monitoring Application

The purpose of monitoring application is to provide users an easy, user friendly and comfortable tracking platform in which users will be able to locate their vehicle. This monitoring application will be an android based application which users of this tracking system can install in their android based mobile phones.

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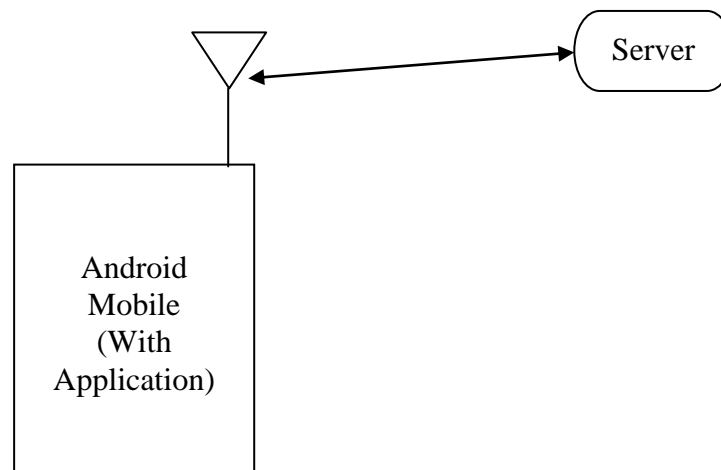


Figure 2. Monitoring unit

For accessing the location of vehicle the user will need an android based phones with internet access. As the user open this application and enter the desired bus number the application will download the values of longitude and latitude from server and shows the current real time location of the vehicle.

## 1.4 Hardware Design

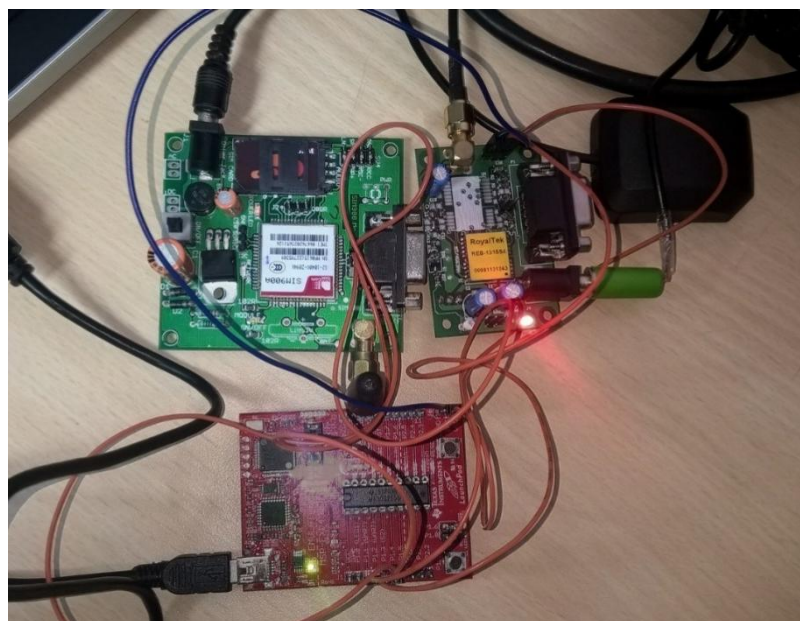


Figure. 3 Actual Hardware Design

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In the above figure (figure 1.) actual connection is shown between GSM, GPS and microcontroller is shown and power supply is provided to all module.

## III. SOFTWARE

The program for interfacing of modules is written in sketch code and obtained GPS values are transmitted with the help of GSM module to the web link provided by server and that link is required to be mention in the programming of the microcontroller. '\$' sign is there at the starting of GPS value every time when the location is send on the web link. The locations coordinates (latitude and longitude) are having the format of ddmm.mmmm. i.e. .Degrees minutes and Decimal minutes.

## IV. ANDROID APPLICATION

The Android application developed and shown in the figure (3) below. This application will the show output of the system in google maps. As we soon as the users open this application in their android based phones it will ask for bus number if the user enter figure (4) the correct bus number which is there on the server. The application will automatically fetch its location and will start showing the actual position of the vehicle. This application will work only if internet connection is available and the server we are using is opengps for tracking and monitoring of vehicle.

### Advantages of Android Application

1. Within an organisation everyone can be given the application to track their transportation. No separate device is required for everyone.
2. Easy to track and carry.
3. Gives exact location with the help of google maps.

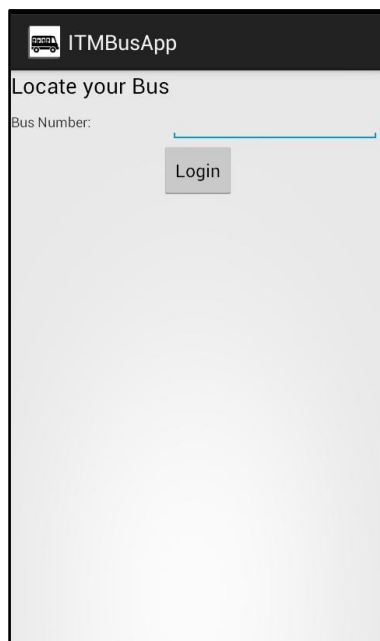


Figure (4)

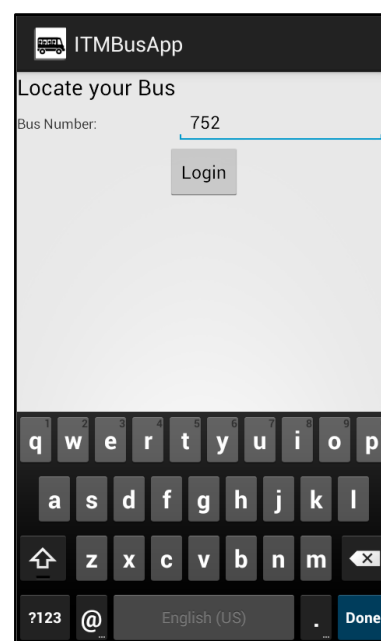


Figure (5)

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## V. EXPERIMENTAL RESULTS

After the above mention two steps the result will open in google maps with the actual position of the vehicle (Figure 6).

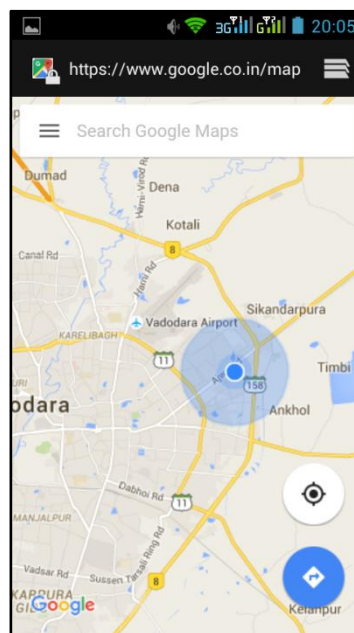


Figure (6)

## VI. CONCLUSION

We have developed an android based transport tracking system with the help of GPS, GSM and Google Maps. It is successfully giving us the actual location of the vehicle.

This system could be beneficial for:

1. Parents and Educational Institutes for their children and students.
2. Tracking of the Public bus services.
3. Food Delivering and car rental companies.
4. Tracking of Government vehicle of Police and various other agencies.

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