

ANDROID TRACKING APPLICATION USING GSM/GPS

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Abstract:GPS/GSM Tracker is a mobile application. The main aim of this Android project is to assist users in finding their relevant location according to their source and destination. By using this application, the user can find out the location of the person within a campus or premise. The tracking is done within a specified range and is easy to use.

IndexTerms– GPS, GSM, Android, Tracking.

I. INTRODUCTION

This project is about the design and implementation of device tracking system using (GPS, GSM). It comprises of integration between GPS technology and a GSM module. This combination of technology will produce a tracking system. This project can be divided into two main parts software and hardware development. GSM module is used for tracking and GPS is used for navigation.

The objective of this project i.e. an Android application is to provide location tracking functionality for Android device. This project supports Android OS only and makes communication with the phone through GPS. The scope of this project includes the security of the architecture as well as the accuracy of tracking unit.

II. LITERATURE SURVEY

- IJETT journal paper for pilgrim safety and tracking: Disadvantage: Privacy problems for mobile users.

Solution: We allow tracking of people only if they are registered users of our app. So people who are not registered cannot track others and cannot be tracked. [2]

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Disadvantage: The user has to track his/her phone by sending a secret code to their mobile phone number. Then the location of the phone is sent to them.

Solution: We can track our phones within the given range using our app. We do not require any secret codes to be sent to the device to track it but we are using color change system when the other person accepts to track him/her in our app itself.[3]

III. ANDROID APPLICATION

- *Login and registration of the application*

The user needs to register in the application and then continued with the login page to succeed with the login page.

Only if registered and logged in the user can track, which is the security measure for our application.

- Tracking

The android application provides location tracking functionality. This project works for android OS only and includes security of architecture as well as accuracy of tracking unit. The user should grant permission to allow other users to track him/her. This is done by “allow to track” option for every registered user. This is reflected as a color change from red to green in the other person’s device. Check boxes are provided for every registered user to accept that the other person can track him/her. The registered users list will be in reject state as default and on accept the color change will be seen in the other person’s phone.

- Purpose:Real-time tracking

The tracking application mainly aims at tracking people using their phone numbers based on GPS and GSM technology.

- *Abbreviations and Acronyms*

GPS-Global Positioning System

GSM-Global System for Mobile Communication

- *Some Common Mistakes*

- If the user does not register to the application, then tracking is not possible.
- User can be tracked only if he has the device with him/her.

IV. BLOCK DIAGRAM OF PROPOSED SYSTEM

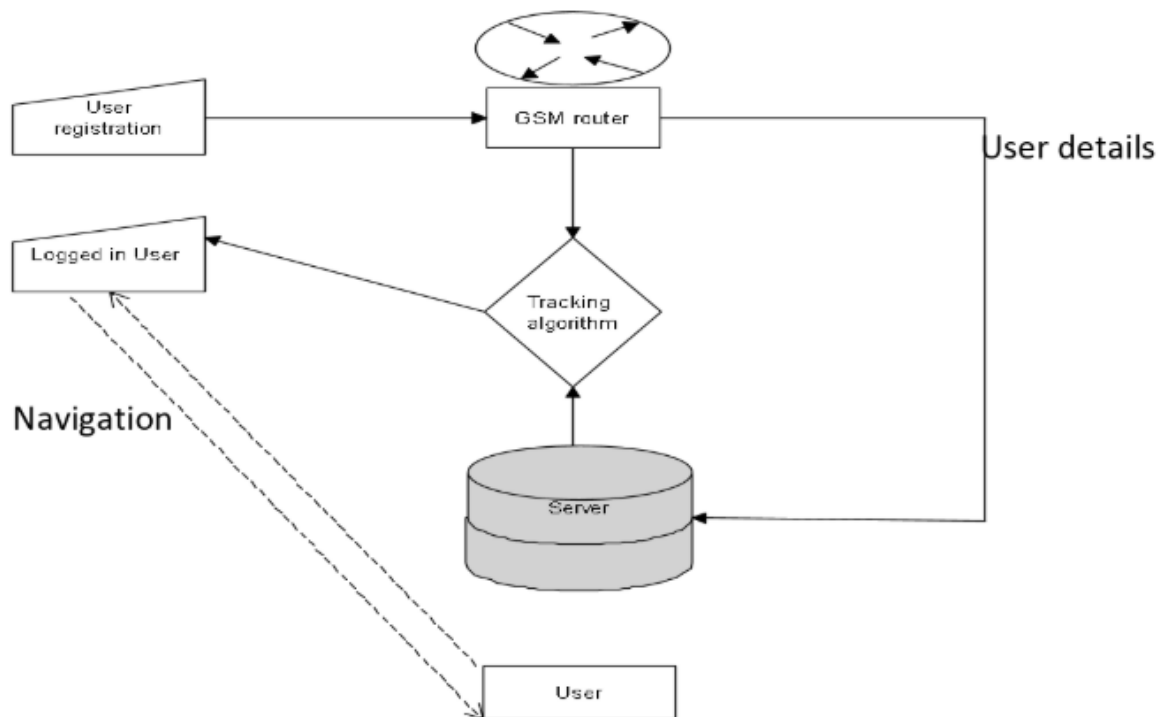


Fig 4.1: Block diagram of proposed method

The above figure shows the flow of architecture. First the user needs to register to the application by providing his credentials. Once he registers, his details will be sent to the server through the GSM router. From the server, the tracking algorithm fetches the latitude and longitude values of the registered user. This information is sent to the user who wants to track another user. The unique phone number is registered in the GSM module using which the latitude and longitude of a phone is fetched and finally navigated within a campus of any place with the help of navigation maps. The navigation maps is designed based on source and destination got by latitude and longitude fetched from the server. The information sent to the server is sent and received through REST web services. Thus logged in users can track each other simultaneously. We have used google maps API for our project and the range for tracking is maximum 500 meters with 1800MHz frequency. We have implemented the project for using within 500 meters of any place since we have not included the plan of any place in our application which is the biggest advantage.

V. IMPLEMENTATION-HARDWARE

1. GSM Module: GSM is a mobile communication modem; it stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands. GSM system was developed as a digital system using time division multiple access (TDMA) technique for communication purpose. A GSM digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot[9].

The digital system has an ability to carry 64 kbps to 120 Mbps of data rates[10]. GSM modem is controlled using AT commands[7]. AT COMMANDS have the format of “AT”, where “” is the command, and “” is/are the argument(s) for that command.Eg. ATD 1234567890,this command calls the number.

As told above,the microcontroller issues AT commands to the GSM module acting as the controller to the working of GSM module. A SIM is inserted to the GSM module. In our project, on logging in, a message from the user’s phone is sent to the GSM module and a reply message is got from the GSM module saying “Welcome to our people tracking app”. We will also get a miss call from the module to confirm that we are a registered mobile user. So this project can be implemented for only registered users.

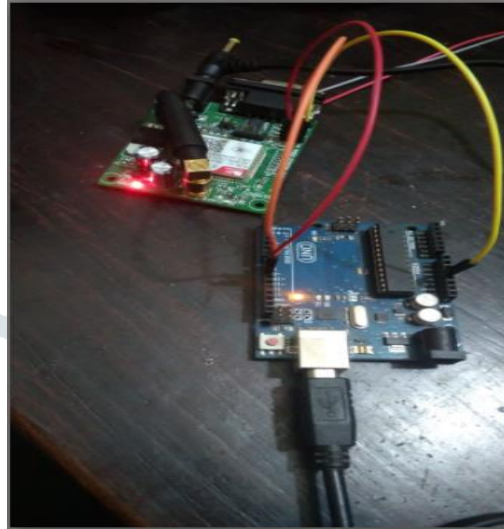


Fig 4.2.2: GSM Module and Microcontroller

2. Hardware and software requirements

- Hardware requirements:

An android phone is used consisting of GPRS(General Packet Radio Service) is a packet oriented mobile data standard on the 2G and 3G cellular communication networks global system for mobile communication.

A GPS module is used along with a GPS navigation device.

GSM router is used consisting of GSM module is a specialized type of modem which accepts a SIM card and operates over subscription to mobile operator.

- Software requirements:

Operating System that is Android 4.0 or higher version is used.. GPS must be enabled on a device.

Client side must have Android-SDK version 4.0 or higher.

Server side we use NodeJs and MySql .

Android studio is used for front end and XML and Java are the basic requirements to be known.

VI. CONCLUSION

The android project is implemented and tested using GSM and microcontroller hardware modules. This project is used to track the android phone with the help of the android application. Only the registered user can use the android application and track the phone and hence our application is secured. This project tracks the users after receiving permission from them which gives privacy for the user getting tracked. Thus our project is implemented successfully with privacy and security.

VII. FUTURE SCOPE AND APPLICATIONS

We can increase the range of the GSM module for bigger campuses. We cannot track android phones which are lost since we need to take the user's permission whom we need to track and so we can even improve our application in tracking lost phones. We can even develop our project so as to work for even iphones as we have developed now for android phones only. In our project, we use a separate server to login from our application which can be totally implemented within the hardware and track using only GSM module without GPS and internet connection.

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