International Journal of Future Innovative Science and Engineering Research (IJFISER)
Volume – 3, ISSUE – I **ISSN (Online):2454- 1966**

Research Manuscript Title

Smart Vehicle Tracking System Using Android Application

V.Harishma[1], S.Rani [2], RebikaWangkhem[3], Ms.,P.Brindha[4],

UG Scholar[1,2,3], Assistant Professor[4]
[(1,2,3,4)]Department of Computer Science and Engineering,
[(1,2,3, 4)] Vivekanandha College of Engineering for Women Namakkal,TN India

Corresponding author E-Mail-ID: ***brindhassk@gmail.com***

March – 2017

www.istpublications.com

International Journal of Future Innovative Science and Engineering Research (IJFISER)
Volume – 3, ISSUE – I ISSN (Online):2454- 1966

Smart Vehicle Tracking System Using Android Application

V.Harishma[1], S.Rani[2], RebikaWangkhem[3], Ms.P.Brindha[4],

UG Scholar[1,2,3], Assistant Professor[4]
[(1,2,3,4)]Department of Computer Science and Engineering,
[(1,2,3, 4)] Vivekanandha College of Engineering for Women Namakkal, TN India

Corresponding author E-Mail-ID: *brindhassk@gmail.com*

ABSTRACT

GPS tracking device receives signals from the GPS satellites whereby each satellite knows the exact distance from the other satellites in its proximity. Depending on the time it takes for a signal to reach the device from each satellite, the GPS receiver can calculate its exact location on the ground. The GPS tracking device can then route that information back to an online tracking system for mapping. The main aim of this Android application is to track the college buses of Colleges and which would give the exact location of buses with the help of Google map and help the users to plan their way to reach their college on time. This application may be greatly used by college students and staffs since Android mobiles has become common and spread everywhere. In addition, this will also enhance the security since the movement of the college buses is always available.

Keywords: GPS (Global positioning system), GPS transmitter, GPS receiver, Google map.

1. INTRODUCTION

A vehicle tracking system is one of the most common applications used for tracking vehicles which is also used to prevent vehicle from theft. Today Android Applications are very good source for tracking the vehicles. It provides real time data on the movement of vehicles. Android phones are widely used for this purpose because they have GPS device attached with it. It acts as both transmitter as well as receiver. A vehicle tracking system combines the use of automatic vehicle location in individual vehicles with software that collects these fleet data for a comprehensive picture of vehicle locations. Modern vehicle tracking systems commonly use GPS for locating the vehicle, but other types of automatic vehicle location technology can also be used. Vehicle information can be viewed on electronic maps via the Internet. Urban public transit authorities are an increasingly common user of vehicle tracking systems, particularly in large cities.

2. RELATED WORK

Land Vehicle Tracking Application on Android Platform is done to solve the issues like accidents, traffics, vehicle theft etc. It tracks vehicles through android application using GPS to find out where a bus is using a web application which requires login of administrator. This web application intimates the administrator and people sitting in bus to come in front for their stop. The web application developed only provides route of the bus but no exact location. Bus Locator via SMS using Android Application sends current location of the bus to the server at specific pick up point. Then the server sends SMS to registered students who are supposed to

board at Next pick up point. Here the mobile phone is used as a GPS receiver. This is the tedious process where the details of the students are to be maintained and updated. The server is overloaded frequently to get details of student at every stop. Real Time Bus Monitoring System using GPS displays the real time locations of the bus in Mumbai city. This system consists of transmitter installed on the buses, receiver boards are installed on the bus stops.

It provides the relevant bus routes and bus number from source to destination.It transmits the bus routes and bus numbers continuously as soon as bus comes within range of the receiver. The pedestrian can view the bus only after coming to bus stops and no information of the bus can be viewed from other place. GPS Based Vehicle Navigation System using Google Maps mainly focuses on developing an enhancement of GPS based vehicle navigation system using Google Map.

This project helps to locate the routes in which buses are travelling and displays the bus position in Google map. The motion of the vehicle is traced continuously and the message is send to the owner of the vehicle on demand or automatically. Here both GPS and GPRS are used but the movement of the vehicle is not displayed. Android Application for Vehicle Theft Prevention and Tracking System provides the information like location, speed; distance travelled etc., can be viewed on Google Map with the help of API via internet. The vehicles are registered and tracked at any time. The vehicle tracking system installed within the vehicle sends a SMS containing the GPS coordinates to the administrator, using which he tracks the vehicle on Google Earth. The administrator can also forward the SMS containing the GPS coordinates to his close friends and relatives if he wishes to, so that they can track the vehicle using Google Earth.

3. PROBLEM DESCRIPTION

One of the problems occurring in current UTAR bus service is student did not know exactly what time a bus will arrive, but only know the scheduled arrival time. Student needs to wait for a bus without knowing what time the bus will arrive actually. Sometime, student might feel anxious and impatient when they waiting for a bus if they do not know what time the bus will arrive especially when student rushing of time for certain reason. Additionally, this situation wasted a lot of time when waiting in bus stop because the time wasted can actually spend on other matter. Examples to describe this issue, a student have to take the 7.40am bus to attend an 8am morning class and the class is important and cannot be late.

The scheduled time for the bus is 7.40am, but the exactly arrival time for the bus will be different due to traffic status. If the bus arrives at exactly 7.40am, the student will not late for the class. But if the bus delay 5 to 10 minutes, the student will late for the class. Thus, the student unable to make decision whether to wait for the 7.40am bus or walks in to campus before 7.40am because the student do not know the exactly arrival of the bus and it would be risky to wait for the 7.40am bus. There is dangerous situation when student waiting in bus stop. Due to delay or missed bus, student needs to wait long time in bus stop. In the same time, student might become robbery target. For example, a student plan to take the 7am bus but the bus was delay 15 minutes due to traffic

jam. If the bus is not delay, the student is already inside the bus on the way into campus. But due to delay 15 minutes, robber has 15 minutes more chance to target on the student. This unpredictable problem was very dangerous for student and it will reduce the confident of student to take bus service.

Besides, current UTAR bus management unable to schedule an accurate bus timetable for student. This is because current bus system is implementing manual tracking on bus arrival time and travel duration between two bus stops. The estimated arrival time is calculated based on the average travel duration between two bus stops. It was not accurate because of various uncertainties will happened on each bus stop. Given an example to illustrate this problem, bus management team was manually recorded the travel time between bus stop A and bus stop B. And estimated arrival time in bus stop B BCS (HONS) Information System Engineering Page 4 Faculty of Information and Communication Technology (Perak Campus) was calculated by average of travel time between these two bus stops. However, the bus will delay on bus stop B because there are many students queuing up to take the bus in bus top A. In other way, the bus will reach bus stop B early if there are no student take this bus in bus stop A. Moreover, the whole bus route timetable will be delay if delay happen continuously.

This issue occurs because current bus system unable to strain for uncertainties and unpredictable situations happened in every bus stop. Lack of real time platform is the serious communication problem between bus user and bus management team. Without a real time platform, bus management side unable to update latest bus traffic information for students. Students also cannot check on the updated bus schedule if there is a bus delay happens. For example, student can choose walk to the building he or she want to go instead of waiting for a delay bus if there is a real time platform for student to know about the bus is delay.

To determine précised location of object we have proposed tracking unit which it is attached and using GSM modem this information can be transmit to remote user. This system contains GPS and GSM modems along with ARM processor that is setup in the vehicle. Through SMS the location of vehicle can be reported. GSM and GPS technologies helps to track the vehicles exact information. Real time control is provided by SMS system. You can monitor the location from anywhere using this system [1] we also proposed a model to get the exact position of vehicle.

The device used for tracking the location of vehicle is named as SWTRACK. The distributor companies use this model to get the location of their respective vehicles. It also provides the mechanism to the vehicle Positioning monitoring system was designed using CORS and Mobile GIS. The accuracy and precision is provided by CORS service network and Mobile which has also verified the feasibility to integrate CORS and Mobile GIS for mobile location services.GPS helps in to get accuracy and high speed for performing in faster way. It is best suited for taxi monitoring and navigation, vehicle anti-theft and other fields [4].

We presented all the satellite navigation systems available or in process today. Every system from GPS to IRNSS has been properly introduced and signaling schemes and modulation schemes are studied. Satellite navigation now days are what every country desire to have to become on great power as most importantly it serves military applications and rescue operations. The next generation of satellite navigation are giving services to the civil users and hence a very good market for commercial point of view [7].

To help individuals in finding addresses and locate their services of interest using their mobile devices Hassan I. Mathkour has propose and develop a GPS-based Mobile Service Locator System. To determine the approximate distances between the user and the locations of the desired place this system was developed. This system is flexible and extendible to easily get the location of the users interest places. A main purpose of departure fromexisting similar systems is that it is the GPS-based rather than the mobile-based service provider to allow for a more accurate location calculation [10].

Using GPS and GLONASS Changsheng Cai and Yang Gao has proposed a model which provides precise point positioning. In order to assess the positioning accuracy and convergence time improvement of the combined GPS and GLONASS data processing, a 2-hour and four 3-hour sessions of datasets have been used in the data analysis [11]. In Vehicle Tracking System for tracking the vehicle any tracking device is required. Now a days, three navigation systems are available and people use those for tracking any object. The GNSS consist of three main satellite navigation systems. They are GPS (Global Positioning System), GLONASS and Galileo.

4. PROPOSED SYSTEM

The proposed system provides the user to find exact location of the bus from where they are. The bus routes are displayed in the user interface so the users can select the bus route which they want to travel. The position of the bus is displayed in the Google map. The distance between the bus and the user is also displayed so this application helps the students/staffs to be aware of where the bus is exactly. Depending on the information like distance and position displayed in the Google map the user can plan and start accordingly.
The proposed system provides following advantages:

1. It provides exact position in Google map.
2. The details of the bus can be seen by everyone at anytime and anywhere.
3. This also enhances security because the movement of the bus is always available.

GPS based human vehicle tracking system uses the GPS technology, GSM service and Android mobile. As per shown in Fig. 1 this system has three main modules transmitting unit, monitoring unit and server. Transmitting side performs tracking functionality. It tracks the vehicle through GPS and transmits its current location to the server. The main function of monitoring side is to provide login interface to user and to show the google map with vehicle locations. Server woks as a central connector for transmitting unit and monitoring unit. As both transmitting side and monitoring side communicate with each other through Server only

Global Positioning System (GPS):

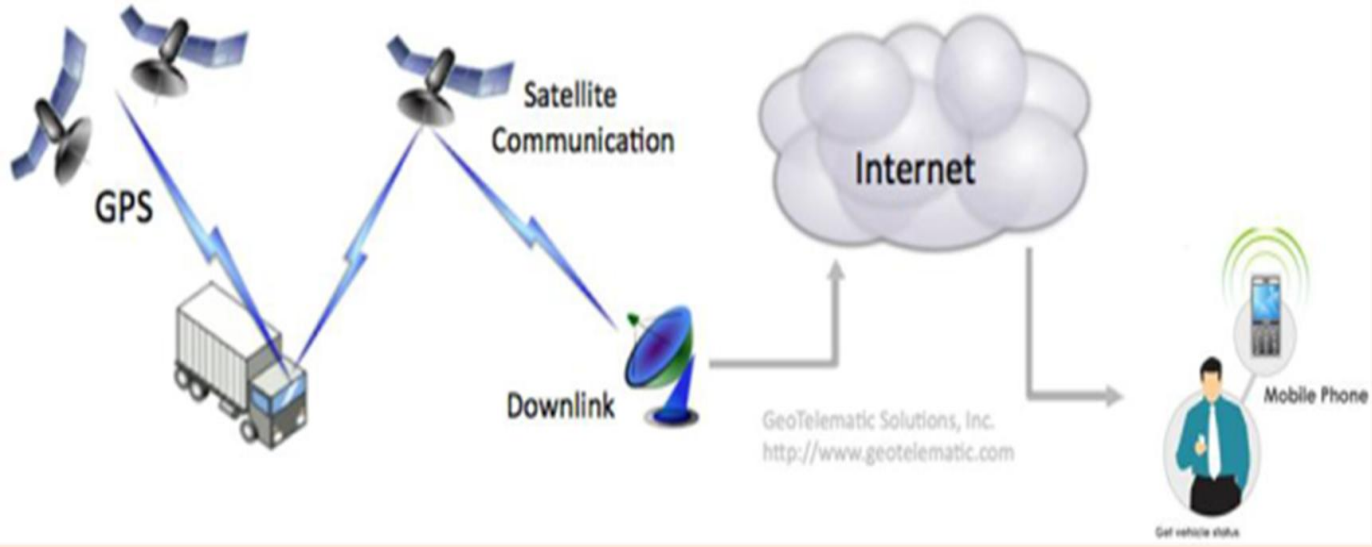
Technology has rapidly advanced in the past few years and it has become very easy for the average person to use a tracking system.GPS stands for Global positioning system has wide number of application today popularly in the field of navigation, tracking etc. A GPSis a space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

Global System for Mobile communications (GSM):

A GSM module works as modem for transmitting data to the server. The data communication is done by using the GPRS (General Packet Radio Service). One of the key features of GSM is the Subscriber Identity Module, commonly known as a SIMcard. The SIM is a detachable smart card. Here in this system, we have used SIM 900 which is a Quad Band Module.

SYSTEM ARCHITECTURE

The three modules in our paper are
1. Registration
2. Bus tracking
3. Route finding



5. RESULTS AND DISCUSSION

EXISTING SYSTEM

There are 17,000 location-based travel apps on the market, and 160 million app-compatible devices are owned worldwide – iPhones, Androids, Blackberries and tablet devices such as the iPad and Motorola Xoom.

There are apps that can make our travelling a little easier, a bit more fun and more memorable. They let you do anything you can do online or with aguide book, but more quickly and easily and while you're on the move – with maps and GPS to tell you where you are and capture wonderful memories. This research is based on development of a user-friendly Android-based application called Vehicle Tracker. Vehicle Tracking Solutions, a leading provider of GPS fleet management services, has introduced a free downloadable "app" for the Android phone that interacts with the fleet supervisor's Vehicle Tracking Solutions account. Called Silent Passenger, this GPS tracking Android app offers flexibility and mobility to fleet and operations management enabling them to modify settings, get reports, or monitor vehicle status, all from their smart phone

.

The existing system has some of the drawbacks like

- The exact position of the vehicle cannot be retrieved.
- This application mainly used only by owners and administrator.
- The bus location cannot be retrieved from anywhere.

OVERVIEW OF THE PAPER

In this paper, "An android application for tracking College bus using Google map" we are going to track the location of the bus using GPS and display it using Google map. Here we are doing it in the android platform using android mobiles because android mobiles contain both GPS transceiver and GPS receiver inbuilt. In the user interface when the user selects the bus route, the location of the bus, user, source, destination are displayed in Google map. Further distance and time the bus takes to reach the user is also displayed. Looking into the details of the information provided in the Google map the user can start accordingly.

MODULE DESCRIPTION

Modules

1. User application

This application will initially be based on Android. On launching the app first device will automatically detect the location of user using the GPS devices. This query is sent in the JSON format to the server. Server will process on it and respond accordingly. The response from server will also be in JSON format. Smartphone app will read the data from response and plot the coordinates or information according to the user's request.

2. Server end

Server end is designed keeping ease of work in mind. It is designed using Web service. When server will receive a request from device, it will parse the data and extract result from the database. This result will be placed in the JSON format and will be returned to the device which made that same request. Every JSON request will send data depending on request URL type. Every request will be in the form of POST/GET query

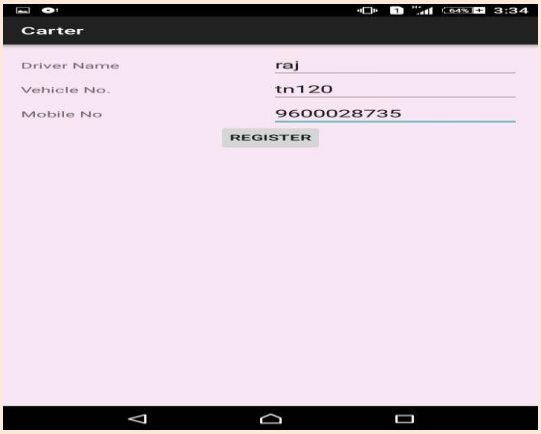
3. Global Positioning System

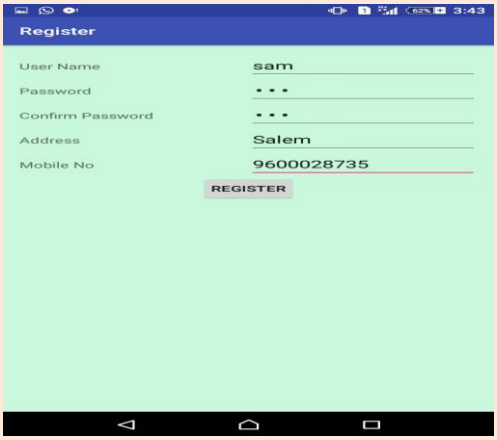
There is an automatic update in location of the device when it is moving is shown diagrammatically. These all activities are processed while registering into cloud. The GPS is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to three or more GPS satellites. One of the easiest applications to consider is the simple GPS tracking device; which combines the possibility to locate itself with associated communications technologies such as radio transmission and telephony. Tracking is useful because it enables a central tracking center to monitor the position of several vehicles or people, in real time, without them needing to relay that information explicitly.

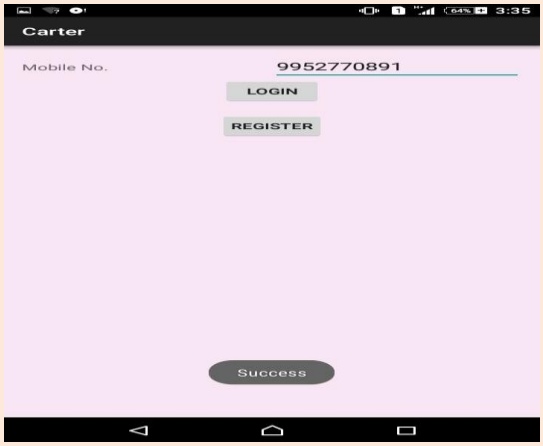
REGISTRATION

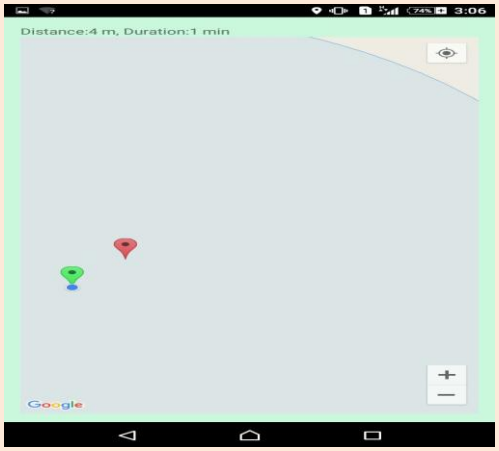
This module is provided for the user to register themselves with details such as name, password, confirm password, email id, mobile number as shown in the figure 2 and use the application for tracking the college bus. The registered users can login with their user name and password once they are registered. The details of the registered students are alone maintained in the database.

Student Registration

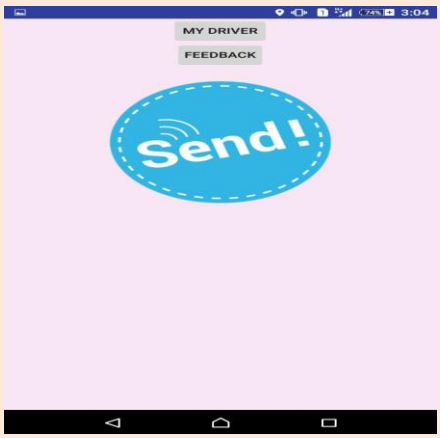


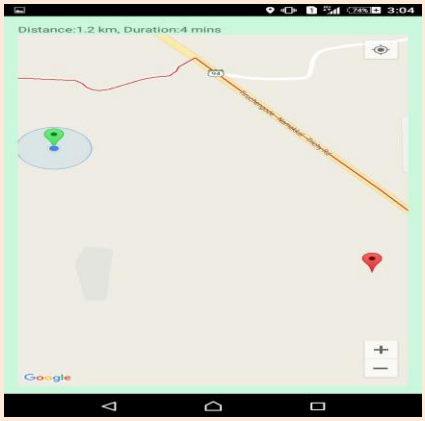






User Registration





6. SUMMARY AND CONCLUSION

This paper presents the bus tracking application using smart phones. The application consists of both the transmitter and receiver inbuilt in mobile phones. The transmitter is used to transmit the location and vehicle status information to the server. The receiver is the user who can view the details regarding the bus location using his smart phone via Google map. Due to the movement of bus is always available this paper can also ensure security by keeping track of the bus. So in the coming year it isgoing to play a major role in our day to day living

The future enhancement for this paper is to make the application online for finding the current location of the bus. We are also planning to fix a GPS device on every bus so that it is not essential for the driver to have an Android phone. Due to availability of android phones and GPS devices it is going to stay for long in the future.

REFERENCES

[1] Wenzhong Li, Member, IEEE, Yuefei Hu, Student Member, IEEE, Xiaoming Fu, SeniorMember, IEEE, Sanglu Lu, Member, IEEE, and Daoxu Chen, Member, IEEE, "Cooperative Positioning and Tracking in DisruptionTolerant Networks", IEEE, ISSN: 1045-9219, pp.1-11, 2014.

[2] Chakradhara Rao CH, Pushpalatha P, and Aditya Sundar N, "GPS Based Vehicle Navigation System using Google Maps", International Journal of Computer Science and Information Technologies, Vol.4, Issue.6, pp.1346-1352, 2013.

[3] Dr.(Mrs) SaylGhargl, Moral Chhaa, Gaurav Chheda, Jitesh, and Niket, "Real Time Bus Monitoring System using GPS", VES Institute of Technology, Mumbai University, India, Vol.5, Issue.7, pp.1786-1792, 2013.

[4] Karan Punjabi, PoojaBolaj, PratibhaMantur, SnehaWali, "Bus Locator via SMS Using Android Application", International Journal of Computer Science and Information Technologies, Vol. 5 (2), pp.1603-1606, 2014.

[5] Ramesh Chandra Gadri, Ankita Chavan, ReemaSonawane, Sujata Kamble, "Land Vehicle Tracking Application on Android Platform", International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 Vol. 2, Issue3, pp.1978-1982, May-Jun 2012.