An Android Application for Tracking College Bus Using Google Map

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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 St. Peter's College of Engineering and Technology in Chennai city 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. LITERATURE SURVEY

2.1. METHODS OF TRACKING

Land Vehicle Tracking Application on Android Platform [5] 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 [4] 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 [3] 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.

2.2 METHODS TO DISPLAY IN GOOGLE MAP

GPS Based Vehicle Navigation System using Google Maps [2] 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 [6] 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. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM

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.
- The movement of the bus is also not visible in the Google map.

3.2 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.

4. SYSTEM DESCRIPTION

4.1 OVERVIEW OF THE PROJECT

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.

4.2 SYSTEM ARCHITECTURE

The three modules in our project are

1. Registration
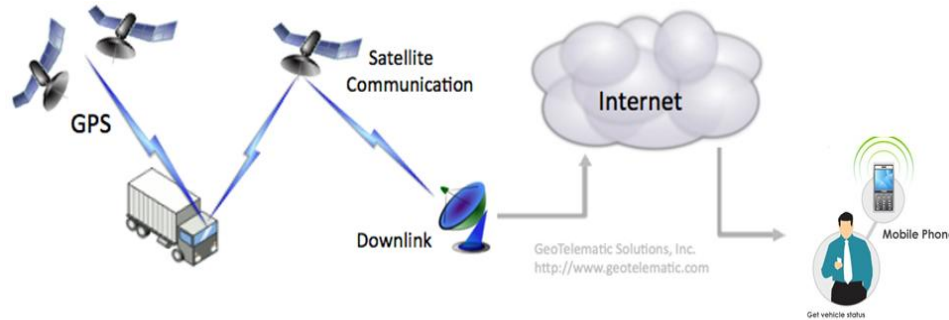2. Bus tracking
3. **Route finding**

Figure 1. Architectur

4.3 MODULE DESCRIPTION:

4.3.1 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.

Figure 2. User registration

4.3.2 BUS TRACKING MODULE

In this module when the bus route is selected the appropriate bus is found using the IP address of that particular bus. Then the location of the bus is tracked using its latitude and longitude. Corresponding to the bus movement the change in latitude and longitude are updated in the database for every minute.
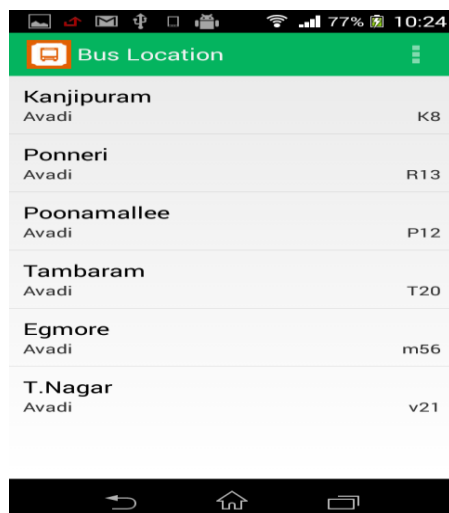
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Figure 3. Bus routes

4.3.3 ROUTE FINDING MODULE

In this module the updated latitude and longitude value in the database is used to find the exact location of the bus using Google map and is shown figure 4.
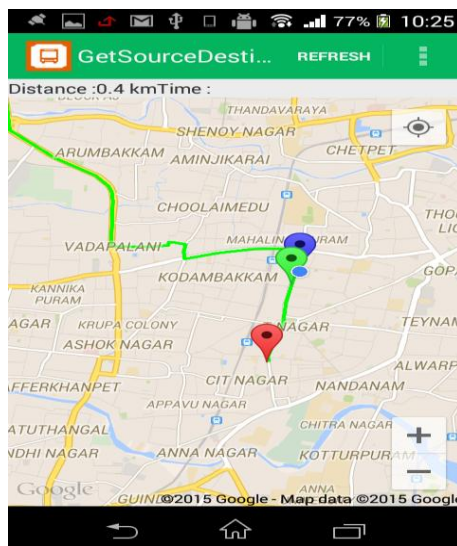

Figure 4. current location of bus

The bus source and destination, user, bus are displayed in the Google map with different colors to distinctly identify them.The distance between the user and bus along with the expected time is calculated and displayed.

5. 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 project can also ensure security by keeping track of the bus. So in the coming year it is going to play a major role in our day to day living.

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6. FUTURE ENHANCEMENT

The future enhancement for this project 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.

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