# Bus Tracking System using GPS on Smartphones

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***Abstract:-*** **The bus tracking system plays a vital role in current technology due to its various applications.**
**Due to over population, there is a need for efficient public transportation system. There is increased burden on public transportation like bus just because of population. Therefore remote user needs a smart system which provides real time information of bus. So we proposed a new system which solves the drawback of current public transportation system. So our system handle all the data like current location of bus, management of buses. It provides current location of bus on google maps to the remote user. For development purpose technologies like GPS(Global Postioning System),GPRS(General Packet Radio Service)and google maps are used. LOCATION-BASED services are increasingly important for modern mobile devices such as the Smartphone. An important feature of a modern mobile device is that it can position itself. Not only for use on the device but also for remote applications that require tracking of the device. Furthermore, tracking has to robustly deliver position updates when faced with changing conditions such as delays due to positioning and communication, and changing positioning accuracy. The realized system tracks pedestrian targets equipped with GPS-enabled devices.**

***Keywords:- GPS, GRPS, google map***

## INTRODUCTION:

The GPS (Global Positioning System) bus tracking system combines the use of automatic vehicle location in individual vehicle with software that collects these fleet data for a comprehensive picture vehicle locations. Bus information can be viewed on electronic maps via the internet or specialized software. Modern bus tracking systems commonly use GPS technology for locating the bus. These systems are particularly using in large cities. This tracking system are commonly used by operators for functions such as tracking, routing, on board information, dispatching and security. These are helpful in daily progresses, such as: traffic congestion, unexpected delays, irregular vehicle dispathching time, other incidents. It provide more convenience with publics and give real time bus location information so that they may not get delay. The proposed system requires a Ellipse that is open source software development environment. The Ellipse consist of an extensible plug in system and an IDE (Integrated Development Environment). The IDE is used in android development in order to make it quick. It is a multitasking platform. It is very much useful for the students and workers
to be on time for their daily routine work. The GPS tracking systems are widely used world.

A web application has an internal global timer which refreshes the tracking application after every forty seconds and collects the latest location and other customized vehicle parameters and updates the end user with the latest information of the bus. By helping travelers move from single occupancy vehicles to public transportation systems, it can reduce traffic congestion as well as environmental impact. Our goal is to increase the public transportation and satisfaction of current public transportation users and help to motivate more people to ride. If remote users who wish to use public transportation had an easy way to see which bus is near to their location and approximate time it will take to reach the particular stop, in real time, then they can make a more accurate decision of whether or not to wait at a stop. Our proposed system will provide pedestrians with this convenience. The location of bus is determined by using GPS and then the information is transmitted. The transmission can be terrestrial radio or cellular connection, satellite from the bus to a radio receiver, satellite or nearby cell tower. Once the location data along with other custom data is collected a wireless communication system is used for transmission purpose.

## LITERATURE SURVEY:

A navigation system complying to these design requirements enhances the experience of users of a PTN in a cost effective way. Visitors and sporadic users are target user groups, as the system is especially helpful for people unfamiliar with the PTN. But also normal users would profit, being guided to destinations out of their current and known parts of the transport network, for example visiting a place for the first time in an area they do not usually use. In this way, the navigation system enhances the urban mobility experience and makes using the PTN more attractive to people unfamiliar with it.

As with any application, it's important to consider the target audience. In this case, I can divide transit riders into new or infrequent riders, who aren't overly familiar with the local transit system, and frequent riders, who are familiar with it and use it every day. New or infrequent riders are less familiar with available routes and often need more trip-planning guidance, whereas frequent riders typically already know which sequence of stops and routes is the fastest to reach their destination, so they just want to know when the next bus is coming. The application presented in this article is targeted primarily at this second group of frequent transit users.

While static schedules and timetables are an important base for rider information, the reality is that transit vehicles do not always run on time. Traffic congestion, weather, accidents,

and passenger incidents: there is any number of reasons why a transit vehicle might not meet its schedule. As such, many recent transit traveller information system improvements have focused on providing real-time arrival information.
The design of the navigation system was driven by a set of premises that distinguish it from other navigation solutions.
 The service should be deployable on short term, and not in a far future.
 Deployment cost for the service provider should be efficient.
 Usage cost should be low considering currently common communication costs.
 Service should be easily adaptable and extendable to a fast changing reality.
For tracking the bus, many design ideas that have been proposed and implemented. In the case of implementation or in the case of the system design all proposed methods and implementations are unique. GPS module in the real time bus monitoring system is installed on the buses for transmission of the real time location of bus to receiver boards which is installed on the bus stops. The GPS data is accessed by the control unit and LEDs which is activated gives the position of bus route.
The device will not require an external power source , it will be portable and sustainable and eliminate energy costs [1].
Embedded system model was prposed by abid khan and ravi mishra, which is based on single board system consist of GPS and GSM modems and the tracking of vehicle by ARM processor. The advantage of this model provides large capability ,operation cost is low, expansibility is strong.

The next model was proposed by Swati Chandurkar, Sneha Mugade, etal.it is based on real time bus monitoring and passenger information system. The model gives current location of buses and estimated arrival time at different stops in their respective routes. The location of the bus position and the current route of the bus is provided by link updater. The control unit is used to update the arrival time and shares this information to passengers using display board at bus stops

The next model based on zigbee and RFID was proposed by S. P. Manikandan, P. Balakrishnan which provides the real time query system for public transport service using Zigbee and RFID is suitable to passengers demand and it also provide information such as bus location, bus number and number of persons inside the bus in real time. This system provides efficient as well as low cost public transport system [4].

Madhu Kumar, K. Rajashekhar, et al. proposed, Design of punctuality enhanced bus transportation system using GSM and zigbee. In this way service quality of operational efficiency is improved and passenger is also able to get the information about the respective bus [5]. The tracking system can

OVERVIEW OF THE PROPOSED SYSTEM:

*PROBLEM FACED:*
In the daily operation of bus transport systems, mainly that of buses, the movement of vehicles is affected by the different uncertain conditions as the day progresses such as:

- traffic congestion
- unexpected delays
- irregular vehicles –dispatching times

Many students are late for classes because they decide to wait for the bus instead of just simply using a alternate transportation.

*SOLUTION BY OUR APPLICATION:*

- our application focus on to providing them more convenience with bus schedules.
- it provide real-time bus location information so that they may not get delayed.
- also we have integrated google maps in the application.

*DEVELOPMENT ENVIRONMENT:*

- The proposed system requires Eclipse that is an open source software development environment.
- Eclipse cconsists of an Extensible plugin system and an IDE.
- The Android project has been developed in the LUNA version of eclipse,as it has plugins that are mainly used for android
- LUNA is latest version of Eclipse

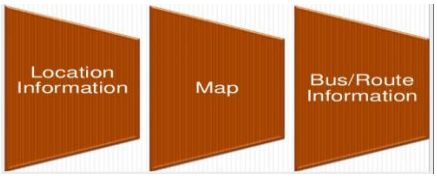
*ANDROID SDK:*

- Integrated Development Environment is used inAndroid development in order to make it more straight forward and quick.
- It has been recommended for the developers because of its simplicity in working.
- Android is basically a multitasking platform.
- These applications can work simultaneously with other applications because of multitaskimg ability of the Android platform.

*ADT PLUGIN:*

- ADT(Android Development Tools) is a plugin developed by Google.
- Its main purposes is for developing Android mobile applications in Europe.
- It makes it easy and convenient for all the Android developers working in Eclipse environment to quickly create Android projects and debug the programs whenever needed.

PROJECT MODULE



MODULE 1-LOCATION INFORMATION

This module depicts the process of selection of bus number and presenting the current location of the bus.
TECHNOLOGY APPLIED:
GPS – Gobal Postioning System
Client-Server Technology

GPS-GLOBAL POSITIONING SYSTEM

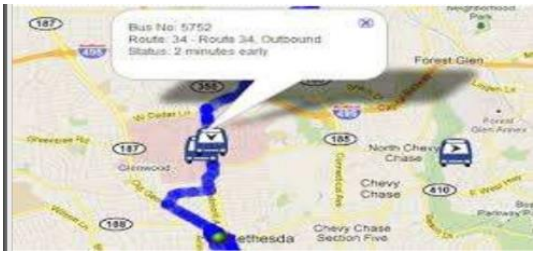
It is a technology where satellites send down radio signals which GPS units and receivers use to work out their current location.
GPS works like this:
There are 24 working satellites circling the globe at any given moment .A GPS navigator or GPS tracker searches for the transmission signal from at least three satellites.

CLIENT-SERVER WORKING

1. client will ask for the location of the bus through his android device. Request to the Server is made automatically.
2. bus is equipped with GPS device .Through GPS it will find its location and deliver it to server.
3. Server will handle the locations and deliver it to the intended client.

MODULE 2-MAP

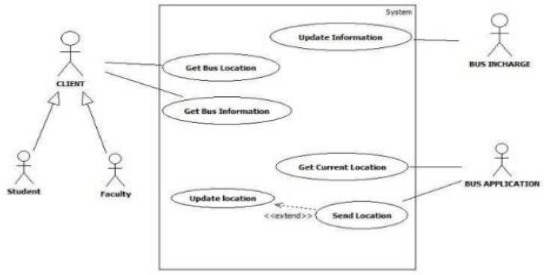
In this Module; application is using Google-APIS to show the maps.



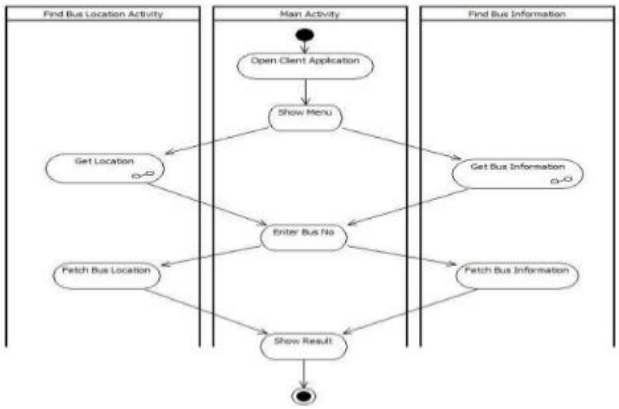

MODULE 3- BUS/ROUTE INFORMATION

- The routes of all buses are recorded by Bus In-charge of college.
- For this purpose we have used MySql.
- Bus In-charge will update all information regarding routes.
- Now when client makes request for the Bus Information it will be fetched from the database and delivered to client through server.

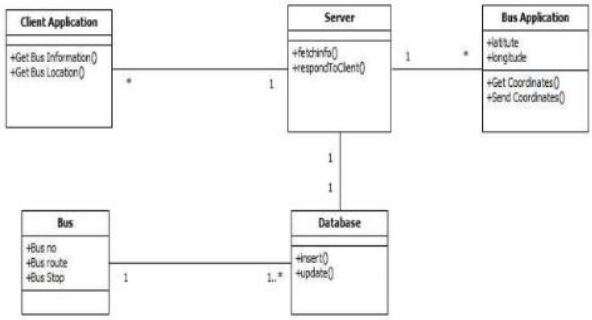
USE CASE DIAGRAM:




ACTIVITY DIAGRAM:




CLASS DIAGRAM:




APPLICATION

- Vecihle tracking systems are commonly used by fleet operators for fleet management functions such as fleet tracking,routing,dispatch,on-board information and security.
- ASSET TRACKING:Companies needing to track valuable assests for insurance.
- FIELD SERVICE MANAGEMENT:Companies with a field service workforce for services such as repair or maintenance,must be able to plan field workers'
- Time,schedule subsequent customer visits and be able to operate these departments efficiently.

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