Abstract- Today passenger facing problem of finding the bus of his root and he does not know about exact arrival time of bus. We can solve this problem by using GPS using android system. GSM modem, provided with a SIM card uses the same communication process as we are using in today’s phone. We are using Google API which sends the Vehicles current location based on its IP address. This paper introduces a real-time vehicle tracking system using a global positioning system (GPS) technology system to get the area of the vehicle. Trilateration is used to determine absolute or relative locations of points by measuring the distances using geometry of circles, spheres and triangle. To calculate the arriving time haversine distance formula is used.

Keywords- Google API, GPRS, GPS, GSM, Tracking, Vehicles.

I. INTRODUCTION

There are 3 modules of this project. In first module we are allocating one smart phone with GPS for particular bus. In second module administrator can manage the bus system. He has all the information about that bus. In third module user application is implemented. There are the GPS and GPRS modules, the GPS module will locate the vehicles via the satellite antenna. The GPS receiver gets a signal from each GPS satellite and transmit exact time of the signals are sent. The time is subtracting from time that the signal was transmitted from the time it was received, the GPS can tell how long it is placed from each satellite. The GPS receiver also knows the accurate position in the sky of the satellites, when they sent their signals. From three satellites and their exact position in the sky we get the travel time of the GPS signals. From this GPS receiver can determine your position in three dimensions - east, north and altitude. The GPRS module will assemble all data and send it to the system. The GPRS core network allows the all mobile networks to transmit IP packets to external networks such as the Internet. The GPRS system is an integrated part of the GSM network switching subsystem. Trilateration is used to determine absolute or relative locations of PMPML. In geometric problem, trilateration does have practical applications in surveying and navigation, including global positioning systems (GPS). In variance to triangulation, it does not involve the measurement of angles. Trilateration describes a method for determining the crossing of three sphere surfaces given the centers and radii of the three spheres. The administrator system has three responsibilities: receiving data from the GPS, securely storing it, and calculate arrival time of bus and send to the user.

The presence of GPS and the all-over cellular network, real time vehicle tracking for better transport management has become possible. These technologies can be utilized to public transport systems, especially buses, which are not able to follow to predefined timetables due to reasons like traffic jams, breakdowns etc. The increased waiting time and the confusion in bus arrival make public transport system unattractive for passengers. A bus service uses a many of technologies to track the locations of buses in actual time and uses this data to generate previsions of bus arrivals at stops along the route. When this information is broad-cast to passengers by wired or wireless media, they can use their time conveniently and go to the bus stop just before the bus arrives, or take alternate way to go if the bus is delayed. They can even plan their journeys long before they actually undertake them. This will make the public transport system competitive and passenger-friendly. The use of private vehicles is reduced when more people use public transit vehicles, which in turn reduces traffic and pollution.

II. LITERATURE SURVEY

Arijit Chowdhury [1] The Global Positioning System (GPS) receivers are now an integral part of smartphones. In this paper, they can represent a method to evaluate the real speed of a moving vehicle derived simply from GPS measurements. In this case in conjunction with GPS measurement the accelerometer sensors are notused. The OBD2 speed measurement compared with results. In this paper the proposed method calculates a better evaluation of vehicle speed, where exactness is measured relative to OBD2 measurement.

HUANG Yan [2] GPS common/all-view method is one of the main tools for long-distance time and frequency transfer. Its basic is the GPS time transfer receiver and post-processing algorithms. The actual-time many-channel GPS time transfer receiver based on EURO-160 GPS board andthe processing algorithms of real time data are introduced. In this paper the high real–time properties is realized by the
software and hardware solutions including bi-direction-duplexing bus port design, double channel communication, DLL double threads working, real-time display interface etc.

P. S. Castro[3] Mining taxi GPS traces has received growing concentration from the data mining, intelligent transportation, database, and ubiquitous computing communities. Vehicles made with GPS localizers are an important sensory device for tracing the activities of people’s and their movements. In this paper the transportation needs of a large number of people is completed by taxis equipped with GPS localizers.

Vigneshwaran.K [4] In automobile field, the security and theft prevention are one of the important areas in current synopsis. The security g.02oals are achieved by the GSM, GPS technology, we can only track and monitor the vehicle. GPS is used to get the vehicle current position and data will be send to the user mobile phone through the GSM. Using this system we can track, monitor and also stop the stolen two wheelers. This system can implemented using Atmel microcontroller, air solenoid and water solenoid valves are interfaced with GSM modem and GPS module which will be set in the two wheeler.

Powell et al [5] examined only the surrounding areas. They measured the benefit of each area in terms of fare gains of all engaged trips come from that area, the number of trips, and the cost from the current location to that area, entering the knowledge of passenger’s mobility patterns and taxi drivers’ pickup/ drop-off behaviors inferred from taxi GPS traces.

Yuan et al. [6] used the past probability of searching a passenger along a route to provide drivers with route suggestions. Instead of giving absolute guidance about areas or routes for searching passengers, the last category of research tries to elicitation of effective taxi service guidelines in a city.

Veloso et al. [7] checked the passenger-delivery patterns and passenger searching processes and revealed that in Lisbon, Portugal, a good passenger-searching strategy in urban areas was that taxis normally went to neighbouring locations, whereas in suburban areas, taxis went to far locations. By considering the taxi GPS traces.

PankajVerma. [8] The GPS system is tracking your vehicle and keeps regular supervising on them. This tracking system can tell you the location and route visit by vehicle, and that information can be checked from any other distant location. It also includes the web application that provides you exact location of destination. This system enables us to trace target in any climate conditions. This system uses GSM and GPS technologies. The paper includes the hardware part which include the GPS, GSM, Atmega microcontroller MAX 232, 16x2 LCD and software part is used for integrating all the required modules and a web application is also developed at the client side. The main aim is to design a system that can be easily installed and to provide platform for more improvement.

Linzhouting Chen. [9] A hybrid prediction method for bridging GPS outages in high-precision POS application has been proposed, which uses RBF neural network and time series analysis to accurately predict the measurement Zk for aiding the POS KF to obtain accurate position, velocity, and attitude navigation information during GPS outages. The proposed hybrid prediction method for high-precision POS can provide reliable and good performance during long GPS outages.

Sandep Kumar [10] In this paper the available GIS processing tools in Android we can realize all three types of LBS services as a mobile can be construct as a server and for that we can also use the SQLite database to save information as android also supports this technology. They can construct the two mobiles to provide peer-peer LBS services through SMS or MMS with the use of correct idea.

C-W.Tan [11] It is known that the GPS based measurements can suffer from serious measurement error under specific conditions like urban canyon situations. Therefore a number of works, over a period of time have tried to address this issue. One representative work is described in[11] where the application of Kalman filters for map-matching is discussed. The extent of smartphone penetration in consumer market offers opportunity for customizing new solutions.

III. EXISTING SYSTEM

- Passenger-searching strategies: These strategies consider the practical factors affecting a taxi driver’s decision making when searching for various new passengers. The taxi driver may prefer to wait at a popular location nearby (e.g. grand hotels...
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and railway stations) or go to a hisnear by area far away to search for new passengers.

- Hunting Locally: Local hunting strategy always contribute positively to the revenue. This is more effective than local waiting and going distant strategy.

- Waiting Locally: Local Waiting strategy always positive or negative depending on Traffic condition and trip fares.

- Going Distant: The absolute co-relation value can be positively defined depending on the grid sales and trip fares.

- Passenger-delivery strategies. These strategies characterize the taxi drivers' intelligence in delivering passengers. A driver may choose one route among several possible ones to deliver passengers, considering factors such as the traffic conditions, and trip fares.

- Passenger Delivery Speed: Passenger Delivery Speed is depend upon the traffic condition and Bus speed.

- Service area preference. In a particular time period of the day, taxi drivers may prefer to serve in certain area in a city by considering the traffic, passenger demands, and their familiarity with the regions.

- Service Time In Each Area: Driver can decide how much time is spend in particular area.

3.1 DISADVANTAGES OF EXISTING SYSTEM:

- Time Consuming
- This system is only for taxi service provider not for passenger.

- This System is Private.

IV. PROPOSED SYSTEM

In our system we are allocating one smart phone with GPS for particular bus and administrator can manage the bus system. He has all the information about that bus. For user one application is implemented. On which user can get information and arrival time of bus. There are the GPS and GPRS modules, the GPS module will locate the vehicles via the satellite, and the GPRS module will assemble all data and send it to the system. The GPRS core network allows 2G, 3G and WCDMA mobile networks to transmit IP packets to external networks such as the Internet. The GPRS system is an integrated part of the GSM network switching subsystem.

In our system there are two modules are present:

- **Vehicle Module**:
The main functions of the vehicle unit are as follows:
  - To download names and coordinates of stops and points of interest from the server On-trip context
  - To compute current location, direction and speed of the bus.
  - To transmit the computed information to the central server using GPRS.
  - To display “next stop/point ” information on the vehicle, and play out corresponding

- **Server Module**:
The server is at the center of our PMPML. The functions of the server are listed below:
  - To maintain a database of all the routes, the buses that ply on a route, the stops along each route etc.
  - To continuously receive location and speed from the vehicle units of all the buses.
  - To calculate the ETA of all the buses at their next and subsequent bus stops
  - Server transfers these queries to the server which processes them and sends the reply message.
  - The ETA for any route-stop pair and plan trips from any source to any destination stop, at any time.

4.1. Trilateration:

We are using the trilateration for getting the location. In geometry, trilateration is the process of determining absolute or relative locations of points by measurement of distances, using the geometry of circles, spheres or triangles. In addition to its interest as a geometric problem, trilateration does have practical applications in surveying and navigation, including global positioning systems (GPS). In contrast to triangulation, it does not involve the measurement of angles. In two-dimensional geometry, it is known that if a point lies on two circles, then the circle centers and the two radii provide sufficient information to narrow the possible locations down to two. Additional information may narrow the possibilities down to one unique location. In three-dimensional geometry, when it is known that a point lies on the surfaces of three spheres, then the centers of the three spheres along with their radii provide sufficient information to narrow the possible
locations down to no more than two (unless the centers lie on a straight line.

**Fig. 3 Global Positioning System.**

### 4.2 Advantages of Proposed System:

1. This system is useful for passenger to know the real arriving time of bus.
2. This will make the public transport system competitive and passenger-friendly.
3. The use of private vehicles is reduced when more people use public transit vehicles, which in turn reduces traffic and pollution.

### CONCLUSION

The PMPML service is becoming increasingly important in large cities. The advent of GPS and the ubiquitous cellular network, in real time vehicle tracking system gives better results and accuracy. This system uses a variety of technologies to track the locations of buses in real time and uses this information to generate correct bus arrival time. The passenger simply send the source location and destination location to the system and get the exact arrival time of bus of his route.

### REFERENCES


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