ENHANCEMENT IN PMPML SERVICES BY USING GPS

SHRADDHA B. DEOKAR[1], SUPRIYA R. JADHAV[2], POONAM N. KANASE[3]

[1] shraddhadeokar5@gmail.com, *Computer Engineering, SGOI COE, Maharashtra, India*
[2] supriyarajadhav@gmail.com, *Computer Engineering, SGOI COE, Maharashtra, India*
[3] poonamkanase65@gmail.com, *Computer Engineering, SGOI COE, Maharashtra, India*

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 tri angle. To calculate the arriving time haversine distance formula is used.

Keyword: *Google API, GPRS, GPS, GSM, Tracking, Vehicles.*

1. 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.

2. 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 not used. 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 and the 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, enterprising 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.

Pankaj Verma.[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 ˆZk 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.

Sandeep 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 errors 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.

3. PROPOSED SYSTEM

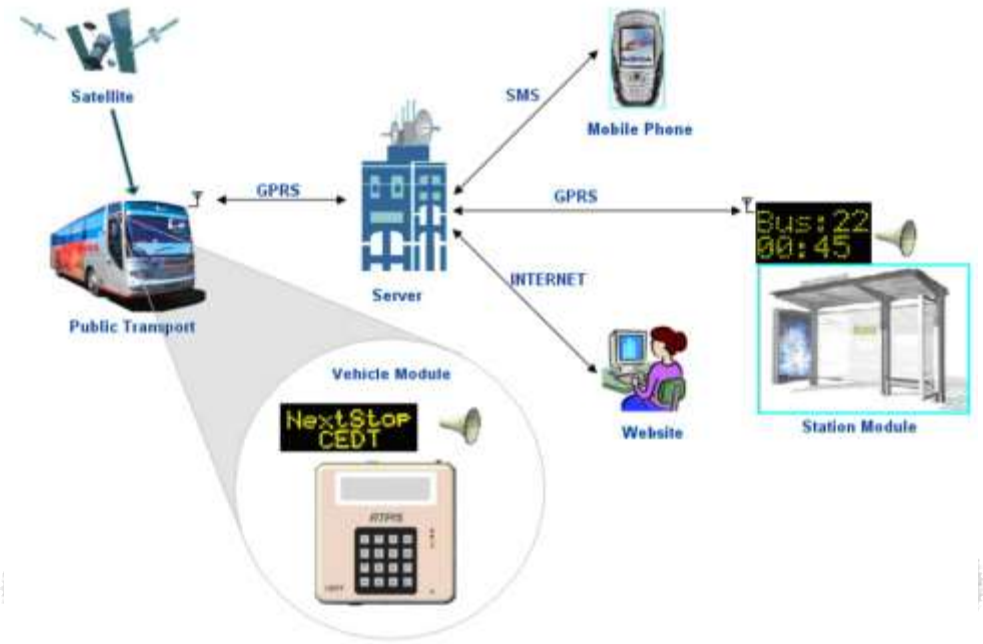

Fig.1. Architecture of PMPML bus services

In our system we are allocating one smart phone with GPS for particular bus and administrator can manage the admin system. In this system there is all information about the bus ,stop and route. 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.

3.1 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.

3.2Advantages 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.

4.Working of Proposed System:

1.PMPML Application.

2.Driver Application.

3.Admin System.

4.Bus Display System

1. User Application:

The PMPML application is used by passengers to know the arrival time of bus. The user will search the bus by entering Source and destination values..

User also see the live tracking of bus by clicking on displayed information.

2. Driver Application:

When driver entering into his bus firstly he will on GPS of his mobile device. Then driver selects the his bus number allocated to him and click on "ON" button. Then only the tracking of his bus will be started.

When any problem will occur or there will be any replacement of bus then click on bus failure notification goes to admin system.

3.Admin System:

In admin system, the admin can register and then login in that system. In this system first we have to add the stop. In that select the location of stop and enter the name of stop then select the radius and click on submit button then stop added successfully.

After adding the stops admin can add the route the this route allocate to the specific bus.

Admin also able to search the specific bus and track this bus.

4. Bus Display System

Bus display system gives the information about next and pervious stop and time to rich the destination

4. EXPERIMENTAL RESULTS

Our System Provide the better accuracy and give the accurate arrival time of bus another existing system does not provide this functionality. Google is able to generate a live traffic map. Google processes the incoming raw data about mobile phone device locations using this data our system can provide accurate arrival time in traffic condition. If bus failure is occurred then bus failure notification goes to the admin system. Inside the bus there is one LCD which gives the information about next and pervious stop and time to rich the destination.

	Arrival Time	Public Transport	Live Tracking	Registration for app
Olacabs	Does not tell arrival time	Not use for public transport	Less accurate	Required
Uber apps	Does not tell arrival time	Not use for public transport	Less accurate	Required
PMPML system	Give accurate arrival time	Use for public transport	More accurate	Does not required Any one can use it.

Table1: Results

5. CONCLUSIONS

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.

6. ACKNOWLEDGEMENT

We offer special thanks to the Prof. M. B. Deokar who have guided towards development of our system paper. Also thanks all who helped in the development of system and giving their valuable suggestions. So that we are able to improve our system.

7. REFERENCES

1. Tapas Chakravarty, Arijit Chowdhury & P. Balamuralidhar, "Estimating True Speed of Moving Vehicle using Smartphone-based GPS Measurement", 2014 IEEE International Conference on Systems, Man, and Cybernetics October 5-8, 2014, San Diego, CA, USA
2. Receiver HUANG Yan*, YAO Hejun*, GAO Yuan†, ZHANG Han*, XU Yuan*" Development of the High Real-time GPS Time Transfer"National metrology center for industry of GNSS
3. P. S. Castro, D. Zhang, C. Chen, S. Li, and G. Pan, "From taxi GPS traces to social and community dynamics: A survey," *ACM Comput. Surveys*, vol. 46, no. 2, p. 17, Nov. 2013
4. Vigneshwaran.K, Sumithra.S , Janani.R "An Intelligent Tracking System Based on GSM and GPS Using Smartphones"International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering(An ISO 3297: 2007 Certified Organization.
5. J. W. Powell, Y. Huang, F. Bastani, and M. Ji, "Towards reducing taxicab cruising time using spatio-temporal profitability maps," in *Proc. 12th Int. Symp. Spatial Temporal Databases*, 2011, pp. 242–260.
6. J. Yuan, Y. Zheng, L. Zhang, X. Xie, and G. Sun, "Where to find my next passenger?" in *Proc. 13th ACM Int. Conf. Ubiquitous Comput.*, 2011, pp. 109–118.
7. M. Veloso, S. Phithakkitnukoon, and C. Bento, "Urban mobility study using taxi traces," in *Proc. Int. Workshop Trajectory Data Mining Anal.*, 2011, pp. 23–30.
8. J.S Bhatia, Pankaj Verma," DESIGN AND DEVELOPMENT OF GPS-GSM BASED TRACKING SYSTEM WITH GOOGLEMAP BASED MONITORING" International Journal of Computer Science, Engineering and Applications (IJCSEA) Vol.3, No.3, June 2013
9. Linzhouting Chen and Jiancheng Fang," A Hybrid Prediction Method for Bridging GPS Outages in High-Precision POS Application" IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, VOL. 63, NO. 6, JUNE 2014
10. Sandeep Kumar, Mohammed Abdul Qadeer, Archana Gupta," Location Based Services using Android" *Department of Computer Engineering Zakir Hussain College of Engineering and Technology Aligarh Muslim University, Aligarh 202002, India sandeepkumar@zhcet.ac.in, maqadeer@ieee.org.*
11. H. Xu, H. Liu, C-W.Tan & Y.Bao, "Development and Application of a Kalman Filter and GPS Error Correction Approach for Improved Mapmatching", Journal of Intelligent Transportation Systems, 14(1), 27-36