iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** I **Month of publication:** January 2019

DOI: http://doi.org/10.22214/ijraset.2019.1134

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 7 Issue I, Jan 2019- Available at www.ijraset.com

A Survey on Local Transport Tracker and Reminder System

Aditya Rajpurohit[1], Keval Jain[2], Shreeyash Bohare[3], Vinaykumar Talreja[4], Dhanashree Nevase[5]
[1, 2, 3, 4, 5]*Students, RMD Sinhgad School of Engineering, Pune, Maharashtra*

Abstract: BUSES have become an important means of transport in different cities. As public transport is beneficial for the majority of the population in cities. But as we know there is no accurate management for public transport, buses also have some issues like delay in the bus to arrival; that leads to more utilization of private vehicles will automatically increase in fuel consumption.
Rather than waiting for public transport like bus, it would be beneficial for the passengers to know the tentative schedule of the buses, so that they can plan their journey according to it. Hence, for the convenience and comfort of citizens, an android application is proposed, which will be beneficial to track the location of the BUS and then it will calculate the approximate time the BUS will be required to reach the stop including the traffic analysis.
Keywords: Bus Routing, Bus Tracking, Google Maps, Wi-Fi.

I. INTRODUCTION

Transportation becomes very difficult in cities like Metropolitan cities. The public transports, especially BUSES are developing around rapidly. At some extend public transport helps to reduce the usage of private vehicles as well as beneficial to reduce fuel consumption and also avoids traffic congestion. The key issue with BUSES is that the public DO NOT knows the exact arrival of BUSES at particular stops. This leads to more waiting for BUSES to arrive and may get late for further work.
Though approximate arrival time of BUSES is known by the public there may be some delay in arrival due to heavy traffic. This is the key reason why people started avoiding public transports and started using their private vehicles. Many applications were developed; to avoid this incontinence but these applications were unable to mitigate some problems.
Some applications only provided the arrival time and some only give departure time of BUSES at their source and destination. Some of them provided time-tables, but they were not as accurate as delay time due to some inconsiderable factors like – traffic, harsh weather situation, etc were not considered. The major issue of timely updating of the bus timetable.

II. LITERATURE REVIEW

"Ahmed Ahmed" et al to improve the transportation services for buses and rental companies, the authors has developed the android devices application. It also plans to reduce the waiting time of bus, thereby to update the information between the bus drivers and students or passengers. This application can run only on android devices. It would inform the students or passengers about the exact time of arrival and departure of buses on route. Thus the authors proposed the android application that is specifically be used by students and drivers of Taibah University for bus transportation.
"Ramesh Chandra Gadri [10]" et al As urban living environment is becoming more and more complex; the road condition is becoming worse because of heavy traffic, increase of traffic accidents and high ratio of empty vehicles.
To resolve the problem, a land vehicle tracking system has been developed. This system determines the location of land route with a terminal embedded on GPS receiver and displays the position on a digital map. Recently, vehicle tracking technologies have brought some breakthrough in these areas: commercial vehicle operations, monitoring, and security.
"Settha Tangkawanit [11]" et al the electric vehicle public service around a campus, on a passenger's side of view, an arrival time should be available. Having known this information, passengers can manage their time and get on the vehicle in time. An application informing about the location and the estimated arrival time of an electric vehicle for Android smart phones is developed and tested. Passengers can view the current location of a particular electric vehicle and the estimated arrival time. Additionally, an alert system has been set up so that the passengers can be notified if a particular vehicle is coming to the bus stop.
"Nusrath Jahan" et al dynamic life where everyone is in a hurry to reach their destinations, waiting for bus is hectic and even many of us are unaware of the bus timing. To overcome this difficulty, an easy system is proposed in this paper to aid tracking real time bus location. The proposed solution takes advantages of the two main features in mobile platform nowadays which are location

services, mainly GPS based, and basic telephony services, mainly SMS based. The system consists of two sides, server side and client side. The server device's main responsibility is to provide the exact location of the bus to the server, or to the user in case of SMS based query from client's device.

"Rui Zhang [12]"et al discuss about the weak traditional GPS-based approach that is used in urban areas while the location systems based on cellular signal also suffer from inherent limitations. A powerful tool called as Signal Voronoi Diagram (SVD) is used to partition the radio-frequency (RF) signal of the WiFi, classified according to where a bus travels, into Signal Cells, and then into fine-grained Signal Tiles respectively. Tackling with theses problem which include noisy received signal strength (RSS) readings and possible AP dynamics. It presents a novel framework known as WiLocator, used to track an urban bus based on the nearby WiFi data collected by the commodity off-the-shelf (COTS) smartphones of bus riders and the mobility constraint of a bus.

III. EXISTING SYSTEMS

Various systems are developed so as to lessen the problems faced by commuters. Given below are a few of the many systems that are developed for tracking the location.

A. GPRS Vehicle Tracking System

This system designed by Fleischer, Paul Benjamin, Nelson, Atso Yao, Bremag, Appah [5], tracks the location of intercity buses. This system was developed in the city of Ghana by the University of Ghana. This GSM/GPRS and GSM based system sends SMS alerts about the location of vehicle to the users.

1) Advantages

a) This GSM/GPRS based system sends alerts to the students of the university about its location.

b) This system also provides theft alerts which are an enhancement to its features.

2) Disadvantages

1) The main drawback here is that the system requires external database server, hence leads to increase in cost of the system.

B. RFID Based Tracking System

RFID stickers [4] are installed on every bus, these stickers are installed for identification at bus terminals. Every bus stop is assigned by a unique ID, this unique ID is transmitted around some distance around it RF transmitters and when the PF receiver on the bus comes within the range of the transmitters, it will receive signal that is generated by bus stop and it will indicate the passengers the next stop[3].

1) Advantages

a) The RF transmits the signals whenever the bus is nearing the bus stop so that the passengers are aware of the arrival of bus.

2) Disadvantages

a) This method will only be helpful for short distances.

C. BMTC Bus Tracking System

Bangalore Metropolitan Transport Corporation [8] buses have a real time bus tracker. The online application that involved a small device on top of buses was tried on experimental basis. This device will calculate distance travelled and time taken. Later the electronic display boards will announce the arrival and departure timing at bus stops.

1) Advantages

a) This application will give real-time location of the bus.

b) This is not an SMS based system so there won't be any interruption in sending the data.

2) Disadvantages

a) The GPS tracker is set up on the bus; so it fails whenever the buses pass from under the trees or flyovers and even when the buses are in their sheds.

IV. ALGORITHM USED

A. Voronoi Diagram Algorithm

Voronoi diagram is nothing but partitioning of a plane with n points into convex polygons such that each polygon contains exactly one generating point and every point in a given polygon is closer to its generating point than to any other.

A Voronoi diagram is sometimes also known as a Dirichlet tessellation. The cells are called Voronoi polygons. The Voronoi diagram is draw with the help of following steps,

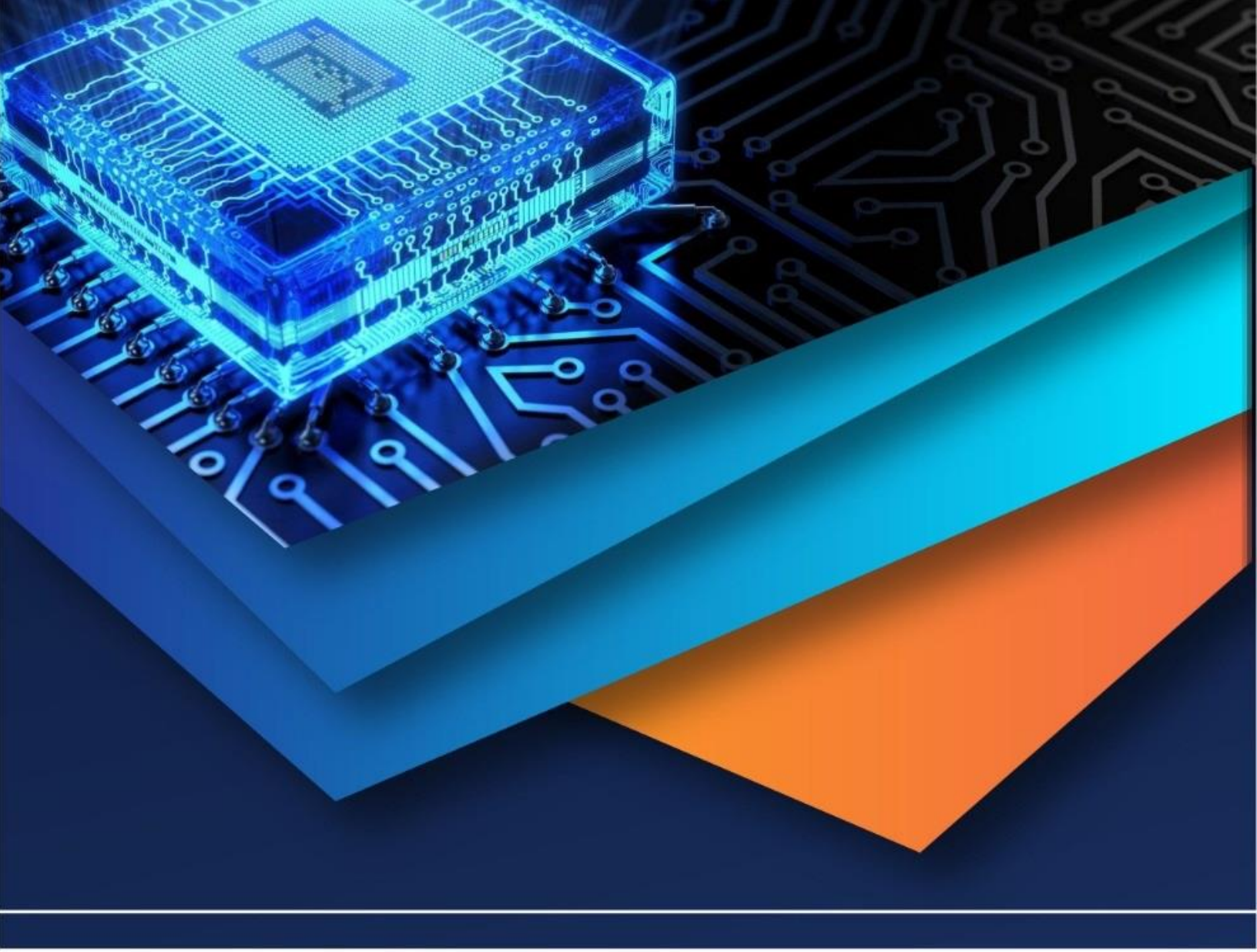
1) *Step 1:* The input points are called sites, labeled here A, B, C, etc.
2) *Step 2:* The next step is to connect the sites to all of their nearest neighbors without making a line that crosses another. This is known technically as the Delaunay Triangulation, and it's maybe the most difficult part.
3) *Step 3:* To find and mark the center point of every line on the Delaunay triangle.
4) *Step 4:* To draw the perpendicular bisector for each Delaunay line. This is where careful accuracy, in finding the center points, and in drawing a tight 90 degree angle, pays off.
5) *Step 5:* To retrace the outline of each Voronoi cell from the perpendicular bisectors. There will be one cell for every site, and at the end, each cell is just the set of all surface area points that are closer to its site than any of the other sites.

V. CONCLUSION

At some extend public transport helps to reduce the utilization of private vehicles as well as it is beneficial to reduce fuel consumption and also avoids traffic congestion too. The bus tracking system will be more beneficial and accurate as compared to other existing systems. In this survey paper includes literature survey by different researchers on various techniques with its advantages and disadvantages.

REFERENCES

[1] Mi Hyun Eom, Eun Young Han and Hee Soon Chang. (2001), "Implementation of Internet-based Land Bus Tracking System using Java".
[2] Agung Dewandaru, Abas M. Said and Abdul Nasir Matori. (2007), "A Novel Map-matching Algorithm to Improve Bus Tracking System Accuracy".
[3] International Journal of Engineering Science & Advanced Technology, http://ijesat.org/Volumes/2014_Vol_04_Iss_02/IJESAT_2014_04_02_05.pdf.
[4] W. Liu, J. Liu, H. Jiang, B. Xu, H. Lin, G. Jiang, and J. Xing. Wilocator: "Wifi-sensing based real-time bus tracking and arrival time prediction in urban environments". In Proc. of IEEE ICDCS, 2016.
[5] Fleischer, Paul Benjamin; Nelson, Atso Yao; Bremag, Appah. Design and development of GPS/GSM Based vehicle tracking and alert system for commercial intercity buses.
[6] P. Zhou, Y. Zheng, and M. Li. "How long to wait? predicting bus arrival time with mobile phone based participatory sensing. IEEE Transactions on Mobile Computing, 13(6):1228–1241, 2014.
[7] P. Zhou, S. Jiang, and M. Li. "Urban traffic monitoring with the help of bus riders. In Proc. of IEEE ICDCS, 2015.
[8] Vehicle Tracking Bangalore, http://www.simbaprojects.org/download/india/pres ent aion%20and%20feedback/ITS/IIT%Bangalore.
[9] Nusrath Jahan, Kamal Hossen and Muhammad Kamrul Hossain Patwary "Implementation of a Vehicle Tracking System using Smartphone and SMS service" 4th International Conference on Advances in Electrical Engineering (ICAEE) 2014 IEEE.
[10] Ramesh Chandra Gadri Bhagyshree Alhat Ankita Chavan Sujata Kamble Reema Sonawane "Land Vehicle Tracking System Using Java on Android Platform" Computer Engineering and Intelligent Systems 2012.
[11] Settha Tangkawanit, Chakkrit Termritthikun, and Surachet Kanprachar "Electric Vehicle Tracking and Notification Application for Smart Phones" Proceedings of the International Electrical Engineering Congress . IEEE 2014.
[12] Rui Zhang, Wenping Liu, Yufu Jia, Guoyin Jiang, Jing Xing, Hongbo Jiang, and Jiangchuan Liu, "WiFi Sensing Based Real-time Bus Tracking and Arrival Time Prediction in Urban Environments" IEEE 2018.
[13] Feng Liu, Jan Sparbert, and Christoph Stiller "IMMPDA Vehicle Tracking System using Asynchronous Sensor Fusion of Radar and Vision" 2008 IEEE.
[14] Qiang Zhang, Yanhu Zhang, Jingyi Li "EasyComeEasyGo: Predicting bus arrival time with smart phone" 2015 Ninth International Conference on Frontier of Computer Science and Technology.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY