International Journal of Advance Research in Science and Engineering
Volume No.07, Issue No.02, February 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

AN URBAN BUS NAVIGATION SYSTEM AND EMBODYING IDEAS FOR URBAN BUS RIDERS USING INTERNET OF THINGS

M.Gowsalya[1], A.Ponraj[2]

[1]*PG Scholar, Department of Electronics and Communication*
Easwari Engineering College,Chennai (India)
[2]*Assistant Professor, Department of Electronics and Communication*
Easwari Engineering College,Chennai(India)

ABSTRACT

All roads in the city have some capacity and if you increase the number of buses, it is going to increase the traffic. You have to limit the number of buses at some point. If you feel someone getting too close in a crowd or on a bus it will be uneasy for both men's and women's. *Commuting on roads in densely populated cities of the developing world is fraught with high delays and uncertainties. Wide use of public transportation can ease the load on the road infrastructure, but such use is not convenient, partly due to the unpredictable nature.* Accident *is unintentional injury, is an undesirable, incidental, and unplanned event that could have been prevented had circumstances and if there is no proper system human lives will be in danger. In order to avoid this circumstance we are implementing the system. In order, to overcome these problems we have implanting systems 1.Global Navigation; 2.CAR (crowd aware recommendation); 3.Fuel monitoring system; 4.Accident detection system and 5. Over speed Monitoring systems.*

Keywordscomponent:Smartcity,BusTransport,Passenger detection,Bus ride recognition,Internet of things.

I. INTRODUCTION

As cities continue to grow in size and population, new challenges arise for the design of urban mobility infrastructures. While public bus transport systems have the capacity to absorb large masses of urban travellers, their public image often suffers from a negative perception . First, from a passenger's point of view, bus networks in dense urban areas are often considered as complex and difficult to navigate. Second, in contrast to private modes of transport, travelling on buses offers only a low level of comfort and convenience. Third, bus journeys lack a sense of personal control and ownership that is valued by car users. To overcome these inherent weaknesses of the physical bus transport system, researchers increasingly turn their attention to digital technologies in order to improve the perceived quality of bus transport. To fill this gap, the Internet-of-Things (IoT) provides great opportunities to improve existing public transport system by embedding smart technology into real world transport usage contexts. In particular, there is potential to design travellers information system

which can foster a closer relationship between physical and digital travel experiences. There is empirical evidence that enhanced information availability and accessibility is an important factor for increasing readership and satisfaction with public transport services. However, the transport information systems provide tools to help travellers plan an upcoming journey, there is no direct support available surrounding the information needs that emerge during their transport journeys. Despite the fact that real-world travel experiences shape the perception of public transport systems, current systems have no means to effectively assist travellers during their transport journeys when complex transport decisions have to be made.

A. VEHICLE TRACKING SYSTEM

The main aim of this work is to develop the innovative system to simplify the human life and save the human life from risks. 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 or GLONASS technology 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 or specialized software. Urban public transit authorities are an increasingly common user of vehicle tracking systems, particularly in large cities. Vehicle tracking systems are commonly used by fleet operators for fleet management functions such as fleet tracking, routing, dispatching, on-board information and security. Some vehicle tracking systems are bundled with or interface with fleet management software. Along with commercial fleet operators, urban transit agencies use the technology for a number of purposes, including monitoring schedule adherence of buses in service, triggering automatic changes of buses' destination sign displays once the vehicle approaches the bus terminus (or other set location along a bus route such as a particular bus stop along the route), and triggering pre-recorded (or even synthetic speech) bus stop, route (and its destination) or service announcements for passengers.

B.GPS TECHNOLOGY

GPS can refer to external announcements (triggered by the opening of the bus's door) at a bus stop, announcing the vehicle's route number and destination, primarily for the benefit of visual impaired customers, or to internal announcements (to passengers already on board) identifying the next stop, as the bus (or tram) approaches a stop, or both; the latter are often also displayed on an internal LED display or LC monitor connected to the system while the loudspeakers play them. Data collected as a transit vehicle follows its route is often continuously fed into a computer program which compares the vehicle's actual location and time with its schedule, and in turn produces a frequently updating display for the driver, telling him/her how early or late he/she is at any given time, potentially making it easier to adhere more closely to the published schedule Such programs are also used to provide customers with real-time information as to the waiting time until arrival of the next bus or tram/streetcar at a given stop, based on the nearest vehicles' actual progress at the time, rather than merely giving information as to the scheduled time of the next arrival. Transit systems providing this kind of

information assign a unique number to each stop, and waiting passengers can obtain information by entering the stop number into an automated telephone system or an application on the transit system's website. Some transit agencies provide a virtual map on their website, with icons depicting the current locations of buses in service on each route, for customers' information, while others provide such information only to dispatchers or other employees.

With the GPS technology being enhanced day by day, companies are coming up with devices that are compatible with phones and other modern gadgets. These devices provide live time activity of the fleet on personal devices without even logging onto their website as well. Keeping a track of fleet commander's actionable data, improving efficiency, reducing fuel cost etc. also come under fleet tracking. These devices and software help in cost cutting.

II. RELATED WORK

Research on public transportation has traditionally focused on methods to improve the efficiency of the physical transport system. For instance, service scheduling is considered as an important problem for efficient bus transport operation . Instead of resolving operational transport issues, they suggest to design passenger-centric information system that have the ability to improve the passengers' journeys. A significant improvement of public transport information accessibility has been the development of mobile transport apps. OneBusAway is the first mobile app that brought estimates arrival times of buses on mobile devices. The authors showed empirically that ubiquitous access to expected waiting times significantly increased satisfaction with public transport services. Meanwhile, numerous mobile transport apps have been developed for transport systems in many cities around the world. Some of these apps leverage on the built-in sensors of smartphone devices to provide personalization and context awarenes e.g., by using GPS for suggesting bus stops in the surroundings of a user. This provides insight into the raw context of the user such as his current location, but does not capture a wider notion of transport context including the colocated physical transport system, e.g., the bus vehicle and bus line on which a user is riding.

Further, current mobile transport apps often rely on the transport information that is published by transport operators as open data, e.g., in form of the Google's General Transit Feed Specification. This data encompasses a description of the transport network including routes, schedules and arrival times while qualitative travel information is missing as a basis for informed travel choices of transport users. Crowding on public transport system is a dimension of qualitative travel information that is known to have a big impact on travel satisfaction and cause a high level of stress and discomfort . To identify crowd levels on public transport systems, some public transport agencies adopt automated fare collection system which can provide statistics about the number of passengers with digital boarding passes. However, due to substantial investment costs these system are only deployed in selected cities and often lack integration with traveller information systems. In absence of dedicated tracking infrastructure supported by transport authorities, crowd sourcing applications have been developed to acquire additional real-time transport information. The idea of these application is to allow transport users act in

a collaborative manner and collect context data about about real-world transport conditions experienced during their journeys.

III. THE URBAN BUS NAVIGATION SYSTEM

The Urban Bus Navigator in order to extend the capabilities of existing public bus transport information systems. The size of the city and the diversity of bus routes complicates travelers transport decisions when it comes to navigating the city, especially as buses, in contrast to other public transport modes such as subways or trams, require frequent interchanges and are susceptible to incidents and temporary re-routing. In the following, it have enhanced the Madrid public transport system with Internet of Things features to uniquely address these needs.

A. PUBLIC TRANSPORT INFORMATION NEEDS

The UBN system has been developed in order to improve the satisfaction of public transport information needs. As public transport system cannot be physically controlled by users in the same way as private means of transport, access to relevant public transport information is travellers have specific information needs to make effective transport decisions. To conceptualize this have developed a model of a public transport journey which encompasses tasks that passengers must be able to accomplish to use public transport such as trip planning, choosing from different routes, finding a path to a stop, alighting, transferring and dealing with transport disruptions.

Micro navigation refers to fine-grained contextual guidance of passengers along a bus journey by recognizing boarded bus vehicles and tracking the passenger's journey progress. Crowd-aware route recommendation collects and predicts crowd levels on bus journeys to suggest better and less crowded routes to bus riders. We present the technical system behind the Urban Bus Navigator and report on results from an in-the-wild study in Madrid that indicates removed barriers for public transport usage and a positive impact on how people feel about bus journeys. As cities continue to grow in size and population, new challenges arise for the design of urban mobility infrastructures. While public bus transport systems have the capacity to absorb large masses of urban travellers, their public image often suffers from a negative perception. First, from a passenger's point of view, bus networks in dense urban areas are often considered as complex and difficult to navigate. Second, in contrast to private modes of transport, travelling on buses offers only a low level of comfort and convenience.

B. INTERNET-OF-THINGS ARCHITECTURE

The UBN is based on an Internet-of-Things architecture which involves a set of distributed soft- and hardware components which are tightly integrated with the bus system. The network-enabled urban bus system with Wifiequipped buses vehicles. Wifi is used to establish local networks for sharing bus data with the passengers' mobile phones. In addition, a crowd density estimation system has been integrated into the bus system.

• The UBN navigation app for bus riders. The UBN app is a smartphone application that is able to track a user's bus journey and support micro-navigation decisions by setting up connections to bus vehicles and recognizing on which bus and direction the passenger is currently riding.

• The bus crowd information server to collect real-time occupancy information from buses operating on different routes in Madrid. The server encompasses an enhanced transit route planning engine to recommend bus routes with lower predicted occupancy for avoiding crowds.

C. THE NETWORK ENABLED SYSTEM

The main Concept of the project is to develop the innovative system to simplify the human life and save the human life from risks. Accident is an unintentional injury, is an undesirable, incidental, and unplanned event that could have been prevented had circumstances and if there is no proper system human lives will be in danger. Fuel Theft and monitoring also one of the major scenario in these terms. The sensors are used to measure the features and data is processed via microcontroller. The Internet of Things [IOT] was the methodlogy used in this project. its take a crowd-sourced approach where information about transportation and informed units as well as road conditions crowd sourced from Bus information server section. In this context, we have developed bus location tracking system, which will enable flexible and scalable content-driven data gathering and dissemination. Practical Problems like accidents as well as fuel level technical issues which need further careful addressed.

IV. SIMULATION AND RESULTS

A compiler is a computer program (or set of programs) that transforms source code written in a programming language (the source language) into another computer language (the target language, often having a binary form known as object code). The most common reason for wanting to transform source code is to create an executable program.

SQL is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS).

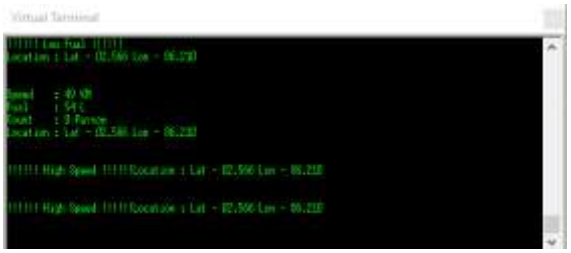

Fig 1. Speed sensor is measured

Fig2. IR Sensor and Speed sensor is measured using by software

V. CONCLUSION

In this article, at first introduced a distributed IoT system architecture and subsequently also introduced and analyzed an authentication mechanism for GPS enable GPRS in distributed IoT applications.The development of a new advanced outdoor safety system for buses in urban environments at low speed has been introduced and tested. The proposed authentication scheme comprises of Multipurpose Bus transport system. The proposed scheme provides more security features with the assurance of less computational overhead Such devices are intended to evaluate any risky situation in order to make the bus driver aware of the danger of certain manoeuvres once pedestrians moving around the vehicle have been detected. The effectiveness of the developed safety system has been analysed through some experiments carried out using a simulated scenario. These experiments show that, when a dangerous manoeuvre happens, the proposed system improves safety significantly. The number of medium and high risk situations as well as the number of collisions is clearly reduced, given that driver's time of reaction when braking is also lower and average time to collision increases with respect to situations where the system is disabled.

REFERENCES

[1] S. Stradling, M. Carreno, T. Rye, and A. Noble, "Passenger perceptions and the ideal urban bus journey experience," Transport Policy, vol. 14, no. 4, pp. 283 – 292, 2007.

[2] B. Gardner and C. Abraham, "What drives car use? A grounded theory analysis of commuters' reasons for driving," Transportation Research Part F: Traffic Psychology and Behaviour, vol. 10, pp. 187 – 200, 2007.

[3] T. Camacho, M. Foth, and A. Rakotonirainy, "Pervasive Technology and Public Transport: Opportunities Beyond Telematics," IEEE Pervaisive, pp. 18–25, 2013.

[4]J.Hare,L.Hartung,andS.Banerjee,"Beyonddeploymentsandtestbeds: Experiences with public usage on vehicular wifi hotspots," in Proc. of the 10th Intl. Conf. on Mobile Systems, Applications, and Services (MobiSys), 2012.

[5] I. Skog and P. H¨andel, "In-Car Positioning and Navigation Technologies - A Survey," IEEE Transactions on Intelligent Transportation Systems, vol. 10, no. 1, pp. 4–21, March 2009.

[6] B. Ferris, K. Watkins, and A. Borning, "OneBusAway: A Transit Traveler Information System," in Mobile Computing, Applications, and Services. Springer Berlin Heidelberg, 2010, pp. 92–106.

[7] V. Guihaire and J.-K. Hao, "Transit network design and scheduling: A global review," Transportation Research Part A: Policy and Practice, vol. 42, no. 10, pp. 1251 – 1273, 2008.

[8] J. Raper, G. Gartner, H. Karimi, and C. Rizos, "Applications of locationbased services: A selected review," Journal of Location Based Services, vol. 1, no. 2, pp. 89–111, Jun. 2007.

[9] B. C. Mairead Cantwell and M. O. Mahony, "Examining the Factors that Impact Public Transport Commuting Satisfaction," Journal of Public Transportation, vol. 12, no. 2, pp. 1–21, 2009.

[10] M. Trpanier, N. Tranchant, and R. Chapleau, "Individual trip destination estimation in a transit smart card automated fare collection system," Journal of Intelligent Transportation Systems, vol. 11, no. 1, pp. 1–14, 2007.