Smart Travelling Using Participatory Sensing

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ABSTRACT

The bus arrival time is primary information to most city transport travelers. Excessively long waiting time at bus stops often discourages the travelers and makes them reluctant to take buses. In this paper, we present a bus arrival time prediction system based on bus passengers' participatory sensing. With commodity mobile phones, the bus passengers' surrounding environmental context is effectively collected and utilized to estimate the bus traveling routes and predict bus arrival time at various bus stops.Daily transport is affected by a number of conditions which are highly uncertain such as congestions, delays, passenger demand and accidents. This calls for a real time and dynamic system that is flexible to meet the needs of the operator and user which is affordable and efficient. An important problem in creating efficient public transport system is obtaining data about passengers' end to end journey. Obtaining this data is problematic and expensive since buses do not have an onboard ticketing system to record where and when passengers get on and off the bus. This paper aims at trouble-free and convenient travel for individuals who commute daily using the public bus transport of a city by making real time information of buses available, without any extra costs right at their fingertips.

Keywords:. Participatory Sensing, predicting, android

INTRODUCTION

Public transport, especially the bus transport, has been welldeveloped in many parts of the world. The bus transport services reduce the private car usage and fuel consumption, and alleviate traffic congestion. As one of the most comprehensive and affordable means of public transport, When traveling with buses, thetravelers usually want to know the accurate arrival time of the bus. Excessively long waiting time at bus stops may drive away the anxious travellers and make them reluctant to take buses. Transportation demands in urban areas continue to increase rapidly as a result of both population growth and changes intravel patterns. This requires planning a system, which is affordable, efficient and reliable from the users' as well as operator's perspectives. This Paper is to make transport much convenient for individuals who commute daily using the public bus transport of the city, for effective time management and making it trouble-free, not just for the commuters but the Transport Department to create an efficient public transport system.Nowadays, most bus operating companies have been providing their timetables on the web freely available for the travellers. The bus timetables, however, only provide very limited information (e.g., operating hours, time intervals, etc.), which are typically not timely updated. Other than those official timetables, many public services (e.g., Google Maps)are provided for travellers. Although such services offer useful information, they are far from satisfactory to the bus travellers. For example, the schedule of a bus may be delayed due tomany unpredictable factors (e.g., traffic conditions, harsh weather situation, etc). The accurate arrival time of next bus will allow travellers to take alternative transport choices instead, and thus mitigate their anxiety and improve their experience. Towards this aim, many commercial bus information providers offer the real-time bus arrival time to the public. Providing such services, however, usually requires the cooperation of the bus operating companies (e.g., installing special location tracking devices on the buses), and incurs

substantial cost. As we get location information, from the sharing users, this data is recorded into the server. The location from the clients from all the requesting clients who are waiting is received. This data is compared and the estimated time of arrival with respect to a client location is calculated,

To present a novel bus arrival time prediction system based on crowd-participatory sensing. We interviewed bus passengers on acquiring the bus arrival time. Most passengers indicate that they want to instantly track the arrival time of the next buses and they are willing to contribute their locationinformation on buses to help to establish a system to estimate the arrival time at various bus stops for the community. This motivates us to design a crowd participated service to bridge those who want to know bus arrival time (querying users) to those who are on the bus and able to share their instant bus route information (sharing users). To achieve such a goal, we let the bus passengers themselves cooperativelysense the bus route information using commodity mobile phones. In particular, the sharing passengers may anonymously upload their sensing data

collected on buses to a processing server, which intelligently processes the data and distributes useful information to those querying users.

LITERATURE SURVEY

A lot of research works are going on related to predicting bus arrival timings ,here we are predicting arrival timings based on mobile phone participatory sensing.[1]Menon et al [4] propose an app where Internet of Things infrastructure can be used to predict arrival timings of buses as well as the crowd inside each bus. It uses protocols for communication between the devices. The architecture proposed by the research would establish a connection between the bus and its information and the passenger through the means of sensors to calculate the vacant seating capacity of a particular bus, embedded devices are used to collectthe temporal information, geographic location and how fast the bus is moving. These details are also sent to the cloud server after every minute through any standard protocols that use 3G/4G, satellite transmits signals to the bus on ground as well as a very accurate time reference which is provided by blocks of atoms, phone app is used to access all the bus information and a cloud server including a database to save and classify the multiple bus information. Finally, they conclude saying bus transportation improves in a number of parameters including management of time, efficiency management, crowd management and in the number of options being offered to users. [2]. Abhishek Dilip Bhonge et al [3] try to make local bus transport easier for everyone by coming up with a mobileapplication on the android OS. Thisapp has all the information about buses and their respective routes. The user has toenter the source and destination or just enter the destination as the app gets his/her current location and shows all possible routes to his destination. The app also has an emergency button to send an alert along with their exact location to the authorities or the updated emergency contacts if the traveller feels uneasy while travelling. The buses also have RFID's to track their current capacity which in turn is showed as red or green on the map indicating whether its board able or not.

[3].In this paper There have been a variety of location-based services and almost all have failed to gain widespread use or to be exquisitely useful. Thomas Sheppard et al [2] developed this technology which has the capability of listening to the signal your smartphone broadcasts as it searches for Wi-Fi networks, and provides an aggregated and anonymized open data stream showing, accurately, where every person is in real-time. With the software of Presence Orb installed on the ever-increasing number of public Wi-Fi hotspots, you could know exactly how a place will be before you arrive. Presence Orb records only required amount of data in order to provide an aggregate picture of group of people, not individual persons, and that the identification of specific devices would only be with the explicit consent of the owner in an opt-in model. With the presence Orb installed citywide, you could practically know how full a bus would bebefore it reaches a particular stop.[4]. To tackle the decrease in frequency

of estimation of the buses arriving at their right timings, Gunjal Sunil et al [5],proposed an android application which has the ability to obtain accurate prediction of bus arrival time on real time basis which can be viewed by the transport department as well as the user. Three privileged access levels are provided toavoid unauthorized access, namely; Admin, who add/remove buses from the timetable and controls the same for of all buses and, Conductor, who selects the route and starts the app on his phone and therefore the User, who will read the timetable of solely the desired buses and can't modify timetable of buses. The whole system is divided into 3 models; The android application, the website which has the information of the database for customers not having access to an internet-connected android device and a Remote database which holds all of the information in a MYSQL database.

PROPOSED SYSTEM:

The system architecture as shown in Figure presents how the user can access the updated data. By scanning a QR code on the bus and by a tap the user's location is uploaded as the new location of the bus and stored to be accessed by anyone registered to the application.

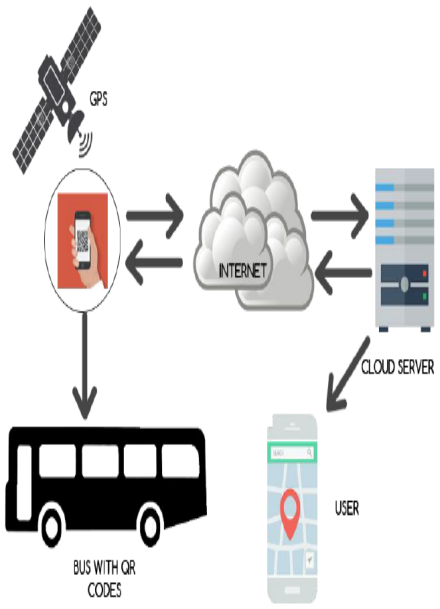

Fig 1.1:Architecture of the system

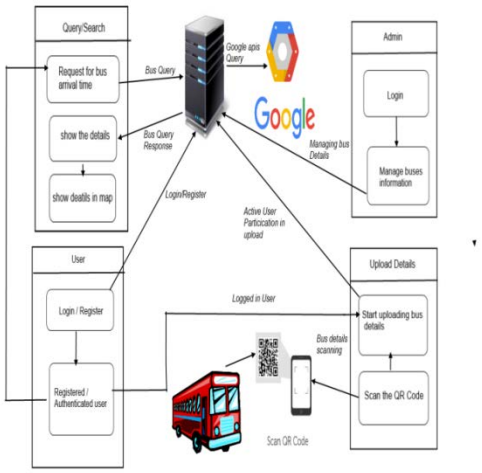

Figure 1.2 BLOCK DIAGRAM

A. IDENTIFICATION (QR)

The main process of the concept is to register the details of the users. Every user in the cloud can enroll their details.According to the registered information's they have to move onto the next stage in the cloud. Here, we login to the cloud with the help of registered details. After the authentication process performed successfully we can select the files to upload into the cloud. In the process we have to choose different domains file for uploading. In this stage we protect the privacy by restricting the access to the data such as adding certification or access control to the data entries, so sensitive information access to the group of authenticated users. Second, we prevent the pinpointed sensitive information in individual data.such that no sensitive information can be misconducted by unauthorized individuals. For data anonymization, the main objective is to inject randomness into the data to ensure a number of privacy goals.One of the major benefits of the data annomization-based information sharing approaches is that, once anonymized, data can be freely shared across different parties without involving restrictive accesscontrols. This naturally leads to another research area namelyprivacy preserving data mining, where multiple parties, each holding some sensitive data, are trying to achieve a common data mining goal without sharing any sensitive information inside the Data. We providing authentication the user have the rights to access, alter, and delete their own data.

B. LOCATION SEARCH (Network Based)

While the QR code is scanned the current location isprobed. The current location is obtained from the cell tower location. The location thus obtained is sent over the internet to the main database server.

C. SYNCHRONIZATION

The synchronization modules sync the data between the client at the server end and the client waiting for the bus. This code, sends all data collected from the bus user and sends to the server. All clients listening to the server receive the data from the server database. Thus clients get an updated status on the position & schedule of the bus.

D. ARRIVAL TIME PREDICTION.

As we get location information, from the sharing users, this data is recorded into the server. The location from the clients from all the requesting clients who are waiting is received. This data is compared and theestimated time of arrival with respect to a client location is calculated.

CONCLUSION

In this Proposed system, we present a crowd-participated busarrival time prediction system using commodity mobile phones.With public transport being used by more than 90% of the people within India, it comes down to a single question as to how it can be well built with a solid organized structure to make it feasible to the users and

the operators as well. To address these issues we eliminate total hardware dependency with a solution that uses an Android application which solely utilizes crowd sourcing to obtain temporal and geographical bus information and a QR code to perform security checks. Since this dynamic information is available right at the users fingertips it offers a reliable and an inexpensive solution providing answers to a number of problems.

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