

PREDICTING BUS ARRIVAL TIME USING GPS AND MACHINE LEARNING

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Abstract— *The bus companies generally provide bus timetables on the web. Such bus timetables only provide limited information (e.g. operating hours, time intervals) which are not timely updated according to instant traffic conditions. Although many commercial information providers offer the real time bus arrival prediction information the service usually comes with prestigious cost. State of the art systems provide this meta data by means of an in vehicle device which accepts driver input, such as the current route, as well as by estimating arrival times based on current vehicle location, past travel time and the official route schedule. The main objective of our system is to develop an android application to provide real time bus arrival information. This system use real-time vehicle tracking using a Global Positioning System (GPS) technology module to receive the location of the vehicle. There will also be an android application which will give real time schedule of buses. Also it can give quick and real time replay for enquiry, via server. Also in case of bus failure or breakdown, the notification will be sent to system, with Bus location. If a user don't have a mobile phone he can get information of buses at his bus stop for all the buses which are going from that bus stop, and for the passengers inside the bus we are providing a screen on that screen we can display the current bus stop, next bus stop and last stop.*

Keywords— *Bus arrival time prediction, GPS, location tracking.*

1. INTRODUCTION

The transportation system provide as the heart in the economic and social growth of the country. Due to the fast rate of population in India there is a fast explode in vehicle which results in a burden on metropolitan traffic management. As the public transport has become an important part of the urban transportation advance in easily available technology Can be enforced which not only help the person who recalculate between a suburban and city to get the traveling information and also help a person in order to belt down there swift with the final real time location. In many parts of the cosmos, public transport especially the bus sluice has been well developed. In order to reduce the fuel consumption, car usage and comfort traffic congestion we can use the bus transport services. The passengers want to know the precise advent time of the bus, when traveling with the buses. The passengers become anxious while extremely waiting for a perennial time at the bus stop and make them indecisive to take buses. Most passengers are usually ripe to office and many of the students are restarted to the class as they determine to wait for the bus Instead of taking an alternate transportation. In this system, our aim is to minimize the cost and complexity of content these services by creating Easy Tracker, an automatic system for transit tracking, processing, and advent time prediction.

2. MOTIVATION

Travel duration in public transportation systems is a direct measure of their efficiency and usefulness. Travel time information is also important in planning operations, signal timing coordination and route assignments. Design and implementation of ITS tools depend on accurate predictions of travel durations by extrapolation of existing travel time data.

The main motto of this system is a real-time vehicle tracking using a Global Positioning System (GPS) technology module to receive the location of the vehicle. There will also be an android application which will give real time schedule of buses.

3. OBJECTIVE

The main objective of this system is to develop an android application to provide real time bus arrival information. This system use real-time vehicle tracking using a Global Positioning System (GPS) technology module to receive the location of the vehicle. There will also be an android application which will give real time schedule of buses. Also it can give quick and real time replay for inquiry, via server. Also in case of bus failure or breakdown, the notification will be sent to system, with Bus location.

4. LITERATURE SURVEY

1) “Predicting Bus Arrival Time using GPS on Android Phone Based Application” by Amruta Zagade, Vaishnavi Langhe, Trupti Gawari, Prof. Milind Hegade. This paper uses an embedded system using GPS (Global Positioning System), GSM (Global System for Mobile Communication) and Microcontroller for tracking the bus. The real time coordinates obtained from the GPS will continuously monitor a moving vehicle and report the status of the vehicle on request to passengers. The GPS/GSM module is mounted on the bus sends the data to the central monitoring system microcontroller using the GSM module

and displays bus location name on the LCD.

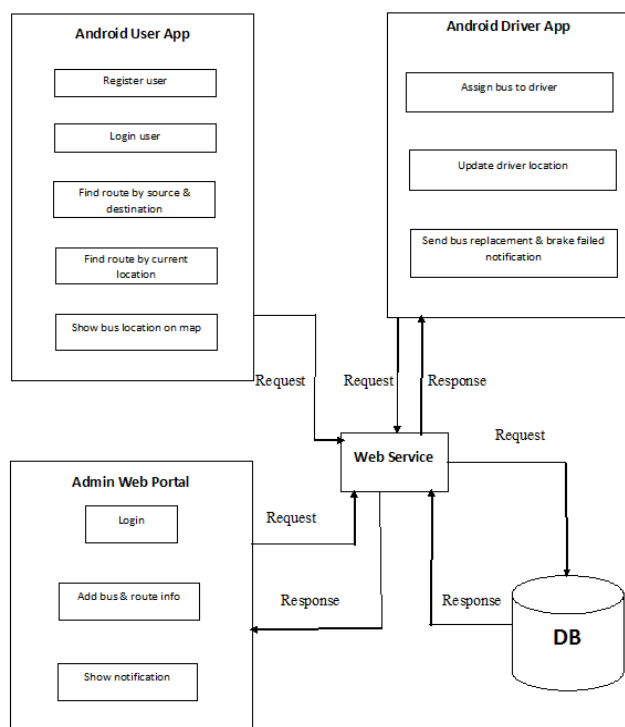
2) “Predicting Bus Arrival Time with Mobile Phone Based Participatory Sensing” by Manasi Mule, Naina Patil, Reshma Takalkar, R. C. Kakade[2]. This system define on the base of users involving relies and collaborate efforts of passengers and it is not dependent from the operating companies of bus, so without support requesting from particular bus operating companies for supporting the universal bus service systems it can be adopted easily.

3) “Predicting Buss Arrival Time on the Basis of Global Positioning System” by Data Dihua Sun, Hong Luo, Liping Fu, Weining Liu, Xiaoyong Liao, and Min Zhao[1]. This system shows the results indicate that the proposed system is capable of achieving satisfactory accuracy in predicting bus arrival times and perfect performance in predicting travel direction.

4) “Predicting Bus Arrival Time with Mobile Phone Based Participatory Sensing” by Suvarna C. Pawar, Aishwarya R. Alavekar, Vibhavari S.Patil, Shivani M.Sasane, Ritesh V. Rananavare, Kekade Mandar. We present a bus arrival time prediction system based on mobile devices GPS enable feature to obtain arrival time of Bus and utilized to estimate the bus traveling routes and predict bus arrival time at various bus stops.

7. OVER ALL DESCRIPTION

5. ARCHITECTURAL DIAGRAM



This is architectural diagram which include android user app, android driver app & admin web portal.

In user app first we have to login, and then find the route between your source & destination. Later the current location is updated automatically. After getting the current location, the location of the bus is shown on the map. First the driver app selects the assign bus. Later it starts its drive & the location is updated on drive automatically to the server. If any bus failure or breakdown occurs the driver notifies the admin the failure or breakdown. It logs in the portal first & then it add the bus & the route information. Then it sees the notification to the admin.

6 .ALGORITHMS:

The algorithm used Haversine, Bearing and K-Means algorithm. Haversine Algorithm is used to calculate the distance between two bus stop. Bearing algorithm is used to showing in which direction the bus is moving. K-means algorithm is used location clustering

7.1 PRODUCT PERSPECTIVE:

The main goal of this system is to develop an android application to provide real time bus arrival information. This system use real-time vehicle tracking using a Global Positioning System (GPS) technology module to receive the location of the vehicle. There will also be an android application which will give real time schedule of buses. Also it can give quick and real time replay for enquiry, via server. Also in case of bus failure or breakdown, the notification will be sent to system, with Bus location.

7.2 REQUIREMENTS:

• SOFTWARE REQUIREMENTS:

- Dot Net
- Android studio 1.5
- Visual studio 12 or 13
- MS SQL server 2008

• HARDWARE REQUIREMENTS:

1. 8 GB RAM
2. 500 GB HDD

7.3 PRODUCT FUNCTION:

In this system two android application are developed such as user application and driver application.

◆ User App-

- Log in- User log in on system.
- Register -User register on app.
- Find Route-Find Route by providing Source and destination.
- Find Route-Find Route by providing current location.
- MAP- Show Bus Location on Map.

◆ **Driver App-**

- Driver Select bus assigned.
- Driver location is continuously updated on server using GPS to get Current Location.
- Driver able to send notification to Admin for Bus replacement and break failed.

◆ **Admin Panel:**

- Admin is able to add bus, route info.

[6] Y. Liu, L, “Mining frequent trajectory patterns for activity monitoring using radio frequency tag arrays”.

8. CONCLUSION

System develop GPS based bus arrival time prediction application. Primarily relying on inexpensive and widely available cellular signals, the proposed system provides cost-efficient solutions to the problem. This system proposes the bus tracking and predicts the bus arrival time with a proposed system in it. This system is turn on and uses i.e. self-calibrating and works anywhere on earth and does not require a laboratory or artificial environment. Having a GPS is truly an advantage you can determine your location.

9. REFERENCES

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