A Survey on Bus Tracking and Bus Arrival Time, Location Prediction System.

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Abstract: As it is said time is money, it has become essential to save time as much as possible. The most of the time wasted by the people is on waiting for buses on the bus stops which is really horrible. Thus it becomes essential to track the buses real location using GPS and provide passengers predicted time of bus arriving at the bus stop and also people must get the bus information like where the bus is, is it in traffic, on route being anywhere like in house or on road, this can happen only by using mobile computing. And for getting information about bus on mobility device (Mobile phone) first it must be there at some central monitoring and control side that must be updated from time to time. But to being with, the survey has to be done to design the proposed system. Many researchers have paid a great contribution for the same since last decade but still the scope for improvement continue. Thus this paper contains the survey of various real-time issues faced by people and some survey about the latest researches in the same field.

Keywords: GPS, Mobile Computing, Routing, Bus Tracking, Bus arrival time prediction, Central Monitoring and Control, Traffic Monitoring.

Introduction

As per the survey made by our team regarding the PMT bus public transport, we met many passengers on the bus stop and enquired for the troubles that they are facing currently. The troubles that the passengers are facing are as mentioned below:
The first and very troublesome issue is about the passengers don’t know exactly when the bus is going to reach their bus stop. So they don’t have any idea till when they have to wait on bus stop for the bus.

The second major issue is that the passengers are not aware about whether the bus for which they are waiting on the bus stop, is coming for sure or not. Many passengers said that we waited for bus on the stop for around 1 hour and then came too know that the bus has broken down mid-way and there was no way to know about the running status of the bus.
The third major issue passengers faced due to current PMT transport is that even if the bus destination is the one which they are waiting for, still the bus routes are different for e.g. a bus from Hadapsar to swargate has two routes to follow, and the passengers don’t really know which route the bus will be following. The passenger’s has to rely on the announcers of the bus stops for getting the information about the buses and the bus routes which is not always audible to traffic noise. So to resolve the issues faced be existing system problems and to overcome the disadvantages of the previous researches, the proposed system will be implemented.

2. Literature Survey

A. Public Bus Arrival Time Prediction Based on Traffic Information Management System

The main factors which affect public bus arrival time are traffic conditions then comes the bus time or sequences and number of bus stops, then comes the number of intersections, and finally the other factors. By analyzing the historical data, authors found the public bus arrival time are combinations...
of two main parts: linear parts and residuals. In Figure 1, taken from [1] authors have shown the relationship between the bus arrival time and the distance it has traveled. Both of 338 those bus lines (No. 61 and 75) have shown strongly linear relationship between travel time and distance. In this model, authors have considered the factors of traffic conditions, dwell time, intersections and departure time. Just as author mentioned above, the main part of the bus traveling time are affected by them. The public bus arrive time prediction model (1) is a formally linear model which has already described the main part of the bus travel time, but author have to estimate its parameters. Meanwhile author still need to improve its accuracy by considering the other factors.

B. RFID (Radio frequency identification) Based Intelligent Bus Management and Monitoring System.

This system summarizes the work on design and implementation of RFID-based system for tracking the location of buses. The system consists of threemain modules: In-Bus Module, Bus-Stop Module and Base-Station Module.

When bus departs from bus BASE-Station, the RFID tag at Bus is read by the RFID reader module in the In-Bus Module and the tagged data is then sent to BASE-Station via GSM. This paper proposes an intelligent bus identification, management and monitoring system using RFID and sensing technologies. A theoretical framework and interface algorithm use RFID and communication technologies, i.e., GPRS, GPS and GIS, has been developed for a prototype. The interface algorithm in the control center is able to analyze the location of the bus, information about the driver and the status of the bus, and whether it follows the schedule. Thus, the proposed system should be able to enhance the efficiency of the campus bus system.

C. How Long to Wait? Predicting Bus Arrival Time with Mobile Phone Based Participatory Sensing

Our early attempts to build practical applications on Star Track revealed substantial efficiency and scalability problems, including frequent client-server round trips, unnecessary data transfers, costly similarity comparisons involving thousands of tracks, and poor fault-tolerance. To remedy these limitations, author revised the overall system architecture, API, and implementation. The API was extended to operate on group of tracks rather than individual tracks, delay query execution, and permit caching of query results. New data structures, namely track trees, were introduced to speed the common operation of searching for similar tracks. Map matching algorithms were adopted to convert each track into a more compact and canonical sequence of road segments. And the underlying track database was divided and duplicate among multiple servers. Altogether, these changes not only simplified the construction of track-based applications, which author confirmed by building applications using our new API, but also resulted in considerable performance gains. Measurements of similarity queries, for example, show two to three orders of magnitude improvement in query times.

D. Bus Management System Using RFID In WSN Phones

These paper authors present a new approach to integrate RFID (Radio Frequency Identification)
WSN (Wireless sensor network).

Figure 4. Bus station schedule management solution using RFID and WSN
WSN is used to support RFID identification process by prolonging the read range of an RFID system. Besides, by the use of the WSN author can monitor the environment of an object and optimize RFID reader’s presentation and energy. Then, method to integrate RFID technology, wireless sensor network to form an intelligent bus tracking application is studied. The proposed system can monitor bus traffic secret expansive bus stations, and can inform administrators whether the bus is arriving on time, early or late. This information is then displayed on the different wireless displays inside and outside the bus station.

E. Automotive Navigation System

An automotive Navigation System is design for using in vehicle. It uses GPS device to acquire position data to locate the user on a road any unit MAP database. Using the road database unit can give direction to other locations along road also in the database for greater consistency there is use gyroscope an accelerometer as GPS signal are loss.

Figure 5. Automotive Navigation System

F. Real Time Web based Vehicle Tracking using GPS

1. This uses GPS receiver to arrest the current location and vehicle speed. Location and speed data provided by GPS is not in human understandable format. This data needs to be processed to convert it into useful information that can be displayed on the map. CPU is required to process this raw data.

2. The raw data provided by the GPS receiver is taken by the CPU and processed to mine the required location and speed information CPU is also responsible for monitoring the microcontroller selected to serve as CPU for vehicle unit. When all required information is extracted and processed, it needs to be transmitted to a remote Tracking Server high will be able to display this information to the end user.

1. GPS antenna receives signals from GPS satellites and it must face towards sky for correct computation of the current location by GPS receiver. Location data is transferred to microcontroller through serial interface. After processing of the data provided by GPS receiver, microcontroller transmits this information to remote location using GPRS Modem.

2. Microcontroller controls the operation of GPRS modem through serial interface using AT commands. External GSM antenna is required by the GSM modem for reliable transmission and receiving of data. When modem receives any command sent by tracking server, it passes this information to with respect to the PMT and others buses services. The survey there by concludes that the system is not ate developed and the researched system is not giving accuracy and too have lot of disadvantages so to get accuracy we have find the solution which will be implemented In proposed system

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