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RFID BASED INTELLIGENT BUS MANAGEMENT AND MONITORING SYSTEM

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ABSTRACT: As we know that there are number of factors affecting bus travel time, such as departure time, work day, current bus location, number of links, number of intersections, passenger demand at each stop and traffic status of the urban network, etc. This paper presents a statistical approach to predict the public bus arrival time based on GPS information Management system. 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 be happening 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 scopes 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.

INTRODUCTION

In the current era we know that traffic plays an important role in modern urban society. Based on report from United Nations Population Division, there are almost 64 billion people will live in urban in 2050, and the annual growth rate is around 1.5% [1]. It will cause an obviously increase of trip demand. Because of the limitation of the traffic resources, those increments will lead to urban traffic congestion. Traffic congestion, already costing United Sates of American 87.2 billion USD in 2007, is only getting worse, according to a new report from the Texas Transportation Institute [2].In order to relieve the congestion, and provide buses on time for the passengers while waiting long time and passengers want be able to bus

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arrival time of their bus. Because of too much traffic in the road bus arrival time might be late and have to wait long time still bus arrived. Public transport is a shared passenger transportation service which is available for use by the general public. The governments or public transport authorities are developing public transportation system. A key problem in the development process is to provide adequate public transportation service or enhance the service level. The problem is also faced by public transportation planners and operators. For example, the accurate prediction of bus arrival times and the timely dissemination of the information to transit users may reduce their wait time, and thus increase the service quality. 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 comes troublesome issue is about the passengers don't have any idea exactly when the bus is going to reach their bus stop. So they don't know till when they have to wait on bus stop for the bus.

Figure1. Bus breakdown Issue

The second major issue is that the passengers are not aware about the bus for which passengers are waiting on the bus stop, is coming 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 station 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.

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 come sequences or the bus time and the bus stops, then comes the number of intersections, and finally any other factors. By analyzing the historical data, authors found the public

bus arrival time are combinations of two main parts: residuals and linear parts. 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
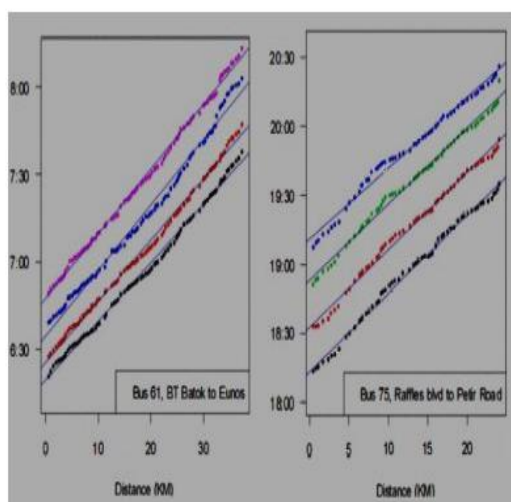

Figure 2.. Linear relationship between time and distance.

B. 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.

Figure3. Automotive Navigation System

C. How Long Time 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, with unnecessary data transfers, frequent clientserver roundtrips, 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. Track trees, New data structures were introduced to speed the common operation of searching for similar tracks. Map matching algorithms system 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. Analysis 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) in WSN (Wireless sensor network)
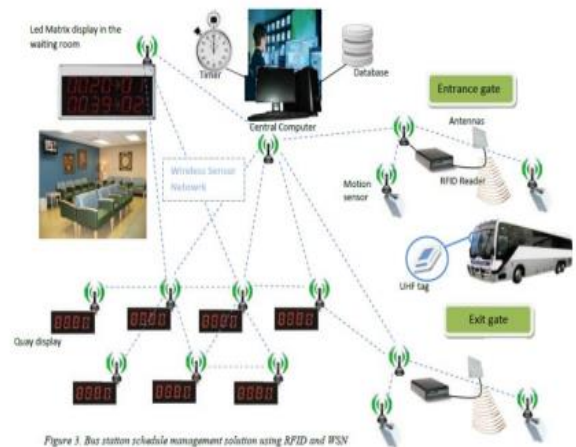

Figure 3. Bus station schedule management solution using RFID and WSN

**Fig -4 :** Bus station schedule management using RFID and WSN

WSN is used to support RFID identification process by prolonging the read range of an RFID system. Besides, by the access 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 bus information is then displayed on the different wireless displays outside and inside the bus station.

E. Real Time Web based Vehicle Tracking using GPS 1. This uses GPS receiver to arrest the current location and vehicle speed. Speed data and Location 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. To process this raw data CPU is required. 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. 3.GPS (Global Positioning System) antenna get signals from GPS satellites and it must face towards sky for correct computation of the current location by GPS receiver. Area location data information is transferred to microcontroller through serial interface. Then processing of the data provided by GPS receiver, microcontroller pass on this information to remote location using GPRS Modem. 4. Microcontroller controls the operation of GPRS modem through serial interface using AT commands. External GPS antenna is required by the GPS modem for reliable receiving and transmission of data. When modem gets 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

PROPOSED SYSTEM
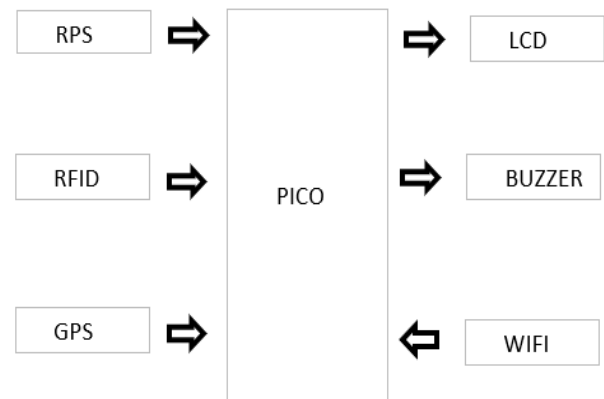
The proposed system architecture for intelligent bus management and monitoring system A black-box containing RFID reader, GPS modem is equipped in the moving bus. As the bus approaches a bus stop with an RFID tag, the distance between the reader and the tag decreases so that they can interact with each other. This communication also produces data and the data gained is sent to the BASE-Station via GPS. The entire system consists of three modules: BASE-Station Module, In-Bus Module and Bus-Stop Module. The architecture and working of these modules is described in this section.

CONCLUSION In this paper, a statistical approach was present to forecast the arrival time at each stop for public bus. Based on the assessment of all factors which will have impact on the bus arrival time prediction, a linear model was

proposed. Thus the survey for the bus tracking and bus breakdown management is carried out with the help of previous research as the prevailing system in the market with respect to the PMT services. The survey thereby concludes that the previous system proposed could not efficiently make the bus tracking and passengers' service so convenient that the proposed system will be providing. Also a deep study regarding the prevailing system in the PMT bus transport system was studied to understand, the current information providing system to the passengers regarding the buses.

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