Public Transport System
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Abstract:
Public Transport System (PTS) is an electronic system to provide real-time information for the passengers to display the arrival and departure times of the buses. This will let the passengers know when their bus would arrive and plan their journey accordingly, for planning a journey the public transport system provides the users to find the suggested journey’s to commute between the source and destination. This application should list the bus-route number, fare details, distance and also allow the user to view the same in a map-view.

Index Terms: GPS, GPRS, Google map

1. INTRODUCTION:
In the way people move around their communities’ public transportation systems is the main problem which play an increasingly important role. It is a very cost effective mode of transport. Due to cause of heavy traffic and roadwork etc., most of the buses are delayed in time. At the bus terminus people have to wait for long time without even knowing when the bus will arrive. Anybody who want to use the public transportation system, can’t find the time of arrival of particular bus at the particular destination even at their homes and plan their departure from home accordingly. But due to unexpected delays in traffic congestion the bus arrival time cannot be guaranteed. Our main focus is to provide such a system to remote user which will reduce waiting time for bus and will provide him with all necessary details regarding the arrival/departure time of the bus, its real location and expected waiting time. So to find out the current location of a bus and the dynamic arrival time a systematic tracking system is required. For best tracking result, GPS and GSM technology can be used. For tracking a vehicle the GPS and GSM based system can provide all specifications that are necessary. Our proposed system can find the location of the bus and inform the central controller at the bus terminal. Once this information is uploaded in the server and then the commuter can access the information via a web based application using internet even at their homes or any work place. Additionally, our system also provides a web based application which is interfaced with Google Maps which displays all transmitted information to the end user along with location of the bus on the map. A web application has an internal global timer which refreshes the tracking application after every forty seconds and collects the latest location and other customized vehicle parameters and updates the end user with the latest information of the bus. By helping travelers move from single occupancy vehicles to public transportation systems, it can reduce traffic congestion as well as environmental impact. Our goal is to increase the public transportation and satisfaction of current public transportation users and help to motivate more people to ride. If remote users who wish to use public transportation had an easy way to see which bus is near to their location and approximate time it will take to reach the particular stop, in real time, then they can make a more accurate decision of whether or not to wait at a stop. Our proposed system will provide pedestrians with this convenience. The location of bus is determined by using GPS and then the information is transmitted. The transmission can be terrestrial radio or cellular connection, satellite from the bus to a radio receiver, satellite or nearby cell tower. Once the location data along with other custom data is collected a wireless communication system is used for transmission purpose.

2. LITERATURE SURVEY:
For bus tracking many designs that have been proposed and implemented. In the case of implementation or in the case of the system design all proposed methods and implementations are unique. The real time bus monitoring system GPS module is installed on the buses for transmission of the real time location of bus to receiver boards which is installed on the bus stops. The centralized control unit get the GPS data of the bus location and it activating LEDs in the approximate geographic positions of buses on the route. The device will not require an external power source, it will be portable and sustainable and eliminate energy costs [1]. Abid Khan and Ravi Mishra proposed the embedded system which is a single board system having GPS and GSM modules and ARM processor to track vehicle. This system has large capability, low operation cost, strong expansibility [2]. Swati Chandurkar, Sneha Mugade, et al. proposed real time bus monitoring and passenger information system. The system gives current location of buses and estimated arrival time at different stops in their respective routes. The link updater is used to locate the passengers using display board at bus stops [3]. S. P. Manikandan, P. Balakrishnan proposed the real time query system for public transport service using Zigbee and RFID is suitable to passengers demand and provide information such as bus location, bus number and number of persons inside the bus in real time. This system provides efficient as well as low cost public transport system [4]. Madhu Kumar, K. Rajashekar, et
al. proposed. Design of punctuality enhanced bus transportation system using GSM and zigbee. In this way service quality of operational efficiency is improved and passenger is also able to get the information about the respective bus [5]. The tracking system can inform the location and route travelled by vehicle and that information can be observed from any other remote location. The system also includes the web application that provides exact location of target. This system enables to track target in any weather conditions [6]. V. Yamuna, G. Rupavani, et al. proposed GNSS based bus monitoring system. The main objective of this system is to reduce the waiting time of passenger in bus stop by sending information about the location of buses to the passenger through SMS. GNSS based web application is developed which provide real time location of bus on Google Maps along with speed [7]. R. Manikandan and S.Niranji implement real time public transportation information using GSM query response system. The system is capable of a tracking large number of buses simultaneously, detect their service routes and predict arrival time to down station with an acceptable accuracy. The microcontroller acquires data from the GPS module and sends to the control point by using the GSM module [8]. G. Raja, G. V. Karthik, et al. proposed bus position monitoring system to facilitate the passenger. The wireless communication technologies like GSM & GPS are used to send the information about number of seats available in the bus to bus station and current location of bus on the route respectively. Real time passenger information system uses variety of technologies to track the location of bus in real time and generate the prediction of bus arrival at stops along the routes [9]. In this paper, they have presented a smart bus tracking system which is based on GPS, GSM, QR coding and Google’s map. The proposed system, estimates the arrival times at specific bus stops by tracking buses and informs the users through e-mails and SMSs. The system helps to passengers from unnecessarily waiting at bus stops and enables them to use their time more efficiently.

3. OVERVIEW OF PROPOSED SYSTEM:

3.1 Problem statement:
Management of buses of public transportation system is the main problem now a day. Based on to the current system there is no such system which provides information about the bus, its expected arrival time, the expected waiting time and what is the current location of the bus.

3.2 Solution:
Our system provides the relevant information regarding all the bus numbers going from user’s source & destination along with the route details, real time location. Generally our system is operated by GPS which is attached with the bus. Firstly GPS receives the satellite signals and then the position co-ordinates with latitude and longitude are determined by it. The location is determined with the help of GPS and transmission mechanism. After receiving the data the tracking data can be transmitted using any wireless communications systems. GSM/GPRS is used generally to transmit the data. Generally remote user can access this information of a bus based on user’s source and destination. Our proposed system gives the real time location of bus. Bus tracking technology is advantageous for tracking and monitoring a bus.

3.3 Architecture of the proposed system:
The proposed system has 3 modules
1. Application Security
2. Journey Planner
3. Estimated time of arrival (ETA)

1. Application Security:
To secure the transactions when the details of the form is saved to the database

![Figure 1. Shared key](image)

2. Journey Planner:
Journey planner for public transport system to find the suggested journeys to commute between the source and destination. The application should list the bus route number, fare details, distance and also, allow the user to view the same in a map view. Alternatively, the user can also key-in the bus route number to find relevant details of the source, destination, fare and intermittent stops.

3. Estimated time of arrival (ETA):
ETA (Estimated time of arrival) for a public transport system to find the near accurate time it would take for a bus to reach the stop, that the user would board to reach their desired destination. The application shall list the route number, ETA in minutes, destination of the bus route and the bus direction when the user keys-in the keys-inthe bus stop name. The ETA in minutes should be displayed for all the buses that would reach within the next 60 minutes so that the user can plan their journey accordingly.

![Figure 2. Estimated time of arrival (ETA)](image)
3.4 Experimental setup

3.4.1 Hardware part inside the bus:

![Figure 3. GPS device](image_url)

3.4.2 Software part:
This application is designed and developed so as to provide the remote user with all the necessary information as to which buses from the source will go to his destination along with their routes and exact location. The modules retrieve the data’s with the help of MYSQL.

3.5 Result Analysis:
The proposed system is more user friendly than existing system. And it also gives greater performance.

4. CONCLUSIONS:
The proposed system is successfully designed, implemented and tested and the following conclusions are made. Our system reduces the waiting time of remote users for bus. The system tracks the bus at any location at any time. All the current information is stored to the server and it is retrieved to remote users via web based application. This system is more user friendly for users to get information visually shown on Google Map. User can freely get this web based application for real time tracking of bus which provide interactive interface environment. So by using this application remote user can just wait or they may reschedule their journey according to the availability of bus. So this paper presents a system which provides high practical value in the modern fast era. The system has high practical value and cost efficient.

5. FUTURE SCOPE:
This project is having a wide scope. A web based application which can be further modified using cloud. Use of video camera to this system would take this system to the next level in the field of security. It will help to monitor the crimes that happen now a day’s which is witnessed by common people every day. This would prove a major breakthrough in reducing the crime rates. Also, with use of motion sensors the speed of the bus can be calculated.

6. REFERENCES:


