IOT BASED ADVANCED BUS TRANSPORTATION

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Abstract:Primary information for the most city transport travelers is the bus arrival time. Excessively their often discourages the travelers due to long waiting time at bus stop and for taking buses makes them reluctant. In this system, based on bus passengers we are going to present the system which will inform by android app the time of bus arrival, for estimating the route of bus travelling and to prediction of arrival time of bus at different bus stop, the passengers of bus are effectively collected and also utilized context of surrounding environment system has a panic button which notify the police station, parents and departure manager at the time when the bus gets highjack accidents or any problem care related bus.

Keywords:IOT, Smart Bus, Advanced bus system, Android App.

1. INTRODUCTION

Now a day's life is became very faster no one have time for waiting anything. In this faster life transportation or travelling is a primary part of life. Everyone have to reach their places on time or to reach their destination as early as possible. In this faster life buses & trains are the primary options of transportations in metro cities like Pune, Mumbai, Chennai, Bangalore.

In these metro cities people are in emergency always they don't have time for waiting of buses so we are developing a system for saving their time consumption. In our system there are many facilities & many options of easy transportation. By using this system their time savage, exact position of bus, distance from our destination. If there were technical problem or critical situations of bus occurred then this system will inform us by using vibrator sensor. In general life cash problems may occur so we can provide online payment option to overcome this problem.

In this system there is NODE MCU ESP 8266 Module and Piezo Electric sensor used as hardware part, In our system there is an android application for tracking bus, for payment options & measuring the distance of the bus from the destination.

The vibrator sensor is used for recognizing the critical situation & technical problem of the bus .The GPS module is used for tracking the position of bus, the bus distance from the user.Android application provides the payment options, tracking position,distance measuring from user.

Passenger have to wait for the bus to arrive, hence to reduce the waiting time we are developing this system. The main focus is to reduce the waiting time as well provide the location of bus. Also provide details to the passenger about seat availability in the bus. This was one of the main motivation behind developing this system. Such systems must be installed urgently in order to reduce the number of abduction taking place. System provides a security to passenger with the help of panic button.

The purpose of this system is to tract a accurate bus arrival time, which is very useful for the passenger. In addition the system is also provides a security to the passenger by sending panic notification message to police

station , parents no and bus depot manager no at the time of any panic condition.

1. To design a system which give exact bus location and tell predicted bus time to the passenger.

2. To design a simple bus ticket management system by introducing new approach of valid OTP till destination.

3. To design and develop smart bus location tracker and management system in which conductor can give information to next bus stand if any failure is occurred.

4. To design a secured application which will send notification through panic button case of any problem occur.

2. LITERATURE SURVEY

1. Aravind. P. Kalaiarasan, D. Rajini. Girinath, "Real Time Bus Monitoring System by Sharing the Location Using Google Cloud Server Messaging" , International Journal of Innovative Research in Computer and CommunicationEngineering,October2015.

In the daily operation of a bus system, the movement of vehicles is affected by uncertain conditions as the day progresses, such as traffic congestion, unexpected delays, and randomness in passenger demand, irregular vehicle dispatching times, and incidents. In a real-time setting, researchers have devoted significant effort to developing flexible control strategies, depending on the specific features of public transport systems. This paper focuses on the implementation of a Real Time bus monitoring (RTBMS) system, by installing GPS devices on buses. The Real Time Bus Monitoring and location sharing system is a standalone system designed to display the real-time location(s) the buses. This research will enable the tracking devices to obtain GPS data of the bus locations, which it will then transfer it to centralized control unit and depict it by activating symbolic representation of buses in the approximate geographic positions on the route map. Specific softwares will be used to interface the data received to the map. The main Objectives of this research work are:

(a) RTBMS will indicate the bus location expected time of arrival in real time.

(b) Web server interface will pass the current information from the syatem to the application in real time.

(c) Mobile application for end user to find out bus schedules and location.

2. Geethanjall .K , Pushparani. M .K, "Real Time Vehicle Monitoring and Tracking System for School Bus via Beagle Bone", International Journal of Science and Research(IJSR) , May2016.

The Beagle bone based vehicle tracking system for school bus is intended to present safety atmosphere to the students. Now a day we are observing a lot of accidents of school buses because of drivers careless whether a driver may be in laziness or drunk driving and also about many children missing. This is because children and their parents dont know the exact routing details. In order to avoid all these problems the beagle bone black is used along with some sensors in this project. Beagle bone board along with the sensors is placed in the inner part of the vehicle. The map-reading details are updated on the beagle bone board. If the driver drives the vehicle in the wrong path, then message will be sent to the owner and in real time the position of the vehicle can be tracked. Even parents have the opportunity that, they can track the vehicle with Login details provided in the web.

3. Sumit.S.Dukare, Dattatray.A.Patil, Kantilal P. Rane, "Vehicle Tracking, Monitoring and Alerting System: A Review", International Journal of Computer Applications, June2015.

The goal of this paper is to review the past work of vehicle tracking, monitoring and alerting system, to categorize various methodologies and identify new trends. Vehicle tracking, monitoring and alerting system is challenging problem. There are various challenges encounter in vehicle tracking, monitoring and alerting due to deficiency in proper real time vehicle location and problem of alerting system. GPS (Global Positioning System) is most

widely used technology for vehicle tracking and keep regular monitoring of vehicle. The objective of tracking system is to manage and control the transport using GPS trans receiver to know the current location of vehicle. In number of system, RFID (Radio Frequency Identification) is chosen as one of technology implemented for bus monitoring system. GSM (Global System for Mobile Communication) is most widely used for alerting system. Alerting system is essentialforprovidingthelocationandinformationaboutvehicletopassenger, owner or user.

4. Wei-Hua Lin and Jian Zeng, "An Experimental Study On Real Time Bus Arrival Time Prediction With GPS Data"[4]. Bus headway in a rural area is usually much larger than that in an urban area. Providing real time bus arrival information could make the public transit system more user-friendly and thus enhance its competitiveness among various transportation modes. As part of an operational test for rural traveler information systems currently on going in Blacksburg, Virginia, an experimental study has been conducted on forecasting the arrival time of the next bus with AVL techniques. This paper discusses the process of developing arrival time estimation algorithms, including route representation, GPS data screening for identifying data quality and delay patterns, algorithm formulation, and the development of measures of performance. Whereas GPS-based bus location data are adopted in all four algorithms presented in the paper, the extent to which other information is used in these algorithms varies.

5. Mohammed B. M. Kamel, " Real-Time GPS/GPRS Based Vehicle Tracking System", International Journal of Advanced Trends in Computer Science and Engineering August2015 [5].

In this paper a low cost vehicle tracking system is proposed that take into account the required operating costs in a way that does not affect the quality, reliability or accuracy of the system. The system used open source

based mobile device such as devices running Android operating system. This devices are mostly presented with embedded GPS sensor which is a free satellite system that provide information related to current location of the device. GPRS technology is used to data transmission between in-vehicle unit and tracking server. The data is encoded using modified coding method to reduce the transmission cost by reducing the data traffic.

3. RELATED WORK

3.1 Problem Definition

Now a day's people are busy with their jobs, business and many more things so they need to travel all the time. Exact location or distance of the bus is no known to the user. Accidental situations are not getting to detect in present system. More time is consumed on bus stands for waiting of buses.

3.2 Motivation

To overcome the problem which are faced by the passengers now a days, we are motivated to implement the proposed system with the help of the IOT as well as Android Application

3.3 Existing System:

Now a days there are existing system which are totally based upon the software applications but there is lack of the accident avoidance so that this is the drawback of the currently used.

4. PROPOSED SYTEM

In the proposed system there is android mobile application through which we are going to track bus position, to measure distance from user, pay ticket's bills online. If technical problem or any critical situation occurred then by detecting it & by informing to us it will overcome that critical situation, for this purpose we are using vibrator sensor. By using GPS module we track bus & measure the distance from the user.
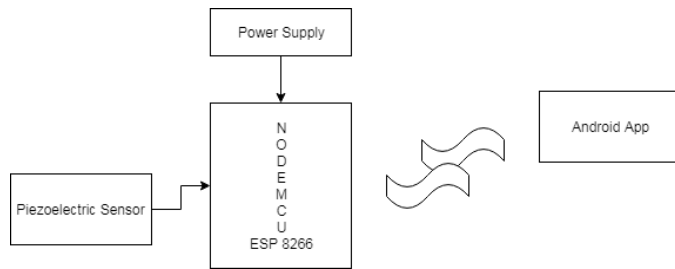
Figure 1: Proposed System Block Diagram

The proposed system is of software as well as hardware components:

1. Hardware:
   a. Piezoelectric sensor
   b. NODE MCU (ESP 8266)
2. Software:

   Android Application:

   This will contain the modules like

   a. Bus location tracking
   b. Seats Availability
   c. Route Define

The proposed system will detect the accident and the message is send to the nearest police station with details such as bus location, and bus details etc.

5. OTHER SPECIFICATIONS

5.1 Advantages:

1. This system reduces time consumption of passengers.

2. This system gives exact location or distance of bus.

3. Due to the reservation system there is checking of availability of seats.

4. Due to online payment there is no issues of cash.

5. If bus fault or technical problem bus cancelled or stopped that information will get to passengers so there other option for travels and reduce wastage of time.

6. Accident situations occurred this information also send through SMS to bus stand control system.

7. This system gives the information about traffic in particular area.

5.2 Applications:

1. Travelling :

This bus transportation system is use for easy travelling.

In a state Govt. Buses, in taxies, in private buses, in vehicles also it will used.

2. Tracking:

To know the exact location of bus. To measuring the distance of bus from the user.

3. Accident detection:

If accidental situation is occurred it will detected by the system.

This system can inform accidental condition to the Hospital for help of Ambulance.4

4. Alerting failure of route:

If route of bus is changed then the alert message will send to passenger.

The above all features from the proposed systems can be useful in various vehicle system like, Private and public transport services.

6. CONCLUSION

Hence we concluded that the system will not only facilitate the passengers to search or track the bus location but also helps avoid the paper work. This system also intimate to user or admin about failure of bus. This system also helps passenger to get seat availability. As of now this application is developed for bus only. In future we will add other transport system to this application such as taxi services and vehicles.

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