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Real Time Vehicle Tracking and Identification Using Microcontroller

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ABSTRACT

The bus monitoring system is used to detect the location of bus. The RFID method is used to detect the bus and the tracking of bus is also performed. If the bus pass through the way RFID reader reads the information and send data to the ATMEGA microcontroller. The common people having a debit card, which is used for money transfer based on their location, and then the amount is debited from their account. Then the Bus stop switch is used for selecting a stop. Finally the stopping details of bus and the bus stop location can be viewed through the mobile phone by connecting the Bluetooth for easy communication. The college student can pay the amount through the debit card and common people are given intimation about their transport amount through RFID tag.

Keywords: Bus, RFID, Mobile, Atmega microcontroller and Bluetooth.

1. INTRODUCTION

Now a days people use public transport system to travel to other place. The people will not have knowledge about the bus arrival of time. Due to heavy traffic and signal buses are late to reach the destination. The 30% of people go to work/college not at proper timing. It's very effective method to identify the bus location. Our main focus is to reduce the waiting time for bus. It is easy to identify the bus using android app by including the two new features.

First: The public transport system is to be provided in college/school for student. The college student details are stored in database. The students can pay the bill monthly through the debit card.

Second: The common people use stop selection switch to select their destination (where to go) .The passenger can show the debit card, the reader reads debit card and amount is credited from passengers account.

Both the methods are very easy and effective. HC-05 is the type of Bluetooth used in this method to transfer the data to the mobile app. The location is determined by using bus app and then the information is transmitted. Bus application fixes the five bus name. The five bus status are registered to mobile using RFID tag and reader .This method is very useful to rural area people for using the public transport system.

2. LITETURE SUEVEY

Many techniques are used for the bus tracking which is to be implemented in our system and to pay the amount through the debit card. Real time vehicle tracking are identified using microcontroller system used to the RFID and microcontroller.

[1] Manini Kumbhar, Meghana Survase, Pratibhaastud, Avdhut Salunkethis system only identified the bus location using Google map and GPRS. This is mainly used to reduce the traffic and identify the bus location.

[2] Dr. (Mrs.) Saylee Gharge, Manal Chhaya, Gaurav Chheda, Jitesh Deshpande , Niket Gajra the proposed system have the device in which it will not require any external power source, which will eliminate the long term energy costs. This makes the system more portable and sustainable.

[3] Make. Madhu Manikya Kumar, K. Rajasekhar, B. Chiranjeevini Kumari, K.Pavani the proposed system consists of monitoring centre, wireless identification device and station monitor. When the connection is established, station monitor will obtain the information of Zigbee devices identification number. The wireless identification in the bus sends a signal to the station monitor. The software design in this paper includes Zigbee protocol software design and application software design

[4] Thiyagarajan Manihatty Bojan, Umamaheswaran Raman Kumar & Viswanathan Manihatty Bojan this paper uses VERTIGUO(Vehicular Tracking using Open source approach),a GPS,GSM&GPRS based vehicular tracking system which is accurate, robust, flexible and economical. There is an expertise on open source HW platform which is developed by leveraging. It uses only in nautical apparatus.

[5]Rose Mary John, Finky Francis, Joe Neelankavil, Alwyn Antony, Ancy Devassy in this system the bus is provided with a next stop indicator which is installed on the bus. By sending bus stop ID to server the user can access nearest bus information through SMS service. GPRS/GSM modems are used for communication. The nearest buses to the bus stop are displayed on the 8x32 LED matrix. The digital speedometer used in this will control the accidents due to over speed by alerting the passenger and drivers.

[6] Muhammad Nur Zaki Juhari, Hasmah Mansor the objective of our proposed system is to develop real-time low cost bus monitoring system. In microcontroller the arduino sketch coding is uploaded. In our proposed system the RFID reader is used to read the bus information such as bus name and time so that the user can know the information where the bus is exactly travelling. The LCD display is used to display the information of bus. The RFID tag is used to pay the travelling amount through the ATM card for people frequently using the same bus. The common people can select the stop by pressing the button and then they can read the ATM card to pay the money.

3. OVERVIEW OF PROPOSED SYSTEM

3.1 Problem Statement

In existing system the arrival time of bus cannot be predicted. But through assumption the timing of bus can be detected because of this drawback the user may suffer a lot without knowing the timing of arrival of bus. Another method where the bus is travelling can be exactly known with GPS tracking system.

The bus device fits into the vehicle and capture's the GPS location information. GPS chip is power hungry which drains in 8-12hrs. This requires either battery replacement or recharge. GPS signal gets affected due to multipath, atmosphere, electromagnetic interferences, etc. This leads to error of about 5-10meters is GPS signal of bus is displayed the bus information is transmitted with help of Bluetooth wireless connection. The stopping amounts are displayed in LCD display.

3.2 Solution

In Our proposed system the RFID reader is used to read the bus information such as bus name and time. So that the user can know the information of bus. The RFID tag is used to pay the travelling amount through the debit card for people frequently using the same bus. The common people can select the stop by pressing the button and then they can read the debit card to pay the money.

3.3 Architecture of the Proposed System

It has three different method:

3.3.1.Bus stop method
3.3.2.Common people method
3.3.3.College/school people method

Fig. Creating mobile app using eclipse software

3.3.1. Bus stop method

The people may not have knowledge about the arrival time of bus. The mobile app is created by using the eclipse software. This software is easy to find the bus through the Bluetooth connection. First On the Bluetooth to connect the sever and then type the bus name. This software easily indicates where the bus is travelling.

RFID tag is fixed in the bus. The tag is used to read the information from the RFID reader and sends the information through the Bluetooth. The Bluetooth is connected to find the information about the bus. The people can find the exact position of bus where it travel.

3.3.2. Common people method

The atmega microcontroller is placed in the bus and also it is provided the selection switch. The passenger can select the destination through stop selection switch and they can read their debit card, the money will debited automatically from the passenger account. The transport fair details are displayed in the LCD display.

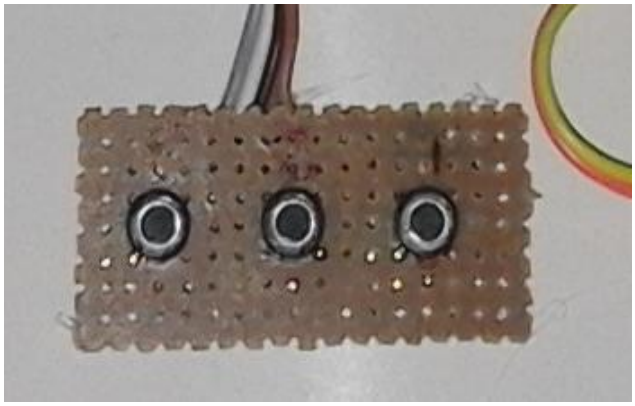

Fig. Stop selection switch

3.3.3. College/school people method

The passengers frequently using the same bus are provided the RFID tag .The tag contains information about the people entering the bus. At the End of the month passengers can pay the bill through the debit card. This debit card payment is very easy for the passengers to pay their travelling amount.

3.4 Experimental Setup

3.4.1 Hardware Part inside the Bus

The hardware design consists of a micro-controller, Bluetooth (HC-05), RFID reader, RFID tag and LCD display. Switch on the power to give supply to the atmega microcontroller, to select the selection switch, to read the RFID tag and read the details.

The output to be displayed in LCD display. All the process can be performed only if the power supply is given. The controller is placed in the bus station. Whenever the bus crosses, the corresponding bus information is read and sent to the atmega microcontroller. The stop selection switch is provided and by selecting the stop travelling amount is intimated to the passenger.

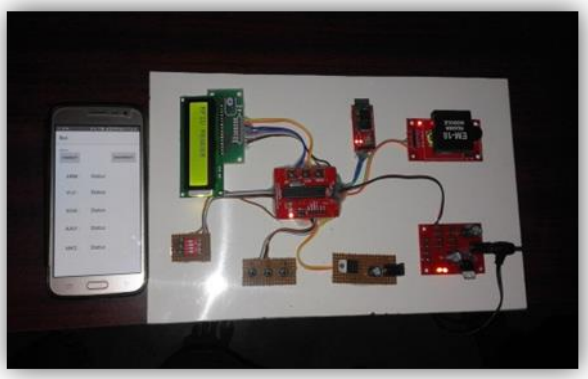

Fig. Hardware setup

3.4.2 Software Design

In software design we use the eclipse software to create the bus application in the mobile. This application is useful for the passengers to reach their destination easily through bus (location of the bus).The software will connect the mobile phone through Bluetooth and then identifies the bus.

3.5 Output

1. Bus stop method

(The bus identified through the bus application).

2. Common people method

(Output for common people method)

3. College/school people method.

(Output for college/school people method)

4. CONCLUSION

The proposed system is successfully designed by following method. This method can reduce the waiting time for bus. This paper gives passengers some awareness about the exact position of bus where it travels. The passenger can easily connect to the Bluetooth device and identify the status of bus. This method is user-friendly method. The passengers can select the stop by switch and pay the bill. The third method is very much useful for monthly salary people to easily pay the bill. This smart transport system is very efficient method and easy to identify the bus. This system reduces the waiting time for bus.

5. FUTURE SCOPE

In proposed system the number of buses are fixed in bus app.in future we can search the bus by using its name or number to find the exact location using bus app. The blind people can find their destination through the loudspeaker fixed inside the bus. The loudspeaker announces the approaching stop. This project can also be implemented in urban areas by increasing the number of stop selection switch.

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