



REAL TIME BUS MONITORING SYSTEM

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ABSTRACT

Due to rapid increase in population, there is need for efficient public transportation system. Because of population it keeps increased in cumbrance on public transportation like bus etc. Therefore the smart system is necessary which provides real time information of the bus to remote user. So we proposed a new system which overcomes the drawback of public transportation system. So our system provide all the data about current location of bus. By using this data the real time tracking of bus can be done. This information is then given to remote user who wants to know the real time bus information. For development purpose some advanced technologies like GPS (Global Positioning System), Google maps, RFID(Radio Frequency Identification) are used. The system includes android based application, which gives real time location of bus on Google Maps.

Keywords: GSM Module, RFID,GPS Module.

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I. INTRODUCTION

The transportation system in India fails to follow the scheduled timetable and puts the common man in to trouble. A person who sitting inside the bus stop is unable to get the information where the bus has reached. The scope of this paper is to make a system where a person inside the bus station can get the information of the bus's current position and the approximate time to it will take to reach the next station is display on the monitor. The GPS based Real Time Bus Monitoring System is the discrete system that displays the location of the bus

and the time it takes to reach the station.Using RFID system we identify the location of the bus. That exact location of the bus immediately sends to the control room or next stop of the bus. Peoples who are waiting for the bus in the next bus stop they getting the exact location of the bus. They will get how much bus far from the station so accordingly they will decide whether they wait for the bus otherwise proceed further with ultimate resources.

II. Literature Survey

There are many real time arrival systems, currently in use, are completely web based

applications. For example, NextBus[1] a popular bus tracking system in U.S. provides the passenger with a website where he/ she can login to find out the location of the bus and textual time estimates projecting the next bus arrival at a particular stop. These displays are often truthful since there is no clear indication of where the bus is actually located and whether there are delays. Moreover, the technology used require GPS or web connected device with the passenger, which only few of the passengers have. Another one system is - The Real Time Bus Monitoring and Passenger Information bus tracking system is a only system designed to display the real-time location(s) of the buses in Mumbai city. This system enable the tracking devices to obtain GPS data of the bus locations. Which it will then transfer it to centralized control unit and delineate it by activating LED's in the approximate geographic positions of the buses on the route map.

III. Design of System

The Block Diagram shows the proposed system for bus monitoring system. The system consists of Microcontroller, GSM Module, GPS Module etc.

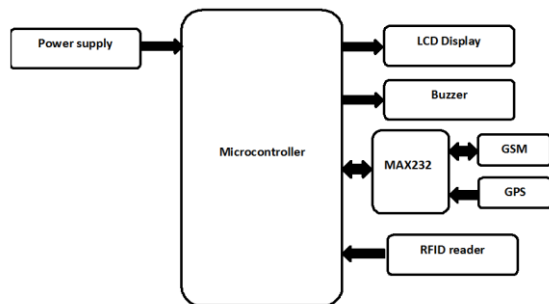


Fig 1: Block Diagram of Proposed System

LPC2138

The LPC2138 microcontrollers are based on a 16 and 32 bit ARM7TDMI-S™ CPU with real-time emulation and embedded trace support, that combines microcontroller with 32 kB, 64 kB, 128 kB, 256 kB and 512 kB of embedded high speed Flash memory. A 128-bit wide memory interface. It is a unique accelerator architecture enable 32-bit code execution at maximum clock rate. For hard code size applications, the alternative 16-bit Thumb® Mode reduces code by more than 30 % with minimal performance penalty. Due to their small size and low

power consumption, these microcontrollers are ideal for applications where miniaturization is a requirement, such as access control and point-of-sale. With a wide range of serial communications interfaces. It is on-chip SRAM options of 8/16/32 kB, they are very well suited for communication gateways and protocol converters, soft modems, voice recognition, providing both large buffer size and high processing power. The 32-bit timers, single or dual 10-bit 8 channel ADCs, 10-bit DAC, PWM channels and 47 GPIO lines with up to nine edge make these microcontrollers mainly suitable for industrial control and medical systems.

RFID

In this system RFID reader is used to read the exact bus location. The micro controller matches the RF card no. with it's save location and sends the bus ID & the bus position co-ordinates to the server unit via GSM module. Radio-frequency Identification (RFID) based on access-control system allows only authorized persons to get the materials from ration shops. An RFID system made up of an antenna or coil, a transceiver and a transponder electronically programmed with unique information.

RFID tag consists of a microchip connected to an antenna, which is constructed of a small coil of wires. Data is stored in the IC and transmitted through antenna to the reader. Most RFID tags contain at least two parts. One of them is an integrated circuit for storing and processing information, modulating and demodulating a (RF) signal, and other specialized functions. The second, It is an antenna for receiving and transmitting the signal. The reader, using an attached antenna and captures data from tags, then passes the data to the microprocessor for processing. As the database of the user is stored in the RFID tag, it will be transmitted through antenna to the reader. Reader will access the data and send it to the ARM7 microcontroller.



Fig 2. RFID

LCD

LCD is an electronic display module and has a wide range of applications. A 16 X 2 LCD display is used in various devices and circuits. A 16 x 2 LCD means it can display 16 characters per line and 2 lines. In this LCD each character is displayed in 5 x 7 pixel matrix. The data is the ASCII value of the character to be displayed on the LCD. Alphanumeric displays are used in a palmtop computers, medical instruments, cellular phones. The 16 x 2 alphanumeric dot matrix display is capable to display 224 different characters and symbols. A list of the characters and symbols is printed on pages. It requires a single power supply (+5V).

GPS Module

The GPS unit continuously transmits the co-ordinates to the μ c kit. These co-ordinates are received and Display on LCD display. This system will enable the tracking device to obtain GPS data of the bus locations, which it will then transfer it to centralized control unit and display the location of the buses on the route map. In this system developed as bus unit and send the bus location to server unit. In the bus unit receive the bus location, the bus will be reach the next station, the match will occur between the save location and the current location ,then bus unit send the bus information about the bus and update the bus time in the data base.

GSM Module

The core of data communication about system lies in wireless communication control terminals that uses GSM Modules to transfer long-distance data extensively. It Support instructions of AT commands. SIM300 can be integrated with a wide range. It works on frequencies 900 MHz, 1800 MHz and 1900 MHz. It support the GPRS coding schemes CS-1, CS-2, CS-3 and CS- 4 and It is with a small configuration of 40mm x 33mm x 2.85 mm, SIM300 can fit all the space requirement.

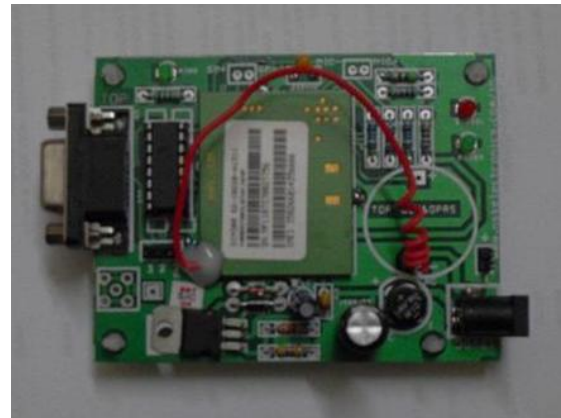


Fig.3. GSM Module Sim900

Advantages:

1. Easily install station
2. Find the bus location easily
3. Real time tracking
4. Update the bus location on data base at every stop
5. Less time delays
6. Quick response time
7. Fully automate system

IV. Future Scope

The system will reduce the waiting time for Vehicle. The GPS Device will send vehicles' current position to the server. On request the server from the client will show to the client the current location of the vehicle on the Google Map. The RTBMS system can show a real time map with bus tracking The project can be extended to other mode of transport such as rail system.

V. Conclusion

In this paper, the partial implementation details of Real Time Bus Monitoring System are stated. The RTBMS tracks the current location of all the Buses and est their arrival time at different stops in their respective routes. It shows this information to passengers using display at bus stops, web based GUI and smart phone application which is android based. This research serves the needs of passengers, vehicle drivers and administrators of the transport system. With the advent of GPS and the complete cellular network, real time vehicle tracking for best transport management has become possible.

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