

Smart Bus Stop

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Abstract — in this paper, a smart bus stop-passenger information system is developed in order to enable and administer effectively the location of the bus and enable the passenger with a message on the mobile phone who utilizes the bus service regularly can observe the information about the location and status of those vehicles. The instant movement information of the vehicle is transferred to the server through a GPS module and GSM module which functions as an integration to the embedded LCD displays and message. Then the main component of this paper is Arduino Uno rev3. This paper is done for reducing the problems faced by people during their travel while using public transport, and thereby informing the passengers priorly about their buses. For pre-booked passengers the bus location will be shared to the passenger using GPS receiver and GSM module. Moreover, the based systems to the bus stops in order to present the information related to the movements of the public transportation vehicle and their approach to the related bus-stop and location and further process has messaging option to passenger mobile. This paper is developed to manage the system provided by the bus service providers and has the advantages of instant status observation, remote-informing and updating the status of the bus at the bus stop displays.

Keywords: GPS, GSM, AURDINO Uno

I. INTRODUCTION

In this paper our aim is to solve the problems faced by passengers in the bus stand. From this paper the passengers may come to know about the location, delay time of the bus and progress of the particular bus through LCD display installed at the bus stops. The passengers will also be able to know the movement of the bus if there is any delay due to any technical problems.

This paper is achieved by using Arduino Uno Rev3 and a LCD display in bus stops, to send messages to the passengers about their bus's location GSM module and GPS receiver are used while, Global Positioning System (GPS) navigation system is widely adopted in vehicles today.

This study will enable us to prepare a paper proposal of finding the bus location in various bus stops, so that time delay and interruptions of service could be minimized which can help effectively help the passengers to plan their journey in advance.

II. METHODOLOGY

This paper is related to vehicle tracking system. We find the exact location of the vehicle and easily find the hefted vehicle. The Exact location is indicated in the form of latitude and longitude along with the exact Navigated track on Google map. The system tracks the location of particular vehicle and sends to users mobile in form of data and also to microcontroller. The arrived data, in the form of latitude and longitude is used to locate the Vehicle on the Google maps and also we can see the output on the LCD. This vehicle tracking system takes input from GPS and sends it through the GSM module to desired mobile/laptop using mobile communication. Vehicle Tracking System is one of the biggest technological advancements to track the activities of the vehicle. The security system uses Global Positioning System GPS, to find the location of the monitored or tracked vehicle and then uses satellite or radio systems to send to send the coordinates and the location data to the monitoring center. At monitoring center various software's are used to plot the Vehicle on a map. In this way the Vehicle owners are able to track their vehicle on a real-time basis. Due to real-time tracking facility, vehicle tracking systems are becoming increasingly popular among owners of expensive vehicles.

The following are the components for designing,

- Power supply
- Arduino Uno
- GPS module
- GSM modem
- LCD display
- 10 K pot resistor
- Bread board

The public who are free from smart phones can also be warned by GSM module technique, where the alert message to send to the nearby base station and from there the authorized numbers can be alerted. The earthquake early warning systems monitors to alert the human and devices when the shaking waves that are generated by the earthquake are expected to arrive the respected location .Even a few seconds or minutes of early warning may allow the people to take actions to protect their lives and move to safer positions.

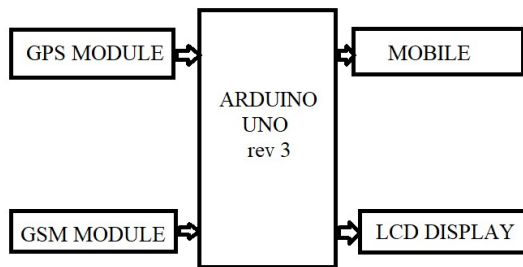


Figure 2.1 Block Diagram of the Proposed System

III. HARDWARE DESCRIPTION

The overall circuit of the proposed system is shown in figure 2.1. Arduino Uno is used for controlling whole the process with a GPS Receiver and GSM module. GPS Receiver is used for detecting coordinates of the vehicle, GSM module is used for sending the coordinates to user by SMS. And an optional 16x2 LCD is also used for displaying status messages or coordinates. We have used GPS Module SKG13BL and GSM Module SIM900A. When we ready with our hardware after programming, we can install it in our bus and power it up. Then we just need to send a SMS, “Find bus location”, to the system that is placed in our bus.

Sent message is received by GSM module which is connected to the system and sends message data to Arduino. Arduino reads it and extract main message

from the whole message. And then compare it with predefined message in Arduino. If any match occurs then Arduino reads coordinates by extracting \$GPGGA String from GPS module data (GPS working explained above) and send it to user by using GSM module. This message contains the coordinates of Bus location.

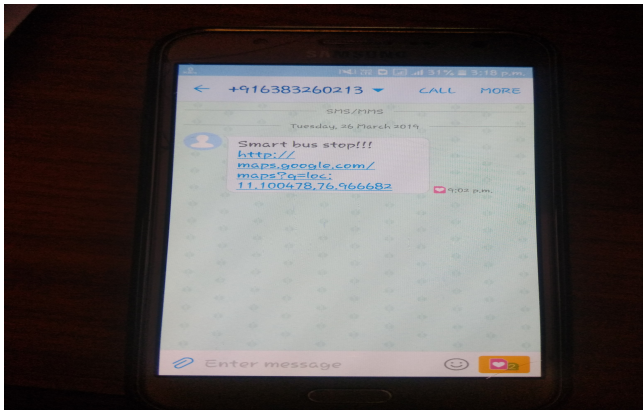
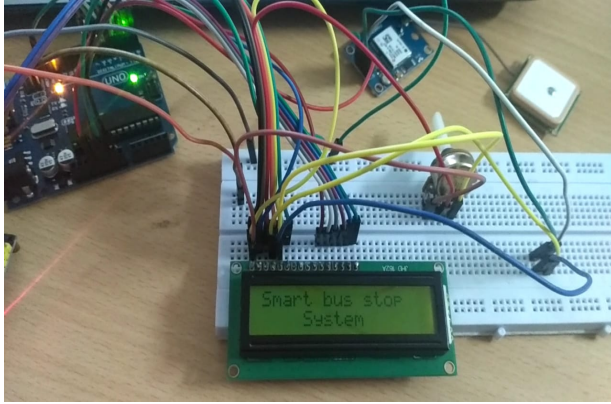
The paper consists of GPS receiver and GSM modem with a Arduino uno. The whole system is attached to the Bus. So the GPS system will send the longitudinal and altitude values corresponding to the position of Bus to GSM Modem.

Imagine the Bus has left Coimbatore at 6 o clock in the morning. If the officer in charge for that Bus wants to know where the Bus is, he will come to the LCD and click on the Bus number, current location and details. Then the GSM program will send an SMS to the Bus number to display them.

The SMS sent would come through the GSM service provider and then reach the bus, which is traveling, because the bus has a GSM device with sim card. This GSM modem will receive the SMS and send to the Arduino Uno in the bus. The Arduino Uno connects with circuit to pass the information through GPS module will receive this SMS.

IV. RESULT AND DISCUSSION

The paper consists of GPS receiver and GSM modem with a Arduino Uno. The whole system is attached to the Bus, so the GPS system will send the longitudinal and altitude values corresponding to the position of Bus to GSM Modem. Sent message is received by GSM module which is connected to the system and sends message data to Arduino. Arduino reads it and extract main message from the whole message. And then compare it with predefined message in Arduino. This message contains the coordinates of Bus location.



V. CONCLUSION

Finding location is getting to be progressively vital in expansive urban areas and it is more secured than different frameworks. It has continuous ability, rises with a specific end goal to fortify the relations among individuals, buses and street by assembling present day data advances or technologies and ready to structures a real time accurate, compelling exhaustive transportation framework. Updating this setup is simple which makes it open to future a prerequisite which likewise makes it more efficient. The proposed work is cost-effective, reliable and has the function of preventing theft and providing accurate finding system. A smart anti-theft system is one of the essential systems that homogenize both GPS and GSM systems. It is fundamental because of the huge numbers of uses of both GSM and GPS frameworks and the wide use of them by a great many individuals all through the world. This framework intended for clients in area development and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving

vehicles in a concise and easy-to-read format. This framework might likewise valuable for correspondence process among the two focuses.

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