

Automatic Bus Indication and Tracking System

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Abstract: The aim of our project is to design automatic bus indication and tracking system. The work is based on the Arduino UNO, IR sensors, transmitter and Receiver. This is very simple system the LCD board is connected to the Arduino board and the program has been written based on the system that may needed due to this the correct location of the bus can get displayed on the LCD screen. Due to this the local people may get lot of use. Even an illiterate people may get understood the concept of bus reaching the stop by seeing the display. It plays a vital role in the development of new technology.

Keywords: Arduino UNO, Transmitter, Receiver, LCD Screen, IR Sensors, Bread Board, controlling system

1. Introduction

The present generation requires the information time to time. The use of technology has been increasing day by day. So we are planning for the combination of present technology with the requirement of information transmission, we planned for the creative approach of "Automatic Bus Indication and Tracking System". To overcome the drawbacks of the previous methods of paper based and we introduce a project to track a vehicle using Transmitter and Receiver. This Vehicle Tracking System can also be used for Accident Detection Alert System, Soldier Tracking System and many more, by just making few changes in hardware and software and widely in tracking Cabs/Taxis, stolen vehicles, school/colleges buses etc....

Our main objective of writing this paper is to develop a Bus indication and tracking in all over the world. Indicating the location of bus by using transmitter and receiver with additional to this an arduino programming. Arduino is used for various advantages over other wireless communication systems. The previous system that may get implemented on the use of maps in android phones but that technology may have a great impact on the travels (buses) that run on the long distances overnight. But our project may get look on the local buses in which lot of people may use to travel in their day to day life by using a simple programming technique. This will serve as great benefit for industrial, commercial, and other general purpose applications.

2. Literature Survey

Different types of researches have been made by different researchers in developing this type of project. However, they

have a different applications and different technologies in implementing their concepts and ideas. Some of those papers are mentioned below. Stating their technology and applications that they worked.

SeoJu Lee [1], has presented his idea on the basis of a vehicle tracking with the help of an GPS, GSM and GSRM it may mainly focus on the mobile applications. Not only that he has developed a mobile app in that he had given all type of information about the bus that it may displays the current location of the bus in detail. here in advance they may uses the mapping system in which it may shows like PIN that pin is the location of the bus that may travel in that particular route and also it may denote the time of reach to the particular station that the people may waiting for the bus.

Pradip Suresh mane and Vaishali Khairnar [2], has proposed the system called as the Analysis of Bus tracking system using GPS on smartphones, which focus on just tracking system that the module has been get fixed on the vehicles body. Whereas the mobile application may track only the bus that are located on the nearby to the people are waiting and also denotes the nearby bus stops. So that the people may get initiate their plan according to their travel.

M. A. Hannan, A. M. Musthapa, A. Hussain and H. Basari [3], they had implemented a system called as an Intelligent Bus Monitoring and Management System. This system uses the artificial intelligence with the help of RFID module which is used to reduce the manual work that can be carried out in the system. in this system the driver who involves in driving that bus has given a id proof the driver needs to show the id on the scanner that has been get fixed on the bus only after this the bus can able to operate. This may scan the proof and indicate the location of the bus in time to time varying and reach of the bus to the station to the user through an SMS (or) E-Mail.

Manini Kumbhar, Meghana Survase, Pratibha Mastud, Avdhut Salunke [4], have implemented the system called as design of punctually enhanced bus transportation using GPS and zigbee. Here they had proposed the concept that daily operation of the public transport system, mainly that of buses, the of vehicles that are delayed due to the different conditions as that may occurs, such as traffic delays, unexpected delays, vehicles that may send off in irregular timings and some incidents. Passenger and students that they travel in bus are often late due to the poor transportations. To reduce this kind of

activity they proposed this system.

Y. Navya sree, G. Lakshmi Durga, K. Lakshmi Supriya, P. Ashok [5], they have implemented the system called as College Bus Tracking System Using GPS and GSM, it is the technology used to determine the location of the vehicle using different methods like GPS and other radio navigation system that may operating through satellite and ground based stations. vehicle speed, location details, distance that the bus travelled etc..., has be viewed through the internet with the help of the software that they have been developed on their own. even a data has been stored and downloaded after some time for the use of the owner's view from the GPS base station and it later used for the analysis. This system may play an important role in tracking of buses, due to analysis if the bus that may arrives late to the station may get answerable by the driver why the bus reach late with help of the correct document that the bus travels in their way.

K. Sridevi, A. Jeevitha, K. Kavitha, K. Narmatha [6], has proposed the system called as a smart bus tracking and management system using IoT. This system mainly used for tracking their college bus. Due to the reach of their college bus late to the campus every day. So the students combined together and make this system due to this system an GPS module has get implemented on the bus it may run continuously on the running of the bus. It may send the data collectively to the server that has get fixed on the college transport system. using this system any staff or student may locate their bus at any time they need. The collected data has been retrived and processed by the server that may get fixed on the college transport system and provide convenient travel to the staffs and students are coming from the long distances.so that the late reach of bus to the campus may get reduced.

Humaid Alshamsi, Veton Kepuska, Hazza Alshamsi [7], has implemented the system called Real Time Vehicle Tracking System using Arduino Mega. The design of vehicle tracking system enables the display of vehicle in Google Maps. The GPS, GSM &GPRS module controlled by the Arduino Mega is fixed on the vehicle.in this way the position is updated every 10 seconds as the vehicle is moving. The system is very useful to enables the owner to observe and track the vehicle and find out the movement of the vehicle and past activities of the automobile. The hardware is fitted on the vehicle that the persons from the outside of the vehicle cannot able to see. This system may play a vital role in the tracking of an automobile and provides an exact location of an automobile. Thus due to this the late running of an automobile may get reduced.

3. Block diagram

A. Arduino UNO

Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.

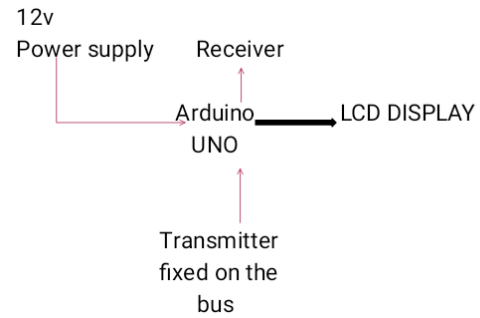


Fig. 1. Block diagram



Fig. 2. Arduino UNO

B. Transmitter sensor

The role of a transmitter in a basic control circuit. Sensor transmitters are primarily used to produce an output with a higher transmission range than the sensor itself can provide. For example, a sensor which outputs a small voltage or resistance value has a short range due to losses inherent in transmission wires.



Fig. 3. Transmitter sensor

C. Receiver sensor

An infrared receiver sensor is an electronic device, that emits in order to sense some aspects of the surroundings. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.



Fig. 4. Receiver sensor

D. IR Sensor

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor.



Fig. 5. IR Sensor

E. LCD Display

LCD (Liquid Crystal Display) is a type of flat panel display which uses liquid crystals in its primary form of operation. LEDs have a large and varying set of use cases for consumers and businesses, as they can be commonly found in smartphones, televisions, computer monitors and instrument panels.



Fig. 6. LCD display

4. Circuit diagram

Below is the circuit diagram that shows the hardware connection between the Arduino UNO, transmitter and receiver unit, IR sensor, LCD display. The LCD Pins are connected to the pin number 3TO12 input pins of the Arduino UNO in which due to this the correct display can be done on the basis of the programming the bread board used here in which the connection of the jumper cables to the Arduino and the LCD would not get confuses. The main work of this project is based on the tracking of a bus and gives the correct location of the bus at present to the people who are waiting for the bus.

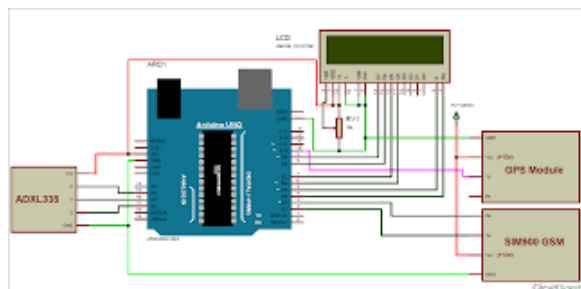


Fig. 7. Circuit diagram

5. Result

This project can be useful in future generation to improve the timing reach of the bus to the station that the people are waiting for the bus. our analysis proves that only few vendors that provide automated tools for the development of tracking system like this. Specific location details have been providing on the display that may get fixed on the station. this may also provide the accurate timing of the bus that may reach the station.

6. Conclusion

Thus in this project we designed an automatic bus indication and tracking system. We have programmed using Arduino and designed the system.it can be possible in all the type of buses that running in this word but our focus is mainly based on the local buses the people may get used in their day to day life. This system receives the signal from the transmitter that may fixed on the bus the receiver on the bus stop will receive the signal due to this based on the program that we may inputted it may display the location of the bus and time of reaching the station on the LCD board that may get fixed.

Acknowledgement

We express our special gratitude to our honourable principle Mr. Premkumar, who us an opportunity to work on this project. Being the students of Paavai Engineering College, it was our pleasure working on this project and this made us to learn lot of new things.

I Would like to thank our guide prof. Mr. C. Vibin Stalin, who with us friendly nature helped us to complete this project and guided us continuously. This list would be incomplete without our Head of the Department Dr. D.R.P. Rajarathnam, who coordinated with us and gave us his valuable time.

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