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A Review on Driverless Air land Bus

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*Abstract-*The aim of this paper is to avoid problem of traffic jam. It has more public carrying capacity than regular buses and monorail. It does not require special tracks like BRT,mono,metro. Also does not require large construction and can be implemented within short period of time. Here we want to show or explain the technology used in driverlessAir landbus. The automatic stopping of this bus iscontrolled byan ARM microcontroller.

The C programming language is used for programming the microcontroller. The hardware is assembled in a toy like prototype driverlessAir land ortunnel bus. Actuators and sensors are interfaced with printed circuit board (PCB) which isused for automation purpose. Simulation for the system's circuit is done with the help of Proteus software. RFID reader is used to identification of right track.

Keywords—Line follow robot, ARM Microcontroller, DC Motor, RFID Reader, Proteus software, LCD, IR sensor, Ultrasonic sensor, Buzzer, DC motor driver.

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I. INTRODUCTION

The idea of Driverless Air land Bus (tunnel bus) was discovered by American architects, Craig hodgetts and Lester Walker in 1969. Later the other version of bus was designed by Shenzhen Hashi Future Parking Equipment Company, and concept known as 3D express. A working scale model was showcased at 2016 by Beijing International High-Tech Expo. The air land bus integrates advantages of BRT (Bus Rapid Transit). Air land Bus has high efficiency and low carbon urban transportation technology. It is completely driven by electronic power and to have enormous passenger capacity. This bus is also known as transit elevated bus or straddling bus. It is also called as 3D fast bus. The tunnel bus combines the advantages of BRT, it is also a substitution for BRT and subway in the future. The highlight innovation of bus is that it runs above car and under overpass.

Air land Bus is the great invention of the 21st century. The Air land Bus prototype is 22- meters long, 7.8 – meter wide, and 4.8- meter tall, can pack in up to 300 passengers, and allow cars less than 2 meter.
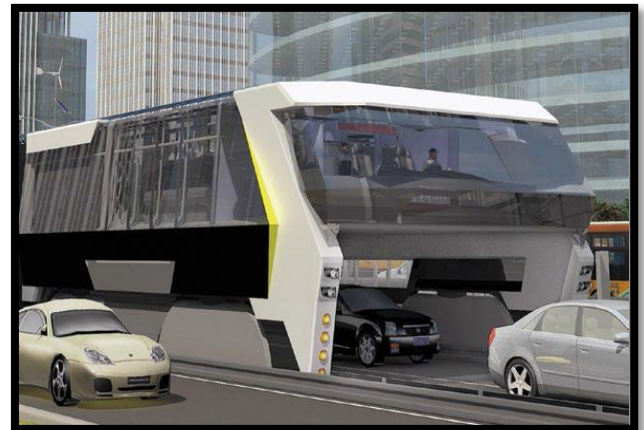

Fig.1 Image of Tunnel Bus

II. NEED TO STUDY

In the current transportation system, the main problem faced by the people is 'traffic' and the overloading of public transport. Also the lots of accident occur due to human errors.

High building cost and large settling time is required in current transportation systems. So we have decided to take a review of a system which will play the main role to overcome all these problems.

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III. LITERATURE REVIEW

[1]GuruprasadPatil,Dr.C.RRajashekhar-"RFID Based Metro Train System", International Journal of Advancements in Research & Technology.

This project is designed to demonstrate the technology used in metro train movement which are used in most of the developed countries. This train is equipped with a controller that enables the automatic stopping of the train from station to station.

[2]Akshatha R., Dr. J Meenakumari-"Enhanced &Integrated E-Ticketing - A One Stop Solution",International Journal of Advance Research in Computer Science and Management Studies.

Communication is a great hazard in Metro cities in the present scenario. During the peak hours the passengers start their travel without concrete decision of their travelling by bus or train. Often they do not carry tender change with them this creates a lot of inconvenience for all. Moreover many passengers travel without much clarity on whether to purchase one-way ticket, two-way ticket or monthly ticket. To overcome this kind of ambiguities this paper would help in developing electronic ticket system that will liberate public transport passengers to have a flexible mode of transportation. The key benefit of this paper is that it includes states of the art technology that automatically calculates the correct fare based on the distance.

[4]Arun. R, P. Gokulsrinath, S.Infant Ezhilarasan, T.Kaviyarasu"study on Transit Elevated bus", IJRTER-2016International Journal of Recent Trends in Engineering and Research.

The only thing passengers need is a plastic card integrated with RFID chip that allows it to be identified via radio waves, the card can be used by different transport companies and service providers and for different modes of transport (metro train/bus). This system also helps to maintain database of travellers for futuristic purpose. At the end of the project the green revolution could be achieved thereby minimizing the paper tickets. The upcoming feature of RFID card includes the information about passengers. A passenger carrying this card can enter to the bus or train and swipe on the device. This card will automatically register the information and checks if card is valid or not. This helps in storing data of traveller's and generating of reports as and when required. This system requires Wi-Fi connectivity for better implementation. This paper mainly comprises of modules such as verification and validation, fare calculation and report generation.

[9]V.Sridhar -"Automated System Design For Metro Train" - International Journal of Computer Science Engineering (IJCSE)

Due to the Internet revolution in the last decade, each and every work area of society are directly or indirectly depending on computers, highly integrated computer networks and communication systems, electronic data storage and high transfer based devices, e-commerce, security, e-governance, and e-business. The Internet revolution is also emerged as significant challenge due to the threats of hacking systems and individual accounts, malware, fraud and vulnerabilities of system and networks, etc. In thiscontext, paper explores E-Security in terms of challenges and measurements. Biometric recognition is also investigated as a key e-security solution. E-security is precisely described to understand the concept and requirements. Some measurement are identified and discussed for thethreats, attacks, and for vulnerability challenges. Biometric recognition is discussed in detail as a key e-security solution. This investigation helps in clear understating of e-security challenges and possible implementation of the identified measurements for the challenges in wide area of network communication.
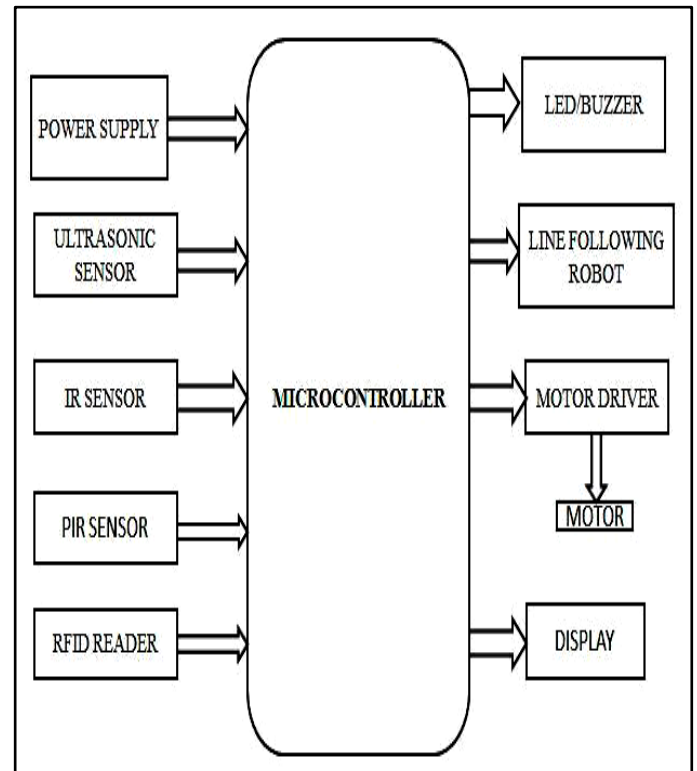
IV. BLOCK DIAGRAM

Fig. 2 Block Diagram of Air Bus

V. WORKING

Each station of bus have that will drag along the roof of the bus and connect to a pair of rails , providing power to bus as it moves through the station. The lower part is like a tunnel to let lower cars freely pass through, while people stand at upper deck. RFID card is made by using microcontroller programing. This card is use two time when entering the bus and leaving the bus. By counting the no of stations we can find out distance and amount of fare. It is used as an alarms to warn cars travelling to close to it, and signals to warn other vehicles when it is about to run. This block consists of ultrasonic sensor which is to determine the distance from the object. This sensor send sound that sound is strike on object and get back to the sensor and measure the distance.

The IR sensor is used to detect the motion. IR sensor controls the automatic stopping of bus at station by station. In this system ARM microcontroller (Acorn RISC machine microcontroller) has been used as CPU. PIR sensor is used for the automatic opening of door. RFID reader is used for the correct track detection. If bus goes on wrong track it senses it. LED is providing on both front and back side of bus to

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indicate its run in either direction. Line following robot is used to follow line of working. Motor driver is used to covert low current into high current which help to drive the bus and display is used to communicate the traffic.

VI.   FLOW CHART

The flow chart consist of idea how automatically bus stop station by station. Bus start running, if any obstacle found it will be stop if not then continue its motion. Its sense the station and stop then door get open and staircase on. When passengers are entering in bus it starts RFID punching. After that door is closed and staircase becomes off.

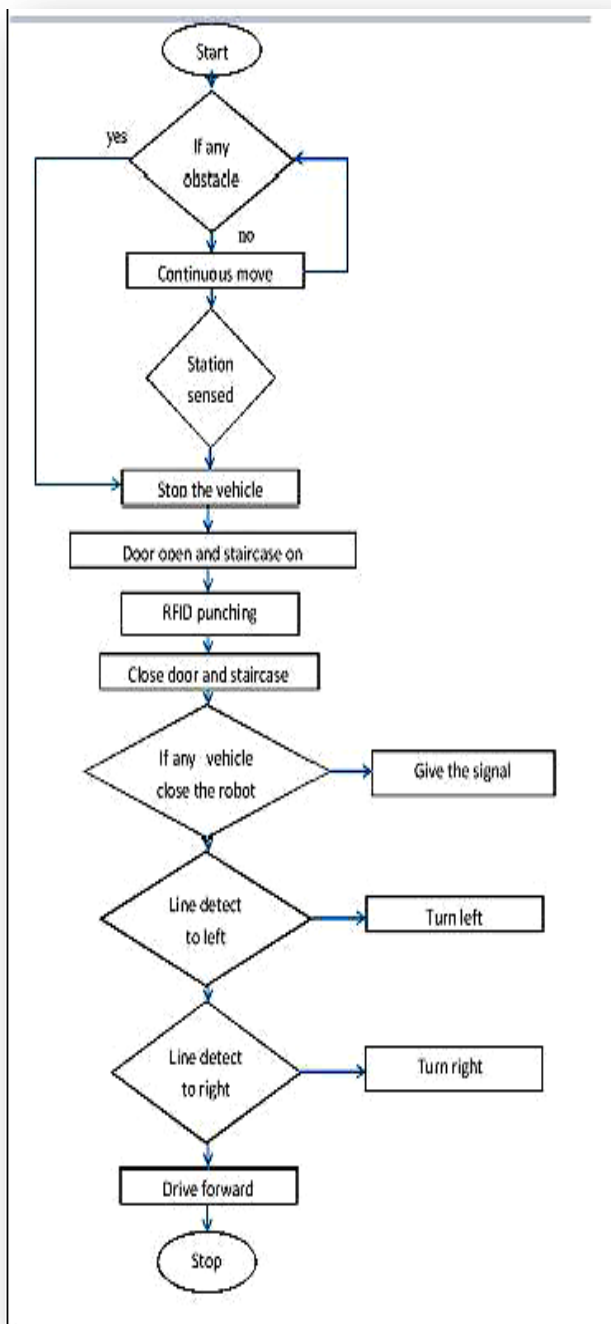If any vehicle is close to bus it gives signal to vehicle or line detects and turns to left or right.

FIG. 3Flow Chart for Working of Tunnel Bus

VI.   CONCLUSION

The Air land Bus helps the public transformation. It helps to reduce Air Pollution and carbon emission. It has low cost and short construction period. The air land bus needs too much space but itis a greener and fast alternative to existing transportation system. Air land Bus aims to reduce the traffic congestion by around 20-30% without cities having to build expensive transport infrastructure such as subway system, mono rails or bridges.

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