

Driverless Car

Prof. S. N. Dharwadkar, Thorat Arti, Pore Amruta, Bhosale Varsha

bhosalevarsha49@gmail.com

Associate Prof. Dept. Of Electronics & Telecommunication, MESCOE, Pune, India.

Modern Education society's College Of Engineering ,Pune

Abstract—Due to invention of the car there is a great relation between human and car. Because of the invention of the car there is huge improvement in the automobile industries, due to the car human can travel from one place to another place in very short time. But from the invention of the car percentage of the road accidents are increased. The accidents are occurred due to the lack of knowledge of driving and drink driving also. In that view, proposing the automatic driverless car. This will explore the impact that autonomous vehicles likely to have on travel demands the transportation planning. We as humans, make a lot of mistakes on road. To have a safe traffic, we came up with the idea of driverless car . This car can be used as taxies, school vehicles, public transport and private vehicles also. The driverless car will never break any signals. It will always follow the speed limits. It will lot of safer for women who travel far away from home. It will increase quality of life.

Keywords-DC Motors, Relays, Batteries, IR sensors, Ultrasonic sensor, Zigbee module, LCD display.

1 INTRODUCTION

The advent of the driverless car will offer enormous opportunities. Due to the driverless car driving become easier, improve the road safety, reduce emission and ease congestion. Driverless vehicles could provide significant economic, environment and social benefits. We are proposing, the driverless car with the help of concept of „Google Car”. In this project we will discuss various subunits of driverless car. The automobile vehicle is electromechanical driverless car. There are three units in this car these are 1) Main car unit 2) Zonal speed control 3)Traffic light signal control unit. In this vehicle we use three IR sensors which are placed three sides of car for object detection purpose. One ultrasonic sensor is placed at the front side of the car to measure the distance between car and object. All these three units are linked together by using zigbee module. It will communicate with speed control unit and the signal transmission unit. This car is battery operated car which is moved with the help of DC motor. The speed of car will control by using Relays.

2 LITERATURE SURVEY-

Rohan Kumar and Rajanpathak *etc* proposed “Adaptive Cruise control –Towards A Safer Driving Experience”. In that research paper they state that cruise control can perform only velocity control by using ultrasonic sensor. Accidents can be controlled by using adaptive cruise control [2].

Rakesh Chandra Kumar, *etc* proposed “Obstacle Avoiding Robot-A Promising One”. This project is related with wheeled autonomous robot. Obstacle can be detected by using IR sensor and accidents can be reduced [3].

Aniket Mishra, Jyoti Solanki, *etc* proposed “Design of RF based speed control system for vehicles”. In that project speed of car can be controlled using RF speed control system [4].

G.Monika, N.Kalpana and Dr. P.Ganasundari proposed “An Intelligent Automatic Traffic Light Controller using Embedded System”. In that project traffic light controlled by using Embedded System [5].

3 METHODOLOGY-

3.1 MAIN CAR UNIT -

We are proposed the driverless car by using ARM LPC2148. The autonomous vehicle is formed with the help of IR sensor , ultrasonic sensor , battery , DC motor , relays and Zigbee module . Three IR sensors are placed at three sides of the car for obstacle detection. Ultrasonic sensor is placed at the front side of the car to measure the distance between the car and obstacle or moving object. This car is battery operated car. The car will move with the help of DC motors and the speed of car will be controlled by using relays, Zigbee module is used to link the others subunits with the main car unit.

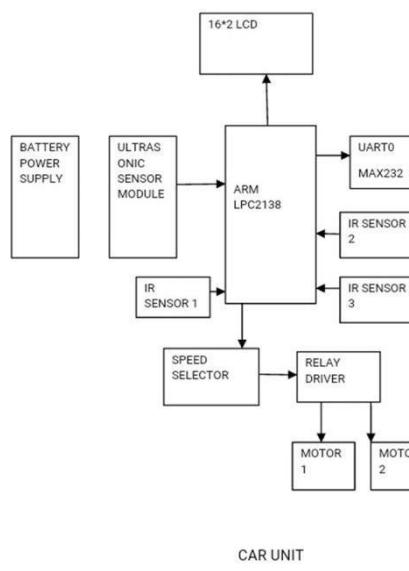


Fig-3.1 Main Car Unit Block diagram

3.2 - TRAFFIC LIGHT SIGNAL CONTROL UNIT-

This unit is used to follow the traffic rules. There will be three signal is red, green and yellow. For red signal R will be transmitted, for green signal G will be transmitted and for yellow signal Y will be transmitted. These signal will decide the whether the car will move or stop.

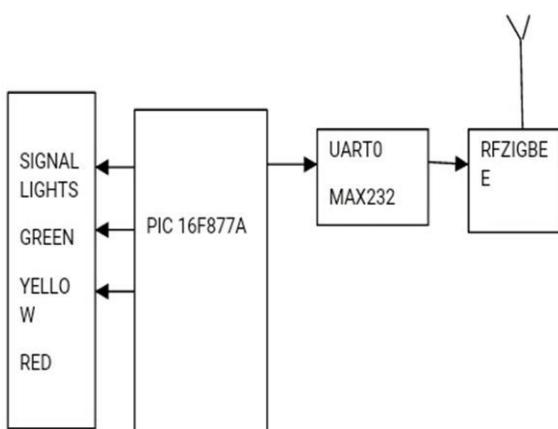


Fig -3.2 Traffic Light Control Unit

3.3 ZONAL SPEED CONTROL UNIT-

Speed of car will be decided by zonal speed control unit the zonal speed control unit. By using this zonal speed control unit the speed of a car will be minimize or maximize. Each key in a keypad is assigned for a certain speed value. By using one key the unit is placed at respective areas. When car is passing through that area is receives the speed value which is assigned for the key by using receiver of zigbee module in main car unit. 16*2 LCD is used for displaying the speed limits of car.

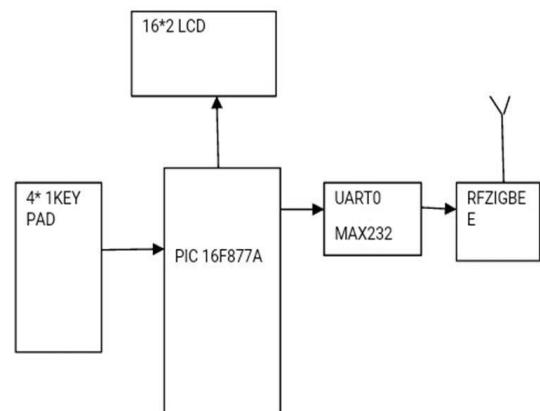


Fig -3.3 Zonal Speed Control Unit

4 - TRAFFIC LIGHT SIGNAL CONTROL UNIT SIMULATION-

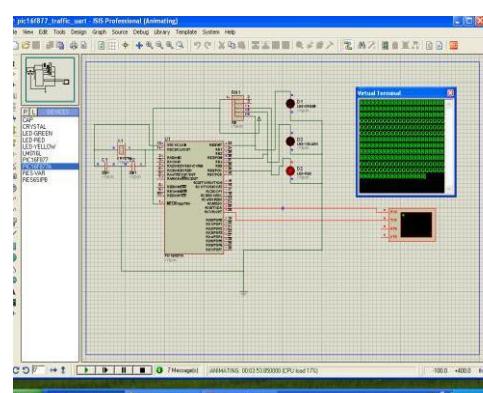


Fig 4.1 Traffic Light Signal Control Unit

5- ZONAL SPEED CONTROL UNIT SIMULATION –

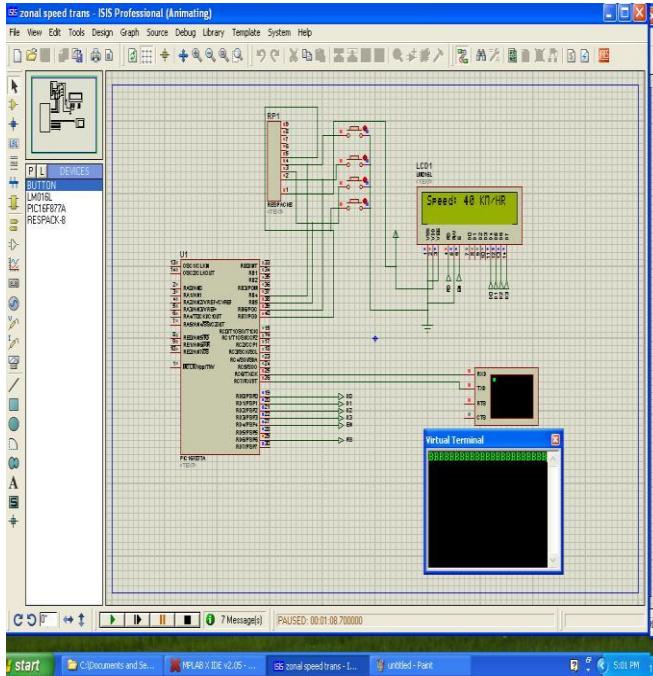


Fig 5.1 Zonal Speed Control Unit

6- SOFTWARE DISCRIPTION -

Proteus is very essential software having latest technology which is used for circuit simulation and implementation. For circuit designing and simulation it has ISIS. It has ARES which is used for PCB designing. When we include the required component and corresponding information from its library it is very easy to build the circuit with the help of this software. For the implementation of the project microcontroller needs to include the hex file. To simulate our project we have to build the circuit using Proteus v7.8 which is as shown in the figure.

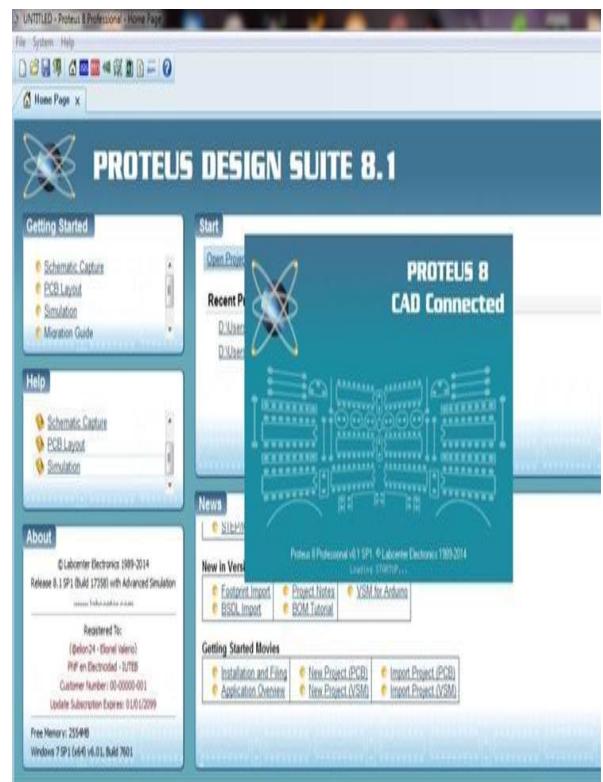


Fig-6.1 Proteus Software

7 - CONCLUSION

There are few key factors like human safety, infrastructure efficiency, quality of life and customer based that will help for self-driving cars in real condition. But now a days, the improvement in technology is very fast, both incrementally from vendors and new entrants. There are so many socio-economic aspects for the adoption of autonomous car. A car having exiting system can take more information in very short time and it is so reliable. Autonomous car can take correct decisions in complicated situations. Due to these, Autonomous car the accidents are reduced and safety is increased. In future the use of autonomous car will surely increase.

8 -REFERENCES

[1]Concept of “GOOGLE CAR”.

[2]Rohan Kumar ,rajanpathak “Adaptive Cruise Control – Towards A Safer Driving Experience”, International Journal of Scientific And Engineering Research Volume 3,ISSN 2229-5518.

[3]Rakesh Chandra Kumar, Saddam Khan ,Dinesh Kumar ,Rajesh Birua” Obstacle Avoiding Robot –A Promising One ”,International Journal Of Advances Research In Electrical ,Electronics And Instrumentation Engineering volume 2 ,ISSN 2320-3765.

[4]Aniket Mishra ,Jyoti Solanki , HarshalaBakshi, PriyankaSaxsena “ Design Of RF Based Speed Control System For Vehicle ” International Journal Of Advanced

[5] G. Monika, N. Kalpana, Dr. P. Gnanasundari “International Journal of Innovative Research in Science, Engineering and Technology volume 4 ” ISO 3297:2007.