

ANTI-COLLISION AND DRIVER ASSISTENT SYSTEM FOR VEHICLES

Saradha priya.K¹, Kalaivani.M² ,
^{1,2} UG scholar

Department Of Electronics and Communication Engineering,
Arjun College of Technology,
Coimbatore.

Abstract: According to the surveys of road accidents, most of the accidents occurs mainly due to driver itself in terms of high speed, carelessness, drunk, health conditions, inattentive, distracted tired, fall unconscious and bad weather conditions and road infrastructure itself. A National Crime Records Bureau (NCRB), Ministry of Road Transport & Highway, Law commission of India, report revealed that every year, more than 135,000 traffic collision-related deaths occur in India. In order to avoid road accidents and provide improved safety measures, this work aims to design & build a prototype of intelligent collision avoidance and automatic headlight controller system and driver monitoring system. An intelligent collision avoidance system is proposed as a prototype, which avoids vehicle accidents and to provide a greatest security to the user. This system assists the driver in avoiding collision using IR and Ultrasonic sensors. This proposal is made to reduce the glare effect and to protect the human eye from getting affected due to high intensities of light and also helps in eliminating the requirement of manual headlight controlling process. Accidents due to drowsiness can be controlled with the help of Eye blink sensor using IR rays. Thus the road accidents are avoided to its extreme level with the implementation of this project.

Keywords: Intelligent collision avoidance system, Automatic headlight controller system, Driver monitoring system.

I. INTRODUCTION

India leads the fatality rate caused by road accidents with 1.4 lakhs deaths every year. To increase the focus on safety features in vehicles, we design this driver assistant system as a prototype which has three sub-systems such as collision avoidance system, Automatic headlight controller system and driver monitoring system using sensor.

Automatic braking system is a part of collision avoidance which reduces the severity in case of an accident. The automatic braking system primarily overrides the manual braking as soon as the sensor detects an obstacle approaching the vehicle. When the sensor detects an approaching object, the system computes the distance between the object and vehicle, along with the calculation of the speed of the vehicle and the speed of the object in front. If there is a considerable difference between their speeds, the system concludes the possibility of a collision thereby activating automatic brakes.

The IR sensor positioned on the blind spot which can't be usually seen in the rear-view mirror. The sensors are mounted on the corners of the bumper. As soon as the system detects a vehicle entering the blind spot window, it sends an alert to the driver. The purpose of the blind spot information system is to alert the driver and give him more time to react for obstacles that are difficult to spot using the side mirror.

Automatic headlight controller circuit will take over the duty of low beaming the headlight when vehicles approach against, and high beams the lights when they pass over. Eye Blink Sensor involves measure and control the eye blink using IR sensor. If the eyes are closed it means the output of IR receiver is high otherwise the IR receiver output is low. This output is given to logic circuit to indicate the alarm.

II. OBJECTIVE OF THE STUDY

- [1] To increase the focus on safety features in vehicles, we design this driver assistant system.
- [2] To make sure that this proposal is made to reduce the glare effect using Photo transistor.
- [3] This system also used to controlled and prevent the accidents due to drowsiness using Eye blink sensor.

III. METHODOLOGY

There are several advanced technology and innovations are available for vehicle safety. Even though there are advanced technological innovations for vehicle safety, the growth in number of accidents is continuously increasing. And these accidents are due to collision or glare effect of the headlights accidents. These accidents occur due to mistakes done by driver or carelessness of the driver. Hence, to overcome these mistakes an intelligent collision avoidance system, automatic headlight controller system and driver monitoring system are proposed using Ultrasonic sensor, Phototransistor, IR sensor respectively. So, the mistakes done by the driver are eliminated. And the numbers of accident are reduced.

IV. EXPERIMENTAL SETUP

The process can be well explained with the block diagram advancement is made in this by using the ultrasonic sensor, IR sensor and the eye blink sensor, which avoids vehicle accidents and provide greatest security to the user. This system assists the driver in avoiding collision. This proposal is also made to reduce the glare effect and to protect the human eye from getting affected due to high intensities of light and also helps in eliminating the requirement of manual headlight controlling process.

Accidents due to drowsiness can be controlled with the help of Eye blink sensor using IR rays. Thus, the road accidents are avoided to its extreme level with the implementation of this project. In this IR sensor is used to detect the objects that approaches the vehicle by any side and provides a warning to the user.

Also, Ultrasonic sensor measures the distance of the oppositely approaching objects and provides an auto break during the emergency situation. With this the accident is avoided much efficiently. Eye blink sensor is used in order to monitor the drowsiness of the driver. When there is absence of the eye blinking in the driver there produces a warning through buzzer.

V. BLOCK DIAGRAM

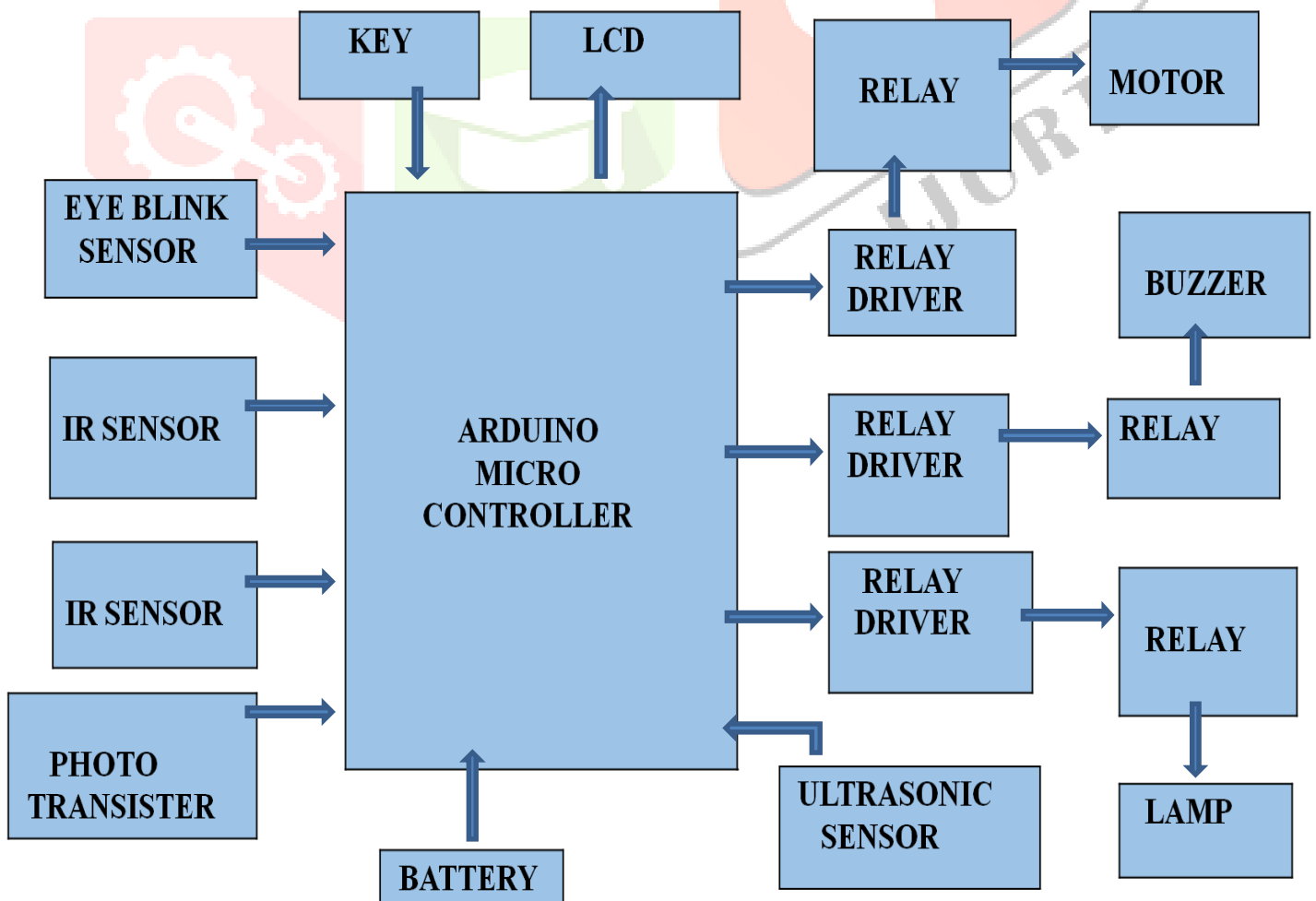


Figure 1 Block Diagram

VI. RESULT

Advancement has been implemented in order to avoid road or vehicle accidents and enhance the security for the users. In this, a new improvement has been made by combining the features of collision avoidance, headlight controlling, and driver monitoring in a single system. Thus, on working with this project, the positives are able to attain from it. Thus, this shows the process of success rate for the further development and the future real-time implementation.

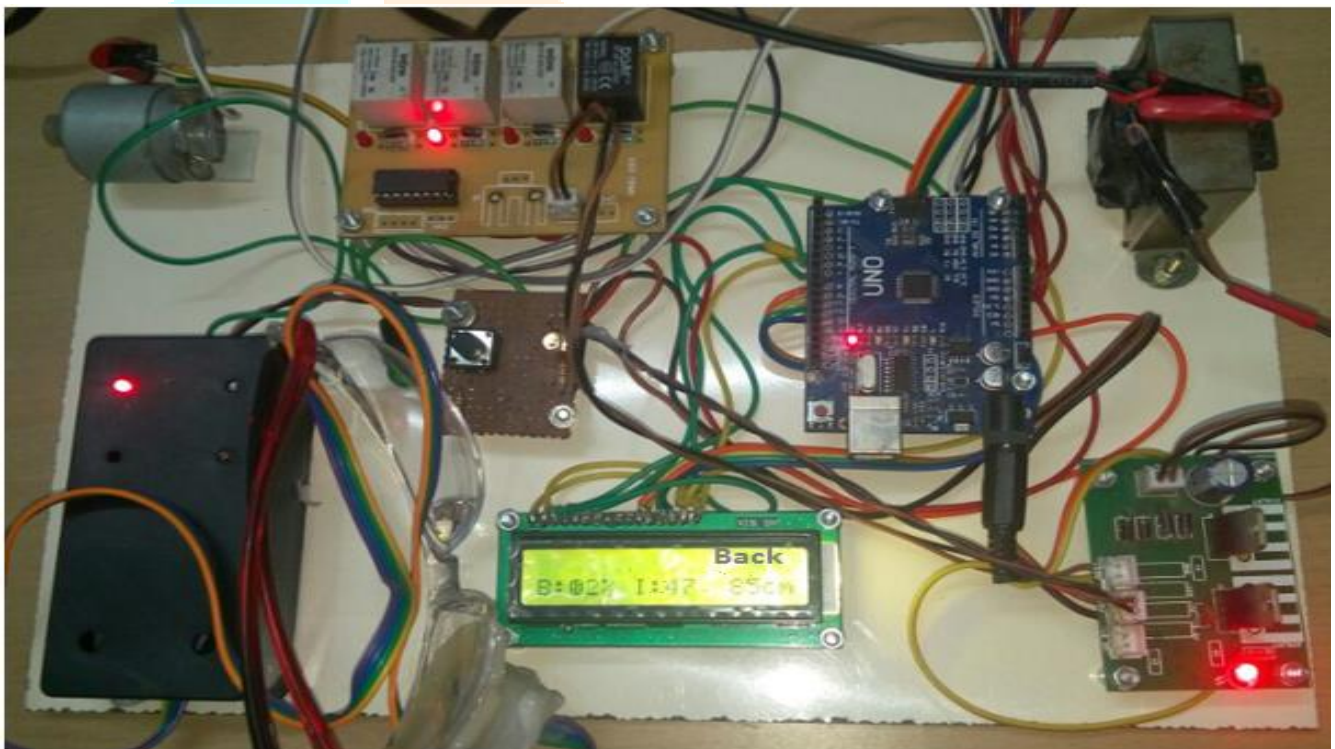
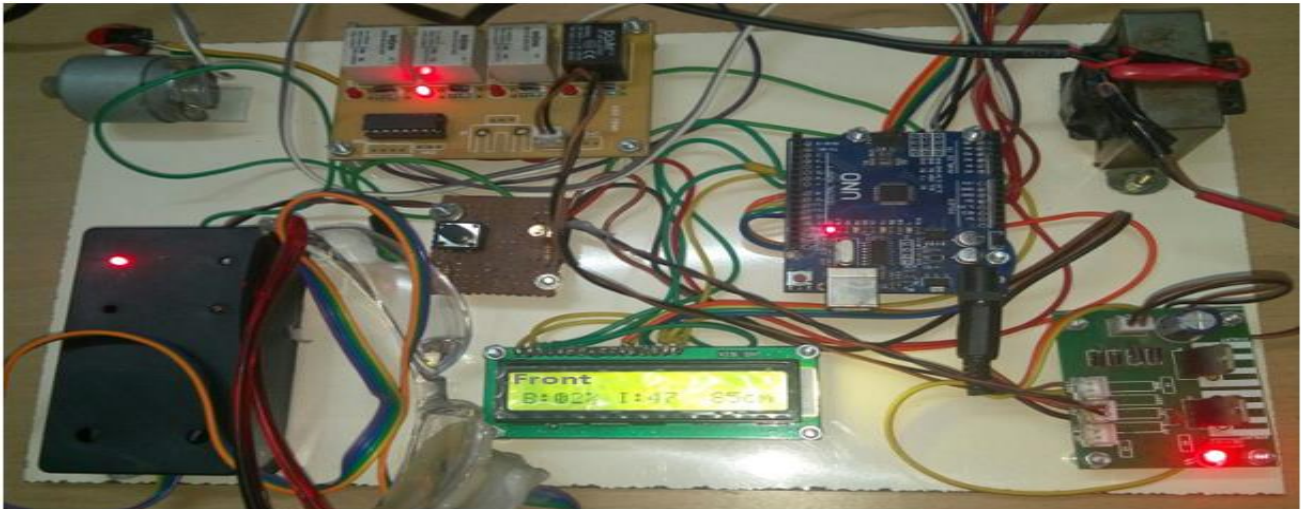


Figure:2 Hardware Results

VII. CONCLUSION

The existing system is used very rarely but this proposed system can be used in a small car model as a prototype to control the distance between the front, back, and side of the obstacles and initiate automatic braking. A phototransistor detects the headlight of the opposite vehicle, and the headlight control is done to avoid accidents in a significant manner. The alert mechanism used in the system will facilitate the vehicle driver at any unusual movement of the driver's eye and the vehicle. Hence, this system can be used in fully automatic vehicles that control the overall safety to its extreme level.

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