AUTOMATIC REAL TIME ACCIDENT PREVENTION SYSTEM

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Abstract— *Now-a-days Most of the Accidents are caused by Heavy vehicles in National Highways (NH). The drivers of the heavy vehicles are addicted to drinking. Drug-abuse and addiction by drivers is another major cause of accidents. Under the influence of liquor they indulge in rash driving. They drive their vehicles at top speed. They cause road accidents. To avoid accident due to DRUNK AND DRIVE an alcohol detector is used, if the driver consumes alcohol and tries to drive the vehicle this sensor detects the gas that sends an ALERT message to the driver and automatically switch OFF the vehicle. Headlight of vehicles poses a great danger during night driving. The drivers of most of the vehicles use only high bright beam while driving at night. This causes the discomfort to the person travelling from the opposite direction and therefore a sudden glare for short period of time. To avoid such incidents a prototype of automatic headlight dimmer the Visible Light Communication (VLC) is used to dim the headlight. The drivers travelling at night may fall sleep and leads to accident. An Eye Blink sensor is used to alert when the driver falls sleep.*

Keywords— Drunk and Drive, Brightness of the opposite vehicle, Falling sleep while driving at night.

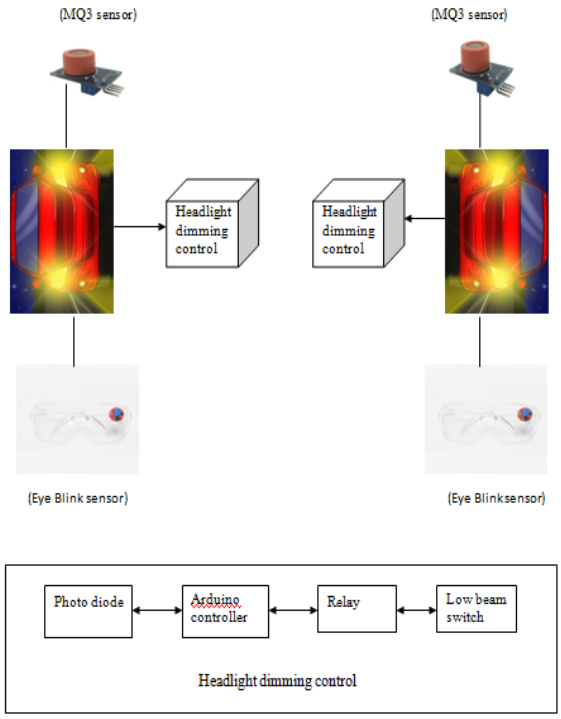
1. INTRODUCTION

Road transport in India is very popular for various reasons, but the conditions of the Indian roads are very poor and deplorable. The rate of road-accidents and fatality in the country is very high. Pressure on roads has been on increase and the number of vehicles is increasing. Lack of road-sense has further complicated the matters. Driving licenses are given on illegal gratifications to the authorities and traffic rules and regulations are thrown to the winds. The condition of the vehicles is hardly found road-worthy. The very increasing use of mobile phones has posed a new challenge to road-safety. Immediate and effective steps should be taken to check the ever increasing number of road-accidents and deaths. Roads in India are a popular means of both passenger and goods movement. Travel by road provides a lot of flexibility, convenience, speed and reliability, particularly at short distances in cities and towns. Therefore, it is the most preferred medium of transport. But Indian roads in cities, towns and those connecting them have been in a very poor condition. Their development and maintenance have not kept pace with the growth in vehicular population. Consequently, there are accidents, serious injuries and deaths all around. Indian roads are red with human blood. The rate of road accidents and resulting loss in man and material in India is one of the highest. Road accidents take place in big cities almost every day. Sometimes, these accidents prove to be fatal. Two main factors responsible for road accidents are heavy traffic on roads and rash driving. The reckless drivers of buses and tracks are in the habit of drinking. Drug-abuse and addiction by drivers is another major cause of accidents. Under the influence of liquor they indulge in rash driving. They drive their vehicles at top speed. They do not observe speed limits. They cause road accidents. Many a time an accident takes place because the driver is a drug addict. They are in a state of intoxication while driving Most of the drivers belong to poor middle class or lower sections of the sections of the society. They are engaged in driving trucks, buses, three-wheelers, tempos etc. and are often overworked. Another issue is the Headlights of vehicle are inherent for night driving. These bright headlights which assist the driver for better vision, may cause a discomfort to the person travelling from the opposite direction in the form of glare for short period of time. Once they spot an opposite vehicle within 150 meters in order to reduce the glare as a rule during night driving, every driver is supposed to switch their headlight from high beam to low beam. This is one of the major causes of accidents during the night, as the opposing driver will not be able to see road clearly due to brightness of the opposite vehicle's headlights. Motorists face a huge problem due to high beam light which falls directly onto their eyes when driving at night or during foggy conditions. There is medical effect associated with these phenomena. This effect includes temporary blindness, glare, fading effect of image and sometimes causing accident leading to loss of many lives. To avoid such incidents a prototype of automatic headlight dimmer the Visible Light Communication(VLC) used to dim the headlight.

2. SYSTEM DESIGN

The architecture describes the working of automatic realtime accident prevention system.

Fig 1 Automatic real time accident prevention system.



Inference from literature survey:

It has been inferred that the headlight of the vehicle can be controlled by reducing the intensity of the headlight using Visible light communication (VLC).

3. MODULES

- Drunk and Drive.
- Brightness of the Opposite vehicle.
- Eye Blinker.

MODULE DESCRIPTION

Drunk and Drive:

To avoid accident due to Drunk & Drive, a MQ3 sensor is used. This sensor is used to detect toxic gases, cigarette smokes, combustible. This sensor is connected to Ignition system and if the driver consumes alcohol and tries to drive the vehicle, this sensor detects the gas that sends an ALERT message to the driver and automatically switch OFF the vehicle.

Brightness of the Opposite vehicle:

The drivers of most vehicles uses high bright beam and it causes a discomfort to the person travelling from opposite direction. The driver experiences a sudden glare. So the driver is expected to dim the headlight to avoid this glare. This glare causes temporary blindness, and causes road accidents during the night. To avoid such incidents a prototype of automatic headlight dimmer Photo Diode(PD) sensor used to dim the headlight.

Eye Blinker:

This Eye Blink sensor is used to monitor the position of the drivers Eye. Whenever the driver sleeps (i.e eye gets closed) the sensor starts alarm through a buzzer. When the buzzer alarms, the driver automatically wakeup switch off the buzzer manually. This manual switch off leads to wakeup the driver from sleep. This is used for controlling accident due to unconscious through Eye blink.

4. SYSTEM IMPLEMENTATION

Since the Headlight of vehicles poses a great danger during night driving. The drivers of most of the vehicles use high, bright beam while driving at night. This causes the discomfort to the person travelling from the opposite direction and therefore a sudden glare for short period of time. Here we use Visible light Communication(VLC) technique for receiving the light from another vehicle. In this project we use an automatic headlight Dimmer which is a Photo Diode(PD) sensor to dim the headlight of our vehicles to avoid human eye effects. Although, the system should be mounted in both the vehicles moving in opposite direction and sensing the driving person to detect an alcohol content means automatically vehicle OFF otherwise vehicle is ON. An Eye Blink sensor is used to alert when the driver falls Asleep. Based on the above concept this automatic real time accident prevention system has 3 modules.

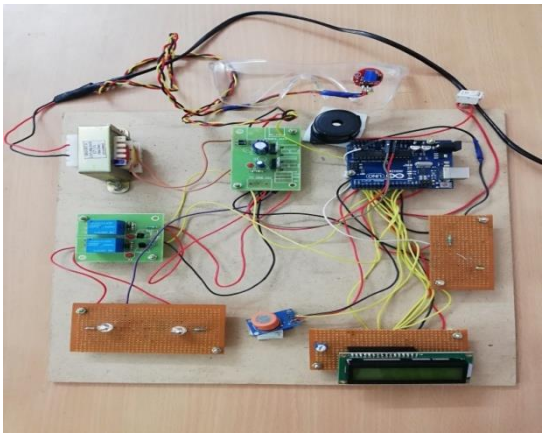


Fig 2 Automatic real time accident prevention system setup.

5. RESULT:

The automatic real time accident prevention system has been implemented by 3 modules namely Drunk and drive,

Brightness of the vehicle and detects the eye blink when the Driver sleeps.

Alcohol detector:

This alcohol detector detects whether the driver has consumed alcohol or not. If the driver does not consumes alcohol it will send a message in LCD and the hardware output is shown in Fig 3

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Fig 3 When driver does not consume alcohol.

If the driver has consumed alcohol it will send a message in LCD that alcohol detected so the vehicle cannot start and the hardware output is shown in Fig 4

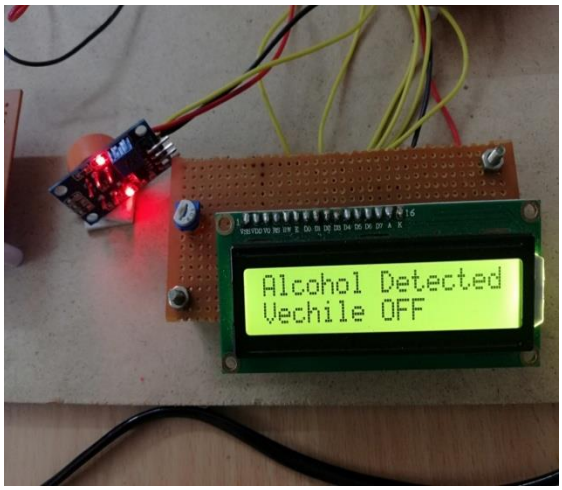

Fig 4 When driver consumed alcohol.

Brightness of the opposite vehicle:

While travelling at night if there is no opposite vehicle, then the headlight can be high the hardware output is shown in Fig 5

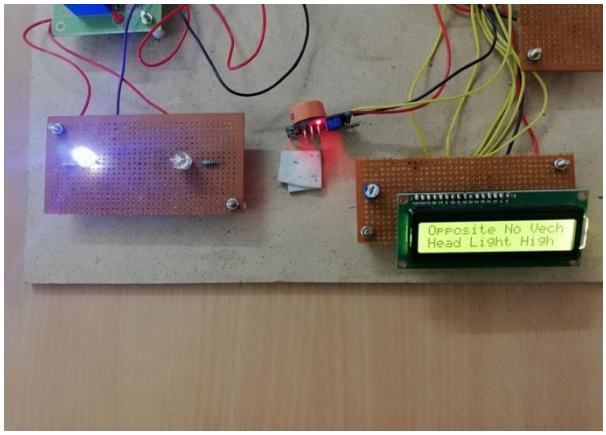

Fig 5 When there is no opposite vehicle.

If there is an opposite vehicle, the Photo diode will receive the opposite vehicles light and sends a message and automatically dims the headlight the hardware output is shown in Fig 6

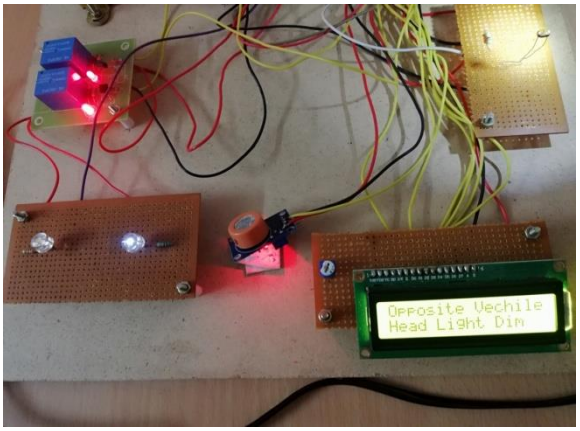

Fig 6 When there is an opposite the headlight is dim.

EYE BLINK SENSOR:

When the driver is not sleeping the sensor and the manual switch will be ON the hardware output is shown in Fig 7

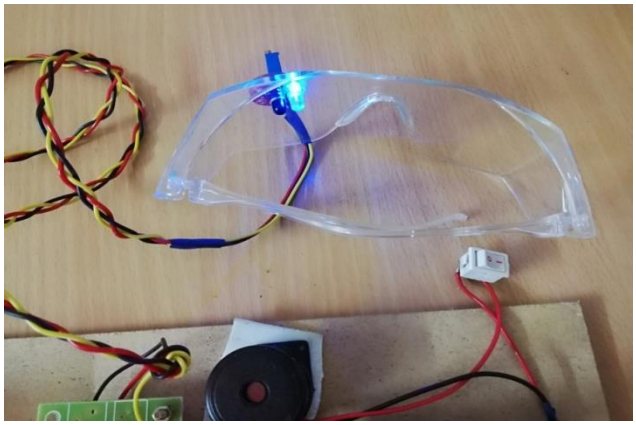

Fig 7 When the drivers eye is opened.

Whenever the driver eye gets closed the sensor starts sound through an buzzer. When the buzzer sounds the driver should wakeup and OFF the manual switch that is fitted to off the buzzer the hardware output is shown in Fig 8

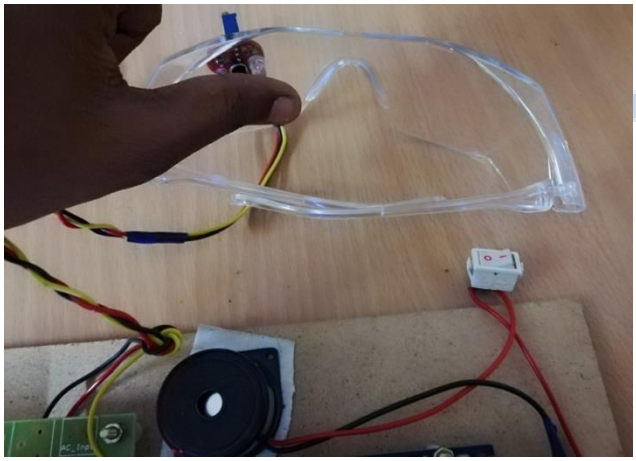

Fig 8 When the drivers is eye is closed.

6. CONCLUSION AND FUTURE WORK

CONCLUSION:

An automatic headlight dimmer of opposite vehicles had been dimmed using VLC technique. Thus, the system device automatically switches the headlight to low beam when it senses a vehicle from the opposite side using Photodiode(PD) sensor. Eventually this has become the major reason for accidents occurring at night and also during bad conditions such as rainy and foggy conditions. The drivers of the heavy vehicles are addicted to drinking. Drug-abuse and addiction by drivers is another major cause of accidents. Under the influence of liquor they indulge in rash driving. They drive their vehicles at top speed. They cause road accidents. To avoid accident due to DRUNK AND DRIVE an alcohol detector had been used, if the driver consumes alcohol and tries to drive the vehicle this sensor detects the gas that sends an ALERT message to the driver and automatically switch OFF the vehicle. The drivers travelling at night may fall sleep and leads to accident. An Eye Blink sensor had been used to alert when the driver falls sleep. In this Automatic real time accident prevention system this eye blink sensor system, can be extended by dynamically capturing the Eye blink using Web camera.

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