



DRIVER DROWSINESS DETECTION SYSTEM

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ABSTRACT

Nowadays There has been a very large increase in road accident due to drowsiness of driver while driving which leads to enormous fatal accidents. The driver loses his control when he falls sleep which leads to accident. This is because when the driver is not able to control his vehicle at very high speed on the road. Driver in-alertness is an important cause for most accident related to the vehicle's crashes. Driver fatigue resulting from sleep deprivation or sleep disorders is an important factor in the increasing number of the accidents on today's roads. Drowsy driver warning system can form the basis of the system to possibly reduce the accidents related to driver's drowsiness. This project can generate a model which can prevent such accidents. To prevent this, we outlined a very simple and economical system which deals with this issue. In this project, when a driver falling asleep, an alarm is raised to warn the driver attached to the rear of the vehicle. The alarm continues for a minimum of 10 seconds so that the driver wakes and get ready to steady the vehicle he drives. Thus, we can control the major accidents.

INTRODUCTION

Drivers driving with drowsiness are one of the major factors for causing road accidents. The danger, risk and other tragic factors results of drowsy driving are alarming. Drowsy driving is the harmful combination of sleepiness, fatigue or continuous driving. This usually happens when a driver has not slept enough time, but it can also happen because of lack of attention, medications, sleep disorder, drinking alcohol or based on shift work. They cannot predict when sleep can come through their body, Even though falling asleep behind the wheel is dangerous but being sleepy affect the said person's ability to drive safely even if they are not falling asleep. These persons are more dangerous to other drivers than they are to themselves. This is due to the fact that large vehicles can cause more harm to small vehicles like car, Bi-cycle, Bikes etc.

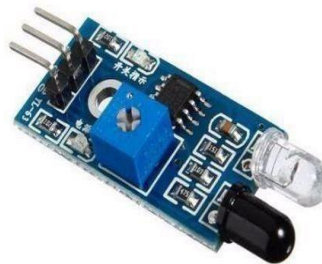
PROPOSED SYSTEM

The drowsiness detection system can be used for different applications. One of them is heavy-duty vehicles like buses, cranes and trucks. It can be used for bus and truck drivers, who have prolonged periods of driving. It can be used for drivers of public transport vehicles to ensure the safety of the passengers. The operator of heavy load lifting vehicles like cranes can use this system to avoid accidents at the worksite.



COMPONENTS

1. IR SENSOR



The IR sensor is used as an eye blink sensor which helps to detect the eye blink of the driver. The IR Sensor consists of infra-red transmitter and received by the IR receiver.

The eye blink is a sensor which is placed in front of the driver on the top. While in driving time the eye blink in normal means it checks when the eye close to particular second's buzzer will be indicated to alert him to wake up.

The eye blink sensor illuminates the eye with infrared light and monitors the changes in the reflected light. The infrared light reflected from the eye is used to determine the results. The sensor output is active high for Eye close and can be given directly to microcontroller for interfacing application.

2. ARDUINO NANO



Arduino Nano is an open-source electronic platform. It is easy to use and it works as both hardware and software. The boards can able to read the inputs and convert it into output. It detects the eye movement of the driver and the eye variation are noted. The noted variations are taken as input by the Arduino and produces the output. If the eyes are closed, the output will be high otherwise the output will be low and it alerts the driver by giving a buzzer system.

3. BUZZER



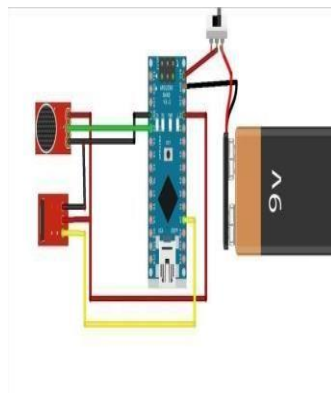
The Buzzer is used for the purpose of giving an alarm helps to alert the driver if he/she is sleepy. The buzzer is in connection with the IR sensor. When the driver exceeds a particular time limit upon which he/she has been blinking then the buzzer gives up a buzz/alarm to let the driver know that he/she is sleepy

4. GLASS



The Glass is the most important apparatus in the IR sensor. The driver must wear the glass which consists of a transmitter -receiver. The transmitter is connected to the right end of the glass while the receiver is connected to the left end of the glass. The Transmitter send an IR signal to the receiver.

5. BASIC IR SENSOR CIRCUIT



IR Sensors use short wavelength to illuminate an area. And these are not affected by smoke oncoming headlights, haze etc.

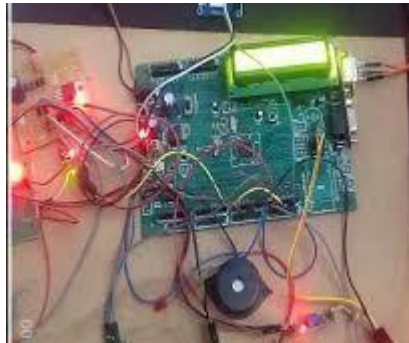
IR sensors are capable of heat being emitted by an object and detecting the motion. This method is practically applicable. It helps in decreasing road accidents.

6. DC MOTOR

The motor acts as the wheel of the vehicle and it rotates when the power is supplied to it through L298 chip. The speed of rotation is slowed down when the driver falls asleep as detected by the eye blink sensor, in the other case the wheel is stopped when the accident occurs.



RESULT



The IR Sensor used in the above project is to detect the eye blinking of a driver and sends signals to the Arduino Nano and then the relay coordinates the whole process.

Hence the driver gets message in return in the form of buzzer and LCD Display so that he awakes and gain control over his driving. Also, the driver motor slowdowns after detecting the drowsiness of a driver.

ADVANTAGES

Driver drowsiness detection is a car safety technology which prevents accidents when driver is getting drowsy. Driver inattention is might be the result of lack of alertness when driving due to drowsiness and distraction. The system alerts driver through alarm in real time.

Applications

- providing real-time drowsiness feedback to the driver
- providing performance feedback to a fatigue management program
- providing regulatory compliance information to enforcement officials
- It also acts as an effective way to solve the issues of sleep driving accidents



Conclusion

The drowsiness detection is used for detecting drowsiness in rapid manner. This system prevents the driver from the fall of sleepiness state while driving. The buzzer alerts the driver if the eyes are closed for some seconds which can be modified in the code. This paper is actually made for safety of the drivers from accidents due to drowsiness. It can be implemented in all kind of vehicles.