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# Drowsiness Detection and Active Collision Avoidance System by Vehicle Emergency Braking

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**ABSTRACT:** Drowsiness detection and active collision avoidance system by vehicle emergency braking is a system that avoid collision when there is a danger and prevents accidents. It is also very helpful in order to alert the drivers and passengers. The system also reacts to danger automatically, faster, and more efficient. The system is implemented on a remote-control car. Theremote-control car can automatically brake when the difference between front ultrasonic sensor and obstacle is less than 35cm. While the system applies automatic braking system a red LED will light on. Next, the ultrasonic sensor is used to detect distance and send the reading to Arduino Uno to calculate distance. LCD is used to display the calculated distance. This system also uses dc motor to control the movement of the vehicle through the Arduino Uno controller LED's and a buzzer is used as alerting device for this prototype. In this we included driver drowsiness which is also a main reason for causing accidents. For the prevention of this, a system is required which detects the Drowsiness and alerts the driver which saves the life. If the blinking rate is high then system detects driver is drowsy and the system alerts the driver with alarm, even though driver is not responding to alarm then system automatically applies brakes and prevents from accident.

**KEYWORDS:** Drowsiness, Fatigue, Arduino,IR sensor, Ultrasonic sensor, LCD display, L293d motor driver, Motor, Buzzer.

## I.INTRODUCTION

Now a days driving a vehicle is not safe due to a various number of factors. The main reason is higher density of traffic on roads and presence of rush hours. The main problem which arises from this is sudden acceleration because the presence of some traffic free areas. The sudden presence of traffic free area is very common in India as the road width varies too much suddenly due to change in terrain even on highways. This causes drivers to speed up suddenly and road width suddenly thins and traffic increases. So sudden braking is very common and this leads to most of the rear collision accidents and the presence of sharp turns leads to about 80% of side collisions and the crossover of lanes accounts about 70% of frontal collisions. By looking at this scenario, only depending on manual steering is becoming more and more dangerous day by day. Vehicle accidents due to fatigue in drivers are causing death to thousands of lives. Thus, a safety module must be included in most of all vehicles to ensure minimum risk of traffic collisions. A collision avoidance system is an automobile safety system designed to reduce the severity of a collision. It is also known as a precrash system, or collision mitigating system driving.

The main aim of this paper is to develop a active crash avoidance systems for the automotive industry due to human errors such as fatigue and drowsiness. development of a comprehensive collision warning system, which is capable of detecting and warning the driver of potential hazard conditions in the forward, and side regions of the vehicle. A drowsiness detection system is particularly useful for night driving, to avoid accidents due to fatigue and falling asleep. It also helps in determining that the driver is not in an active state which could be a result of Fatigue. It activates warning alerts to wake up the driver to prevent a possible accident and also allow vehicle for emergency breaking.

## LITERATURE SURVEY

Certain experiments have been Performed from past few years by different research and development groups. Here are some of the following groups:



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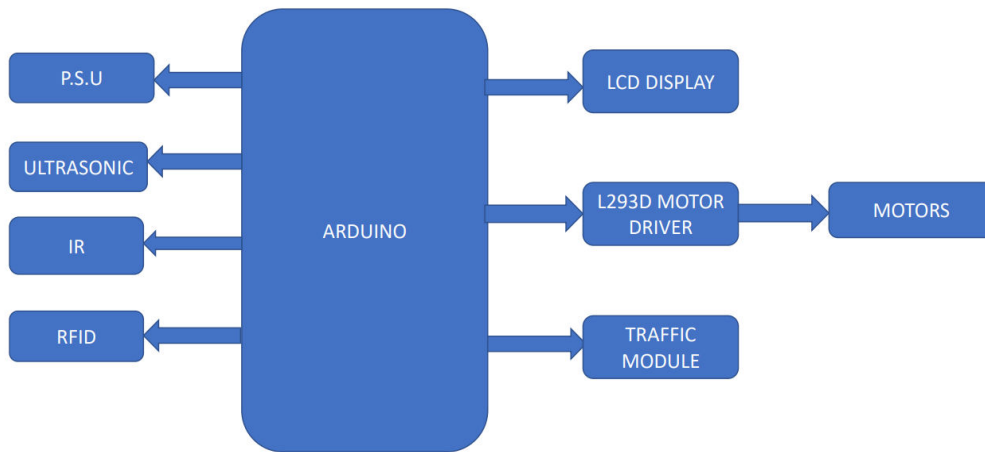
[2] Ming-Yi Dai, Hsin-Tsung Ho, Chih-Ching Hsiao, “A Safety System for IntelligentPortable Hybrid Electric Bicycle”, IEEE 2010 International Conference on SystemScience and Engineering, pp.379-384, june 2010.

[3] William J. Fleming “Overviewof Automotive Sensors” IEEE 2001 sensors journal, vol. 1, no. 4 , pp.296-308,December 2001.

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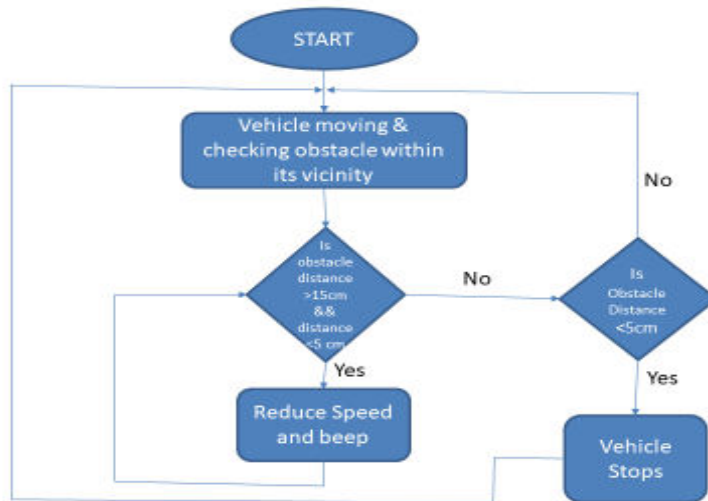
**III.PROPOSED SYSTEM**

In the proposed model we use and Eye blink sensors to detect driver drowsiness and uses controllers to process the data and to apply the vehicle emergency break to avoid collisions.



**Figure3.1:**Architecture of the Model.

**FLOW CHART**



**Figure4.1:**Flow chart of the Model

#### IV.RESULT



Figure5.1:Drowsiness detected



Figure5.2:Obstacle Detected

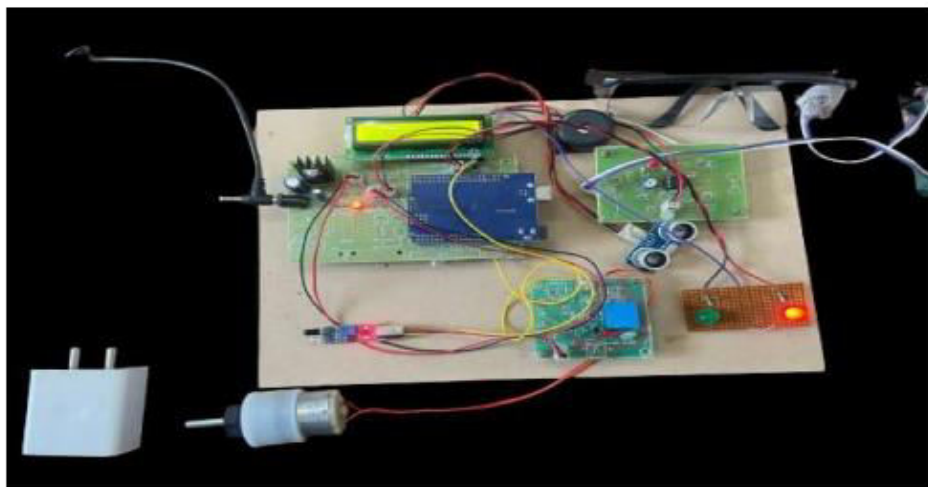


Figure 5.3:Execution of the model



## V.CONCLUSION

An attempt has been made in this project to study and comprehend aspects of ultrasonic. The use of the anti-crashing system will help in saving human lives. The design presents an anti-crashing system which is installed on the moving vehicles. The key idea incorporated in the detection of an obstacle using ultrasonic sensors. Such detection is accomplished by the gradual decrease in the speed of the motors, thus avoiding an accident. We are confident that in coming years our project if used in proper in efficient direction will become a boon and serve the mankind. One developing Advanced driver assistance system technology that can help mitigate the negative effects of distracted driving is automatic emergency steering.

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- [3] Jakob Eriksson, Lewis Girod, Bret Hull,Ryan Newton, Samuel Madden, HariBalakrishnan, “The Pothole Patrol: Using a Mobile Sensor Network for Road SurfaceMonitoring”, IEEE journals, June 2008.
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