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# Driver Drowsiness and Alcohol Detection for Safe Driving

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**ABSTRACT**: Nowadays, a countless number of people tend to use different types of transportation for travelling from one place to another either through land, air or water. It is very dangerous to drive when you feel asleep. Long-distance drivers suffer from insomnia. The drivers should be very cautious while driving and even he/she have to be very careful while driving at night time. Driver's drowsiness is the real cause of many road accidents. Therefore, there is a necessity for developing a machine learning model that will detect and notify a driver's condition .The system proposes detection of drowsiness and alcohol for driver. Generally road accidents causes by fatigue Driver fatigue is a very serious problemcausing in many thousands of road accidents each year. It is not possible to calculate the exact number of accidents because of drowsiness but research shows 20% of accidents happens only because of fatigue .The system provides USB Camera for Eye-Blink Monitoring System and provide buzzer that alerts the driver during the drowsy condition.Driver's

location can be track using GPS. Alcohol sensor is provided to detect the alcoholic condition of a rider, and when this condition exists the vehicle speed goes down.

**KEYWORDS**: Drowsiness detection, Face Detection, Machine Learning, IoT.

## I. INTRODUCTION

Drowsiness or fatigue is one of the main factors that threaten the road safety and causes the severe injuries, deaths and economical losses. The increased drowsiness deteriorates the driving performance. Lack of alertness, generated by the unconscious transition from wakefulness to sleep, leads to several serious road accidents. The U. S. National High wayTraffic Safety Administration (NHTSA)1reports that drowsy driving resulted in almost 100,000 road accidents and more than 1,500 deaths per year. A driver's fatigue can have multiple causes such as lack of sleep, long journey, restlessness, alcohol consumption and mental pressure. Each of which can lead to serious disaster. Nowadays, road rage is in the multiples of the past, which causes stress on drivers. Therefore, previous transportation system is not enough to handle these hazards on roads. Thus, by embedding the automatic fatigue detection systems into vehicles, several deadly accidents can be prevented. The drowsiness detection system continuously analyzes the drivers' attention level and alerts the driver before the arrival of any serious threat to road safety. Due to the hazards that fatigue create on the roads, researchers have developed variousmethods to detect driver drowsiness and each technique has its own benefits and limitations. To conduct a valuable review of Drowsiness Detection Techniques (DDT) and appropriateclassification methods, we build search strings to gather relevant information. We keep our search focused on publications of well reputed journals and conferences. We established a multi-stage selection criteria and assessment procedure.

### A.     Goals and Objective
*     The system aims to detect drowsiness for driver if he feels sleepy.
*     Eye and mouth ratio is calculated to detect eye drowsiness and mouth yawning.
*     Alcohol consumption is also detected before driving.

### B.     Solution
In this project, system propose a Image Processing based Driver Drowsiness Detection, Accident Prevention, & Drunk Driver Detection System. This system using Ultrasonic sensor, Camera, Alcohol Sensor, NodeMCU Micro-controller andBuzzer. Our project focus on to providing them more convenience with driver. It provides real-time vehicle driver status so that they may not get accident. Design accident prevention system, which will detect the accident of the vehicle using ultrasonic sensor. Design vehicle drunk driver detection system, which will detect the drunk driver using alcohol sensor.

## II. RELATED WORK

[1] Driver Drowsiness and Distraction Detection usingMachine LearningAuthor: Gomathy, B., R. Balasubramanian, S. Barkavi,and G. GowarthiniYear: 2021Publication: Annals of the Romanian Society for CellBiology

Domain: Machine Learning & IOT

Summary:

This project uses the technology of OpenCV poweredby Machine Learning in order todetecttheeyes, head and mouthmovements while driving. Oneof the best ways to detect a drowsy driver is to use avision-based approach.

Technique :

1) Detecting Face and Eye part

2) Detecting Head for distraction

3) Detecting Yawning mouth

Advantages:

Detecting Drowsiness and Distraction

Disadvantages :

The development of such systems encounters many difficulties associated with the fast and accurate recognitionof the driver's drowsiness symptoms.

[2] Driver Drowsiness Detection System for Vehicles Author: Chadde, Aditya, Sunil Bhagat, Saurabh Chikankar, Prashik Kamble, Sankalp Moharle, Preetee Karmore, and Nutan Sonwane.Year: 2021 Publication: ijsret

Domain: IOT

Technology/ Algorithm : Eigen Value / Haar Cascade

Summary:

The detection of drowsiness, the most relevant visual indicators that reflect the driver's condition are the behavior of the eyes, the lateral and frontal assent of the head and the yawn.

Technique:

1) Behaviour of Eyes : Eigen Value

2) Lateral And Frontal assent of Head

3) Detection Of Yawn

Advantages :

The system works adequately under natural lighting conditions and no matter the use of driver accessories like glasses, hearing aids or a cap.

[3]Advanced Driver Assistance System for the drowsiness detection using facial landmarks Author: L. D. S. Cueva and J. Cordero Year: 2020

Publication: Conference on Information Systems and

Technologies (IEEE)

Domain: Machine Learning

Summary:

Advanced driver assistance systems ADAS help reduce these serious human errors. Detection of Facial landmarks with help of Algorithm Viola Jones Paulo and methodology of Haar cascade is Implemented for system.

Technique:

Facial Landmark Detection : Haarcascade

## III. PROPOSED SYSTEM

### 1) SYSTEMOPERATIONS

Driver Drowsiness and alcohol detection system detects the drowsiness of driver and acohol content. In the proposed systemwe are using Camera that will capture face and detect whether the eyes are closed or not and generate the alert if eyes are closed beyond threshold value and alcohol sensor will detect whether the driver has consumed alcohol or not and if consumed the car will stop.For Eye detection we are using the eye aspect ratio formula i.e
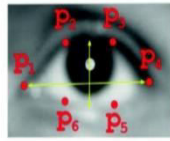
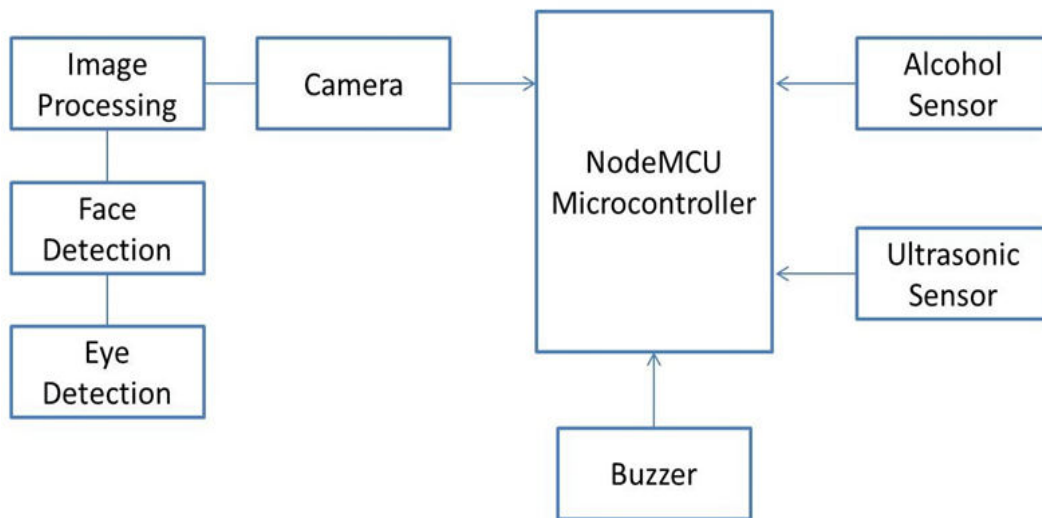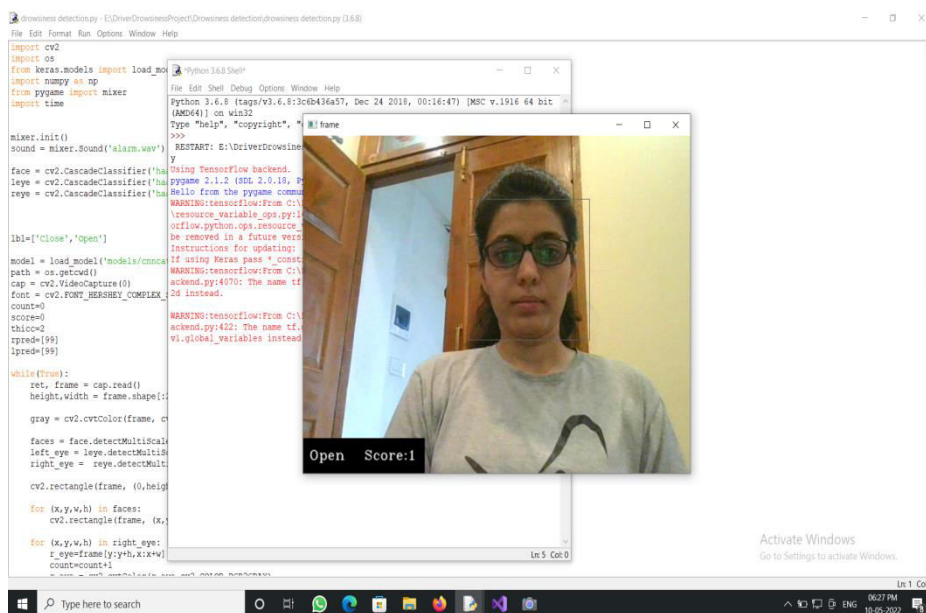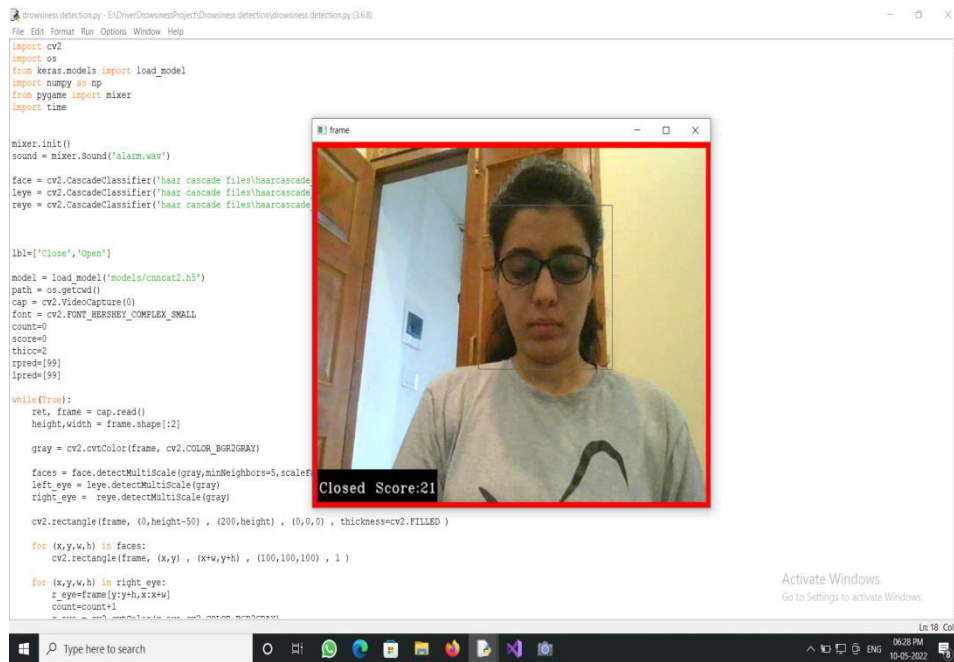$$EAR = \frac{\|p_2 - p_6\| + \|p_3 - p_5\|}{2\|p_1 - p_4\|}$$



**Fig.1:SystemArchitecture**

## IV. RESULTS

## V. CONCLUSION

Designing a system that can detect the drowsiness driver, prevent the accident, detect drunk driver. This project is made with preplanning, that it provides flexibility in operation. This innovation has made more desirable and economical. This project "Driver Drowsiness and Alcohol Detection for Safe Driving" is designed with the hope that it is very much economical and helpful for driver and as well as conductors and passenger during journey.

## REFERENCES

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