

**Project Design Phase-I**  
**Proposed Solution**

Date	22 may 2023
Team ID	NM2023TMID14164
Project Name	Drowsiness detection and alerting system

## **PROBLEM STATEMENT:**

**Here We goes through some problem that face on accident due to drowsiness and tiredness. We had clear to provide drowsiness detection and alerting system to stop the accident.**

Drowsiness describes the state of being drowsy or sleepy. A person experiencing drowsiness may feel tired or sluggish and have difficulty staying awake. Individuals are usually less alert when drowsy and may fall asleep but are able to be roused.

Nowadays, more and more professions require long-term concentration. Drivers must keep a close eye on the road, so they can react to sudden events immediately. Driver fatigue often becomes a direct cause of many traffic accidents. Therefore, there is a need to develop the systems that will detect and notify a driver of her/him bad psychophysical condition, which could significantly reduce the number of fatigue-related car accidents. However, the development of such systems encounters many difficulties related to fast and proper recognition of a driver's fatigue symptoms. One of the technical possibilities to implement driver drowsiness detection systems is to use the vision-based approach. This article presents the currently used driver drowsiness detection systems. Here we are detecting the driver drowsiness by estimating vision system of him. This paper presents an automatic drowsy driver monitoring

Driver's inattention might be the result of a lack of alertness when driving due to driver drowsiness and distraction. Driver distraction occurs when an object or event draws a person's attention away from the driving task. Unlike driver distraction, driver drowsiness involves no triggering event but, instead, is characterized by a progressive withdrawal of attention from the road and traffic demands. Both driver drowsiness and distraction, however, might have the same effects, that is decreased driving performance, longer reaction time, and an increased risk of crash involvement.



## IDEA/SOLUTION DESCRIPTION:

Based on acquisition of video from the camera that is in front of driver perform real-time processing of an incoming video stream in order to infer the driver's level of fatigue if the drowsiness is estimated then it will give the alert by sensing the eyes. A new approach towards automobile safety and security with autonomous region primarily based automatic automotive system is projected during this conception. A drowsy driver detection system and a traffic detection system with external vehicle intrusion dodging primarily based conception. So as to attenuate these problems, we've incorporated driver alert system by watching each the driver's eyes. Once its detected that the driver is drowsy then the particular score is generated and the alarm rings to make the driver aware.

GENERATE THE PREVIEW WITH THE WEB CAMERA .

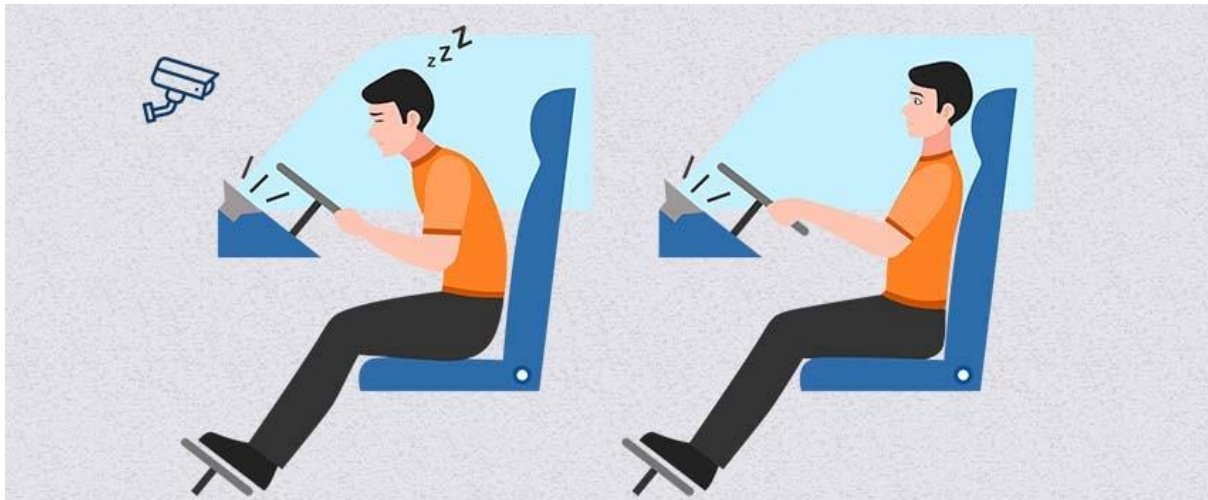
RECORD THE VIDEO THROUGH THE WEB CAMERA AND CAPTURE IT

GENERATE THE PICTURES THROUGH THE VIDEO.

## NOVELTY/UNIQUENESS:

The purpose of the drowsiness detection system is to aid in the prevention of accidents passenger and commercial vehicles. The system will detect the early symptoms of drowsiness before the driver has fully lost all attentiveness and warn the driver that they are no longer capable of operating the vehicle safely.

To determine whether the driver is drowsy, the study tests three ensemble algorithms and finds that the Boosting algorithm is the most effective in detecting drowsiness with an accuracy of 89.4%



## **SOCIAL IMPACT:**

Drowsiness: Makes you less able to pay attention to the road. Slows your reaction time if you must brake or steer suddenly. Affects your ability to make good decisions.

Drowsy driving, also known as driver fatigue or tired driving, is the act of driving or operating a motor vehicle while tired and feeling fatigued or sleepy. Job stress or interrupted nights with young children are common reasons to be short on sleep.

However, other factors can contribute to drowsy driving, such as a medication you are taking or an untreated sleep disorder that leaves you depleted and unable to stay awake during the day. Late-night and third-shift workers are particularly affected by the natural release of melatonin associated with dark hours as they journey home after a long shift.

## **BUISENESS MODEL:**

PERCLOS SystemsPERCLOS (percentage closure) is defined as the measurement of the percentage of time the pupils of the eyes are 80% or more occluded over a specified time interval. It has been found that PERCLOS is a reliable measure in detecting drowsiness

The most popular algorithm for detecting drowsiness is PERCLOS. This algorithm is developed by Wierwille et al. [7]. PERCLOS measures percentage of time that eyes are closed over a window.

## **SCALABILITY OF THE SOLUTION:**

Driver drowsiness detection systems can use cameras, eye tracking sensors and other hardware to monitor visual cues, where drowsiness can be detected through yawning frequency, eye-blinking frequency, eye-gaze movement, head movement and facial expressions

Eye tracking is the process of measuring either the point of gaze (where one is looking) or the motion of an eye relative to the head. An eye tracker is a device for measuring eye positions and eye movement. Eye trackers are used in research on the visual system, in psychology, in psycholinguistics, marketing, as an input device for human-computer interaction, and in product design. Eye trackers are also being increasingly used for rehabilitative and assistive applications (related for instance to control of wheel chairs, robotic arms and prostheses). There are a number of methods for measuring eye movement. The most popular variant uses video images from which the eye position is extracted. Other methods use search coils or are based on the electrooculogram. We here are using eye tracking in detecting the drowsiness of the driver. Eye tracking is helping us to detect and sense the sleep of the driver, whether he is sleeping, wanting to sleep, getting exhausted while driving etc