

# Drowsy Driver Alert System

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## **A brief idea of the project:**

This project is primarily based on image analysis(Deep Learning). It detects the face of a person and rates his eye closing time. If the eyes are half-closed or completely closed for more than 10 -12 seconds, it immediately makes a sound and alerts the driver. It also rates the drowsiness on the basis of how frequently this occurs and gives suggestions to the driver to wash his face / take some rest and restart.

## **Libraries used:**

OpenCV, tensor flow, Keras and pygame, dlib, imutils, scipy.

## **Implementation:**

Taking input from the camera and detect a face in the image and create a region of interest. Then we detect the eyes from the region of interest and feed that information into a classifier. Classifier categorizes whether the eyes are open or closed. Later we calculate the score to check whether the person is drowsy or not. We set up a threshold and if the drowsiness score is more than that we raise the alarm sound.

## **Updated\_timeline :**

### **First-Week :**

1. Learning basics and implementation Haar cascade classifier for image detection. ( This is a specific classifier so, it wouldn't take much time )
2. Learning about CNN classifier, specification of CNN layers, and details into working of the CNN layer

### **Second-Week :**

3. The code can be implemented in 5 parts
  - a. Obtaining data for classifier training

- b. Building the model
- c. Training the model
- d. Testing the model
- e. Live implementation

### **Other things needed to be learnt :**

Classifiers ( I have basic knowledge about it, need to revise) and image analysis.

Motivation: I have completed the basics of machine learning. So, this project would be a good exercise and also this is a real project that we can implement in daily life.

### **Things that went apart from abstract :**

In second week, I understood that it may not be possible to get high accuracy by haarcascade classifier. Completely changed the algorithm, to a mathematical model that can detect the state of an eye. Learnt dlib, imutils, scipy libraries and implemented in code.

### **References:**

[https://onlinecourses.nptel.ac.in/noc21\\_cs05/unit?unit=73&lesson=74](https://onlinecourses.nptel.ac.in/noc21_cs05/unit?unit=73&lesson=74)

[https://onlinecourses.nptel.ac.in/noc21\\_cs05/unit?unit=73&lesson=75](https://onlinecourses.nptel.ac.in/noc21_cs05/unit?unit=73&lesson=75)

References :

CNN theory in the above course given by NPTEL and practical application of code reference is given below.

<https://data-flair.training/blogs/python-project-driver-drowsiness-detection-system/>