## **Signal and Image Processing**

## **Course Project 2**

**Title:** Drowsiness detector using OpenCV

**Aim:** To build a drowsiness detection system that will detect that a person’s eyes are closed for a few seconds. This system will alert the driver when drowsiness is detected.

**Software tools:**

* OpenCV – pip install OpenCV-python (face and eye detection).
* TensorFlow – pip install TensorFlow (keras uses TensorFlow as backend).
* Keras – pip install keras (to build our classification model).
* Pygame – pip install pygame (to play alarm sound).

**Algorithm:**

**Step 1 – Take Image as Input from a Camera**

**Step 2 – Detect Face in the Image and Create a Region of Interest (ROI)**

**Step 3 – Detect the eyes from ROI and feed it to the classifier**

**Step 4 – Classifier will Categorize whether Eyes are Open or Closed**

**Step 5 – Calculate Score to Check whether Person is Drowsy**

**Results:**

**In this project,** we used OpenCV to detect faces and eyes using a haar cascade classifier and then we used a CNN model to predict the status.

**Conclusion:**

By designing a drowsiness detection system that combines non-intrusive physiological measures with other measures one would accurately determine the drowsiness level of a driver. A number of road accidents might then be avoided if an alert is sent to a driver that is deemed drowsy