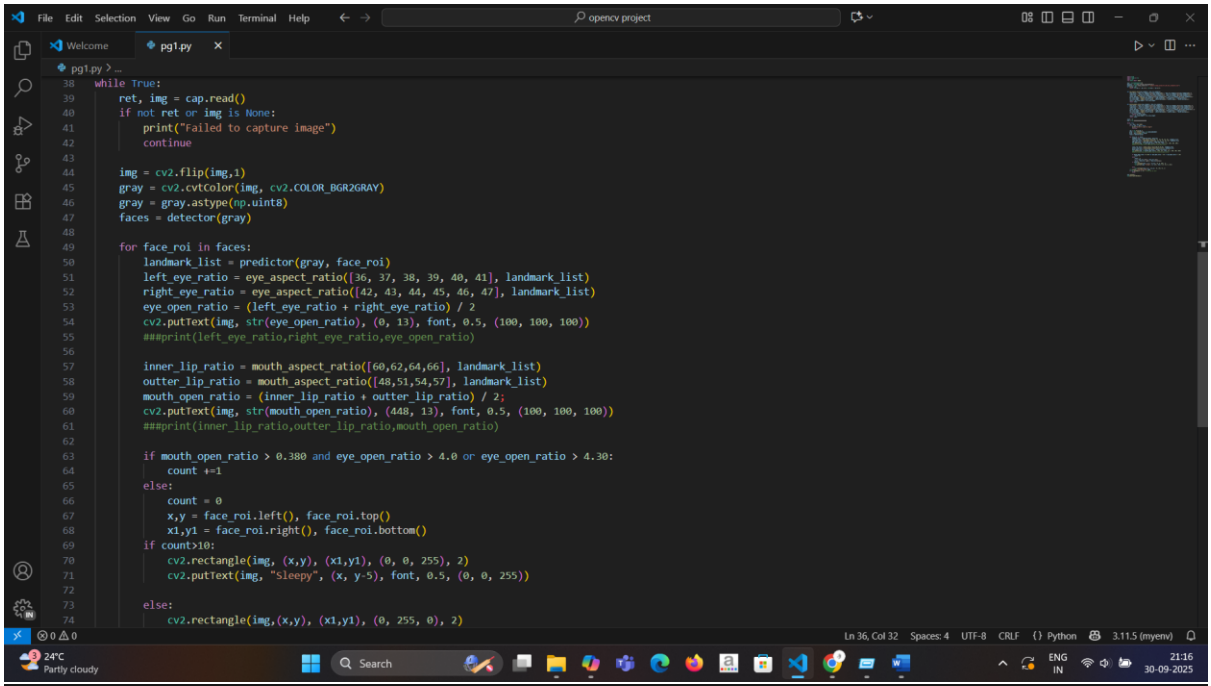
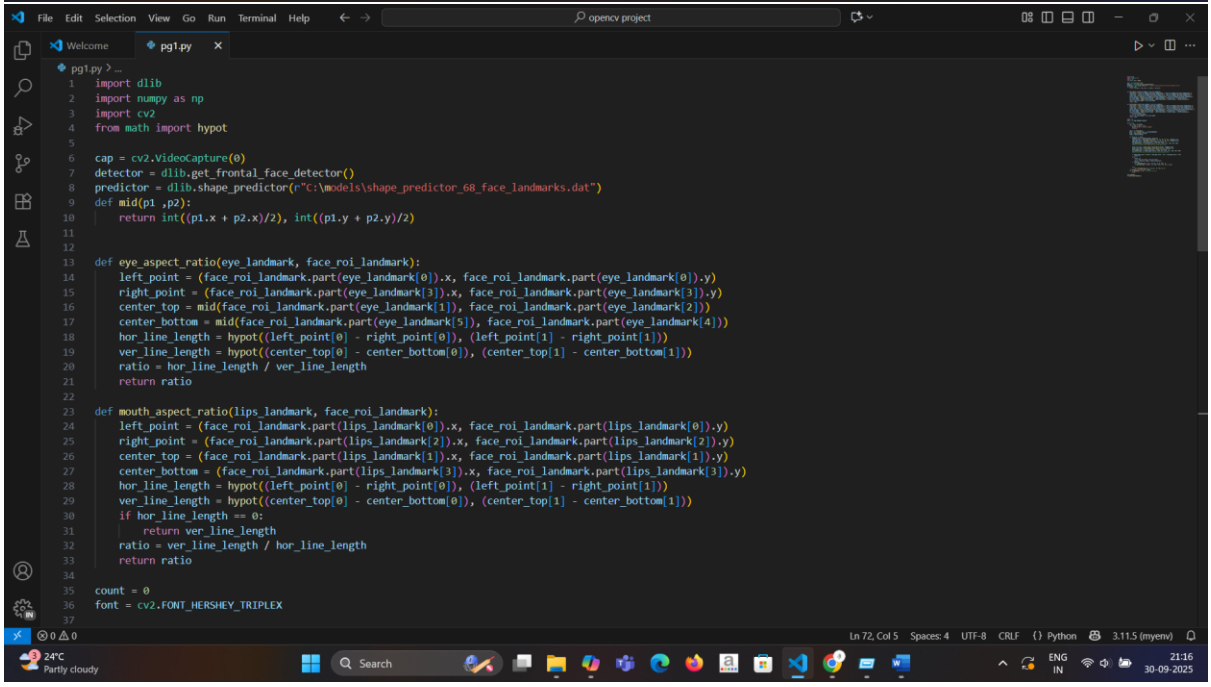
Driver Sleeping Detection with Dlib and OpenCV

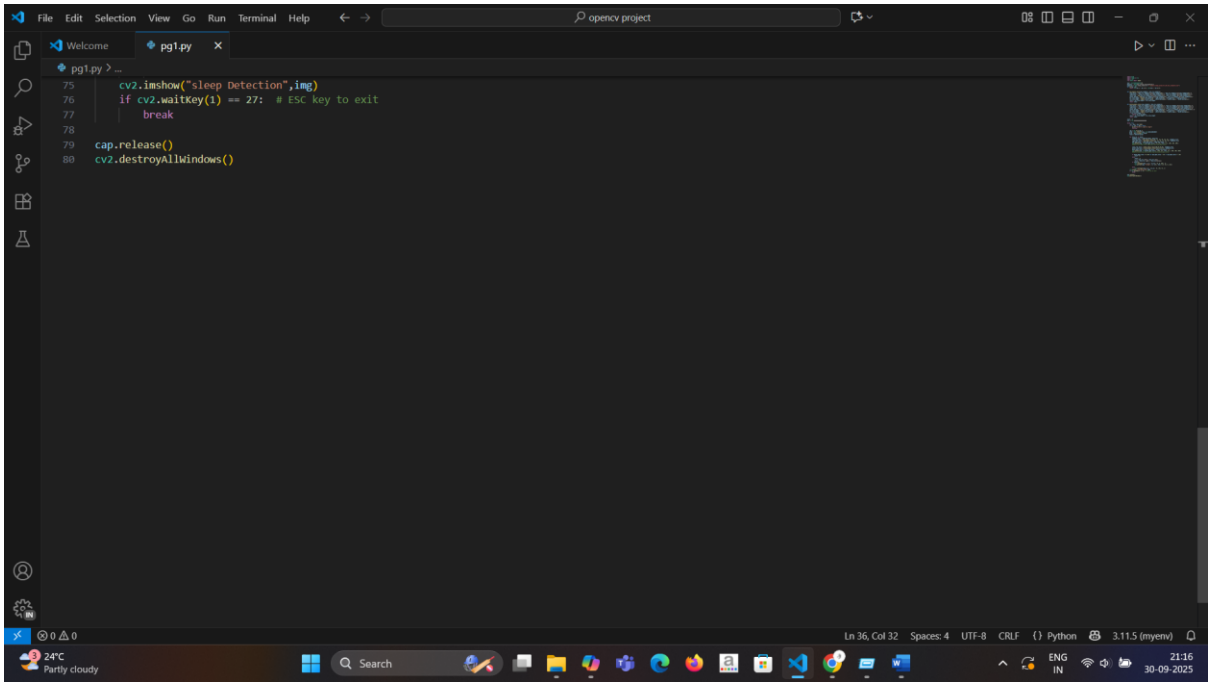
The full code



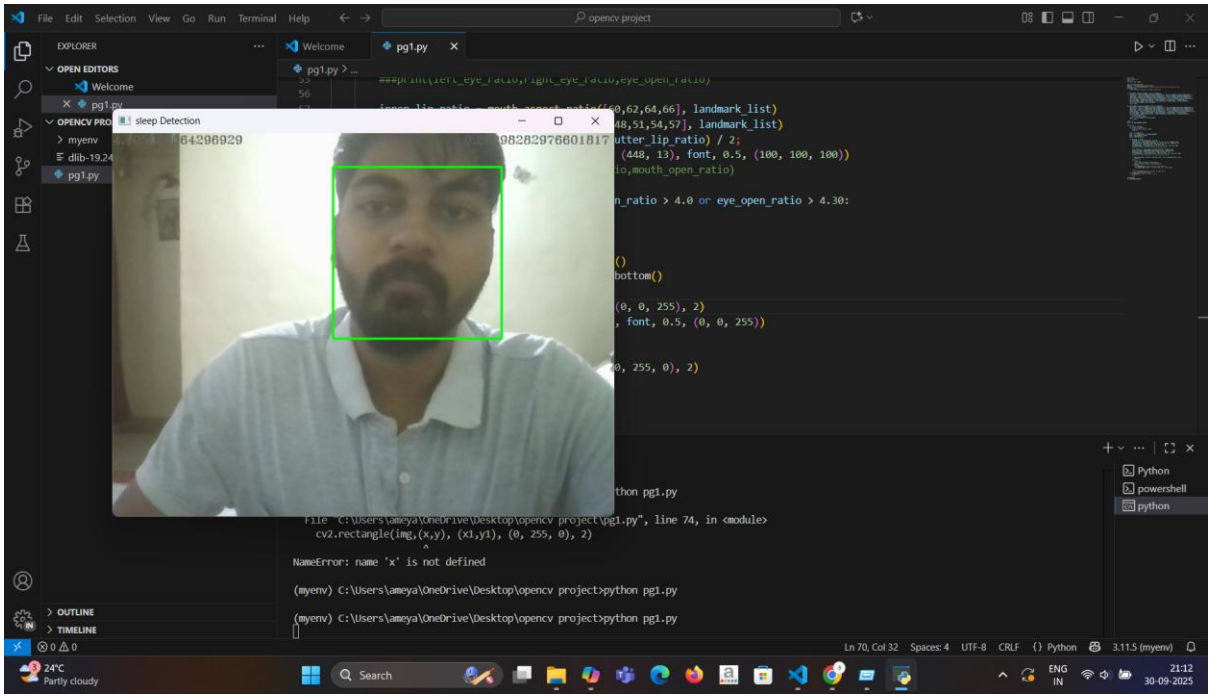
```
while True:
    ret, img = cap.read()
    if not ret or img is None:
        print("Failed to capture image")
        continue

    img = cv2.flip(img,1)
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    gray = gray.astype(np.uint8)
    faces = detector(gray)

    for face_roi in faces:
        landmark_list = predictor(gray, face_roi)
        left_eye_ratio = eye_aspect_ratio([36, 37, 38, 39, 40, 41], landmark_list)
        right_eye_ratio = eye_aspect_ratio([42, 43, 44, 45, 46, 47], landmark_list)
        eye_open_ratio = (left_eye_ratio + right_eye_ratio) / 2
        cv2.putText(img, str(eye_open_ratio), (0, 13), font, 0.5, (100, 100, 100))
        ###print(left_eye_ratio,right_eye_ratio,eye_open_ratio)

        inner_lip_ratio = mouth_aspect_ratio([60,62,64,66], landmark_list)
        outter_lip_ratio = mouth_aspect_ratio([48,51,54,57], landmark_list)
        mouth_open_ratio = (inner_lip_ratio + outter_lip_ratio) / 2;
        cv2.putText(img, str(mouth_open_ratio), (448, 13), font, 0.5, (100, 100, 100))
        ###print(inner_lip_ratio,outter_lip_ratio,mouth_open_ratio)

        if mouth_open_ratio > 0.380 and eye_open_ratio > 4.0 or eye_open_ratio > 4.30:
            count +=1
        else:
            count = 0
            x,y = face_roi.left(), face_roi.top()
            x1,y1 = face_roi.right(), face_roi.bottom()
        if count>10:
            cv2.rectangle(img, (x,y), (x1,y1), (0, 0, 255), 2)
            cv2.putText(img, "Sleepy", (x, y-5), font, 0.5, (0, 0, 255))

        else:
            cv2.rectangle(img,(x,y), (x1,y1), (0, 255, 0), 2)
```

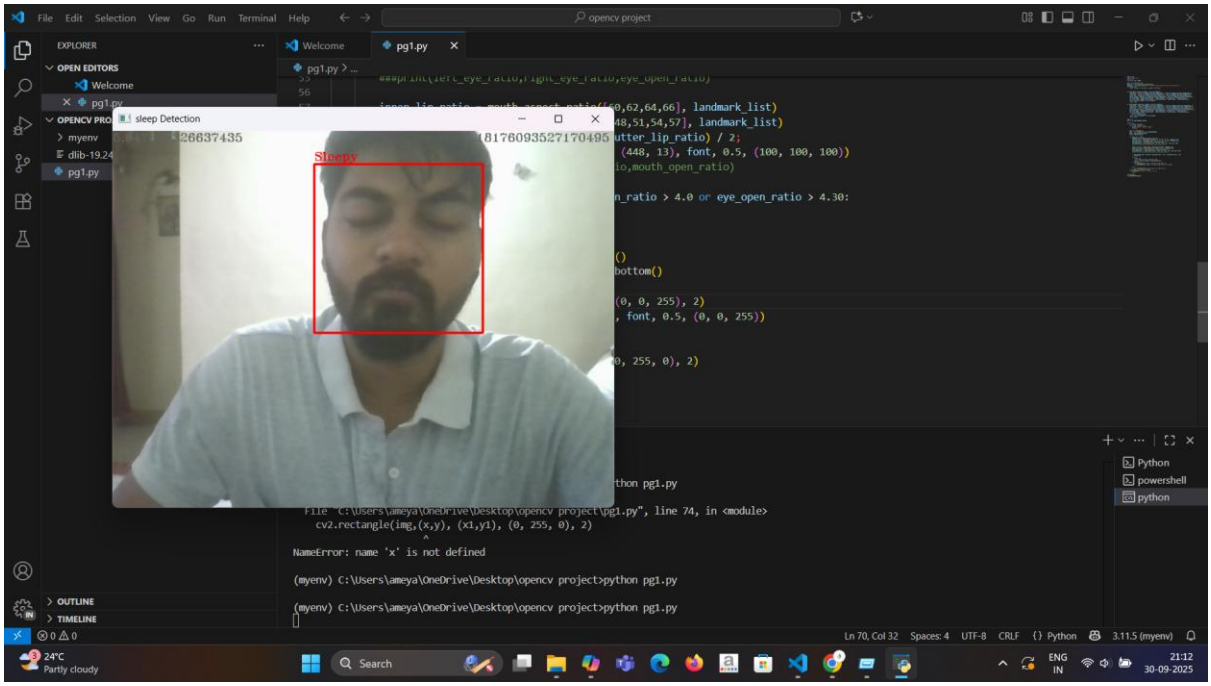


```
import dlib
import numpy as np
import cv2
from math import hypot

cap = cv2.VideoCapture(0)
detector = dlib.get_frontal_face_detector()
predictor = dlib.shape_predictor(r"C:\models\shape_predictor_68_face_landmarks.dat")
def mid(p1 ,p2):
    return int((p1.x + p2.x)/2), int((p1.y + p2.y)/2)


def eye_aspect_ratio(eye_landmark, face_roi_landmark):
    left_point = (face_roi_landmark.part(eye_landmark[0]).x, face_roi_landmark.part(eye_landmark[0]).y)
    right_point = (face_roi_landmark.part(eye_landmark[3]).x, face_roi_landmark.part(eye_landmark[3]).y)
    center_top = mid(face_roi_landmark.part(eye_landmark[1]), face_roi_landmark.part(eye_landmark[2]))
    center_bottom = mid(face_roi_landmark.part(eye_landmark[5]), face_roi_landmark.part(eye_landmark[4]))
    hor_line_length = hypot((left_point[0] - right_point[0]), (left_point[1] - right_point[1]))
    ver_line_length = hypot((center_top[0] - center_bottom[0]), (center_top[1] - center_bottom[1]))
    ratio = hor_line_length / ver_line_length
    return ratio

def mouth_aspect_ratio(lips_landmark, face_roi_landmark):
    left_point = (face_roi_landmark.part(lips_landmark[0]).x, face_roi_landmark.part(lips_landmark[0]).y)
    right_point = (face_roi_landmark.part(lips_landmark[2]).x, face_roi_landmark.part(lips_landmark[2]).y)
    center_top = (face_roi_landmark.part(lips_landmark[1]).x, face_roi_landmark.part(lips_landmark[1]).y)
    center_bottom = (face_roi_landmark.part(lips_landmark[3]).x, face_roi_landmark.part(lips_landmark[3]).y)
    hor_line_length = hypot((left_point[0] - right_point[0]), (left_point[1] - right_point[1]))
    ver_line_length = hypot((center_top[0] - center_bottom[0]), (center_top[1] - center_bottom[1]))
    if hor_line_length == 0:
        return ver_line_length
    ratio = ver_line_length / hor_line_length
    return ratio

count = 0
font = cv2.FONT_HERSHEY_TRIPLEX
```


cv2.imshow("sleep Detection",img)
if cv2.waitKey(1) == 27: # ESC key to exit
break
cap.release()
cv2.destroyAllWindows()

Output :


sleep Detection
cv2.rectangle(img,(x,y), (x1,y1), (0, 255, 0), 2)
NameError: name 'x' is not defined
(myenv) C:\Users\ameya\OneDrive\Desktop\opencv project>python pg1.py
(myenv) C:\Users\ameya\OneDrive\Desktop\opencv project>python pg1.py


sleep Detection
Sleepy
NameError: name 'x' is not defined
(myenv) C:\Users\ameya\OneDrive\Desktop\opencv project>python pg1.py
(myenv) C:\Users\ameya\OneDrive\Desktop\opencv project>python pg1.py