ASSIGNMENT 6

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Question - Develop a python code to detect any object using Haar cascade classifier.

Solution: -

CODE-

```
#import cv2 and numpy
import cv2
import numpy as np

#Using CascadeClassifier function of OpenCV to locate where we have stored the
XML file
face_classifier = cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_frontalface_default.xml')
eye_classifier=cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_eye.xml')
eyeglass_classifier=cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_eye_tree_eyeglasses.xml')
smile_classifier=cv2.CascadeClassifier(cv2.data.haarcascades +
'haarcascade_smile.xml')

#Read the first frame of the video
cap=cv2.VideoCapture(0)

while True:
        _, img = cap.read()
        gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)#Load the image(first
frame) and convert it into gray-scale

        faces = face_classifier.detectMultiScale(gray, 1.3, 5)#Now after
converting the image to Gray, we will now try to locate the exact features in
our face,  detectMultiScale will help us to find the features of the new
image.
```

```
#detectMultiScale function returns 4 values i.e. x-coordinate, y-coordinate,
width(w) and height(h) of the detected feature of the face. Based on these 4
values we will draw a rectangle on the image.
        for (x,y,w,h) in faces:
            cv2.rectangle(img,(x,y),(x+w,y+h),(255,0,0),2)
            roi_gray = gray[y:y+h, x:x+w]
            roi_color = img[y:y+h, x:x+w]
            eyes = eye_classifier.detectMultiScale(roi_gray)
            eyeglasses = eyeglass_classifier.detectMultiScale(roi_gray)
            smiles = smile_classifier.detectMultiScale(roi_gray)

            for (ex,ey,ew,eh) in eyes:
                cv2.rectangle(roi_color,(ex,ey),(ex+ew,ey+eh),(0,255,0),2)
            for (sx,sy,sw,sh) in smiles:
                cv2.rectangle(roi_color,(sx,sy),(sx+sw,sy+sh),(0,255,0),2)
            for (egx,egy,egw,egh) in eyeglasses:
                cv2.rectangle(roi_color,(egx,egy),(egx+egw,egy+egh),(0,255,0),
2)



        cv2.imshow('img',img)

        k = cv2.waitKey(0)
        if k == 27:         # ESC key to exit
            cv2.destroyAllWindows()
        elif k == ord('s'): #'s' key to save and exit
            cv2.imwrite('messigray.png',img)
            cv2.destroyAllWindows()

cap.release()
```