Assignment – 6

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

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

#Use the CascadeClassifier function of OpenCV to point to the location 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')

#To read the first frame/image of the vidio
cap=cv2.VideoCapture(0)

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

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

#detectMultiScale function returns 4 values — 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 around the face.
    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),4)
        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:         # wait for ESC key to exit
        cv2.destroyAllWindows()
    elif k == ord('s'): # wait for 's' key to save and exit
        cv2.imwrite('messigray.png',img)
        cv2.destroyAllWindows()

cap.release()
```