

Assignment 6

Car detection

CODE:-

```
import time

import numpy as np

import cv2

car_classifier = cv2.CascadeClassifier('haarcascade_car.xml')

cap = cv2.VideoCapture('vehicle.mp4')

while cap.isOpened():

    time.sleep(.05)

    ret, frame = cap.read()

    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

    cars = car_classifier.detectMultiScale(gray, 1.1, 2)

    for (x,y,w,h) in cars:

        cv2.rectangle(frame, (x, y), (x+w, y+h), (0, 255, 255), 2)

        cv2.imshow('Cars', frame)

    Key=cv2.waitKey(1)

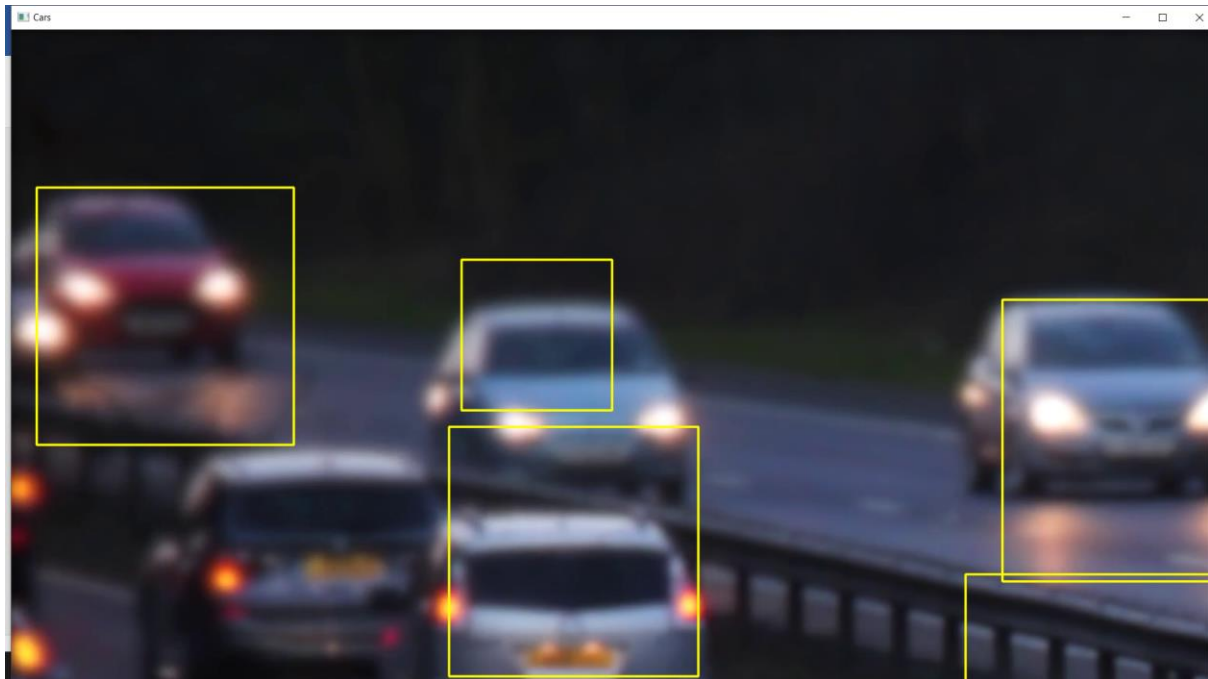
    if Key==ord('q'):

        cap.release()
```

```
cv2.destroyAllWindows()
```

```
break
```

OUTPUT:-



(I also wrote a code for haar Cascade smile detection and decided to use that as well)

Smile Detection

Code:-

```
import cv2
```

```

import datetime

cascade_face = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

cascade_eye = cv2.CascadeClassifier('haarcascade_eye.xml')

cascade_smile = cv2.CascadeClassifier('haarcascade_smile.xml')

vc = cv2.VideoCapture(0)

while True:

    def detection( grayscale, img):

        face = cascade_face.detectMultiScale( grayscale, 1.3, 5)

        for (x_face, y_face, w_face, h_face) in face:

            cv2.rectangle(img, (x_face, y_face), (x_face+w_face, y_face+h_face), (255, 130, 0), 2)

            ri_grayscale = grayscale[y_face:y_face+h_face, x_face:x_face+w_face]

            ri_color = img[y_face:y_face+h_face, x_face:x_face+w_face]

            eye = cascade_eye.detectMultiScale(ri_grayscale, 1.2, 18)

            for (x_eye, y_eye, w_eye, h_eye) in eye:

                cv2.rectangle(ri_color,(x_eye, y_eye),(x_eye+w_eye, y_eye+h_eye), (0, 180, 60), 2)

            smile = cascade_smile.detectMultiScale(ri_grayscale, 1.7, 20)

            for (x_smile, y_smile, w_smile, h_smile) in smile:

                cv2.rectangle(ri_color,(x_smile, y_smile),(x_smile+w_smile, y_smile+h_smile), (255, 0, 130),
2)

        return img

    _, img = vc.read()

    grayscale = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

    picname=datetime.datetime.now().strftime("FACE_%y-%m-%d-%H-%M")

```

```

cv2.imwrite(picname+".jpg",img)

final = detection(grayScale, img)

cv2.imshow('Video', final)

if cv2.waitKey(1) & 0xFF == ord('q'):

    break

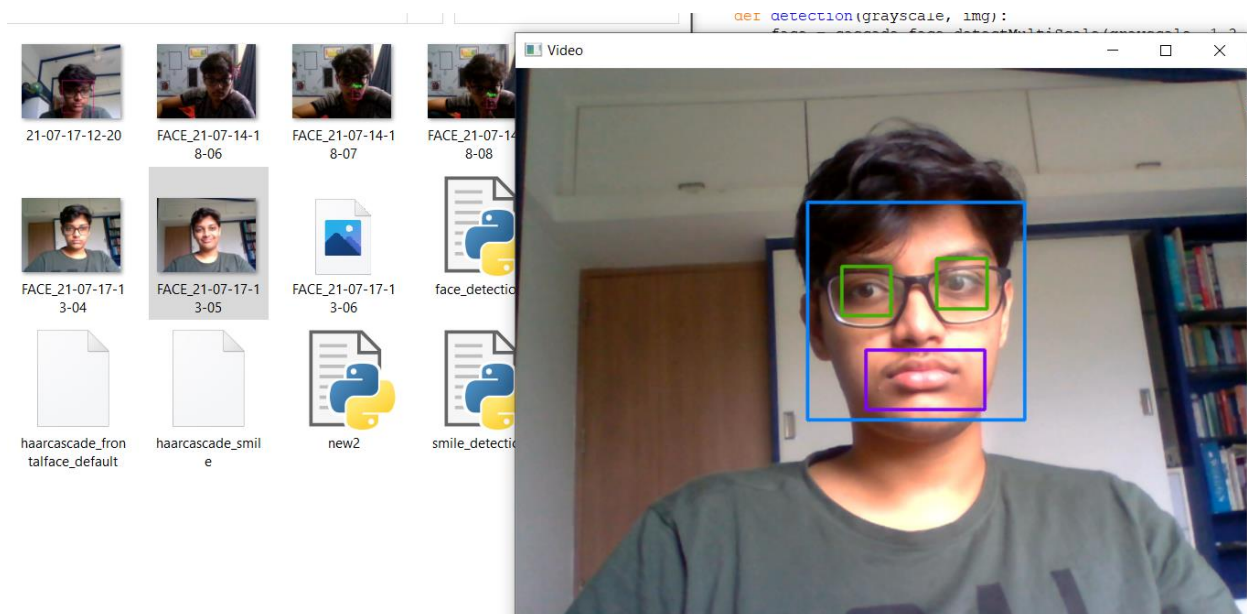
```

```
vc.release()
```

```
cv2.destroyAllWindows()
```


output:-

it will recognize my mouth but not take a pic because I am not smiling




If your smile is comically wide, it can detect your smile and captures image







21-07-17-12-20




FACE_21-07-14-1
8-06




FACE_21-07-14-1
8-07




FACE_21-07-14-1
8-08




Video




FACE_21-07-17-1
3-04




FACE_21-07-17-1
3-05




FACE_21-07-17-1
3-08




FACE_21-07-17-1
3-09




FACE_21-07-17-1
3-27




FACE_21-07-17-1
3-28




face_detection




haarcascade_eye



haarcascade_smile



new2



smile_detection

```
face = c===== RESTART: C:\Users\DELL\Desktop  
for (x_fi>>>  
cv2.i===== RESTART: C:\Users\DELL\Desktop  
ri_g>>>  
ri_c===== RESTART: C:\Users\DELL\Desktop
```

