SmartBridge Externship

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Assignment 6: Develop a python code to detect any object using Haar cascade classifier.

Objects I've detected using Haar cascade classifier are:

(1) Face, Eyes and Smile Detection

(2) Cat face Detection

1) Python code to detect Face, Eyes and Smile using Haarcascades:

```
import cv2
import datetime

face_classifier=cv2.CascadeClassifier("haarcascade_frontalface_default.xml")
eye_classifier=cv2.CascadeClassifier("haarcascade_eye.xml")
smile_classifier=cv2.CascadeClassifier("haarcascade_smile.xml")
#It will read the first frame/image of the video
video=cv2.VideoCapture(0)

while True:
    #capture the first frame
    check,frame=video.read()
    gray=cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

    #detect the faces from the video using detectMultiScale function
    faces=face_classifier.detectMultiScale(gray,1.3,5)
    eyes=eye_classifier.detectMultiScale(gray,1.3,5)
    smiles=smile_classifier.detectMultiScale(gray,1.3,5)
    print(faces)

    #drawing rectangle boundries for the detected face
    for(x,y,w,h) in faces:
```

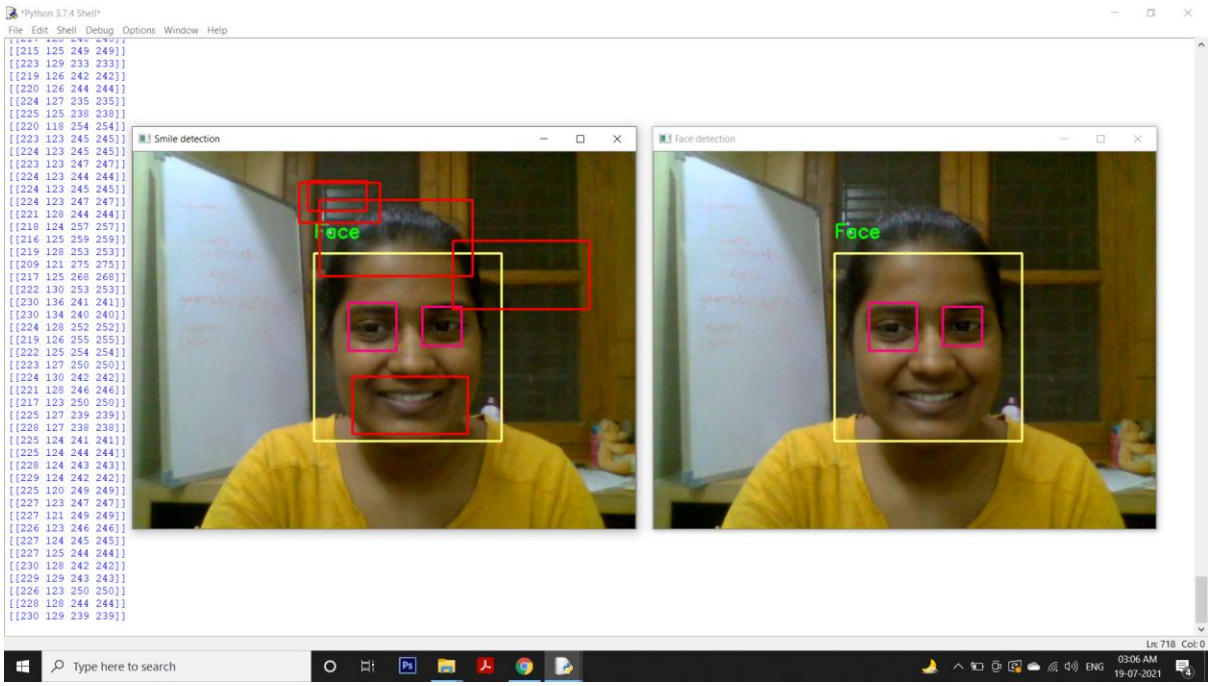
```
    cv2.rectangle(frame, (x,y), (x+w,y+h), (127,255,255), 2)
    cv2.imshow('Face detection', frame)
    cv2.putText(frame, 'Face',(x,y-20),cv2.FONT_HERSHEY_SIMPLEX,0.8,(0,255,0),2)
    picname=datetime.datetime.now().strftime("%y-%m-%d-%H-%M")
    cv2.imwrite(picname+".jpg",frame)

#drawing rectangle boundries for the detected eyes
for(ex,ey,ew,eh) in eyes:
    cv2.rectangle(frame, (ex,ey), (ex+ew,ey+eh), (127,0,255), 2)
    cv2.imshow('Face detection', frame)

#drawing rectangle boundries for the detected smile
for (sx, sy, sw, sh) in smiles:
    cv2.rectangle(frame,(sx,sy),((sx+sw),(sy+sh)),(0,0,255),2)
    cv2.imshow('Smile detection', frame)

#waitKey(1)- for every 1 millisecond new frame will be captured
Key=cv2.waitKey(1)
if Key==ord('q'):
    #release the camera
    video.release()
    #destroy all windows
    cv2.destroyAllWindows()
    break
```

smile.py - C:/Users/91995/OneDrive - vit.ac.in/Desktop/OpenCV/smile.py (3.7.4)

File Edit Format Run Options Window Help

```
import cv2
import datetime

face_classifier=cv2.CascadeClassifier("haarcascade_frontalface_default.xml")
eye_classifier=cv2.CascadeClassifier("haarcascade_eye.xml")
smile_classifier=cv2.CascadeClassifier("haarcascade_smile.xml")
#It will read the first frame/image of the video
video=cv2.VideoCapture(0)

while True:
    #capture the first frame
    check,frame=video.read()
    gray=cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

    #detect the faces from the video using detectMultiScale function
    faces=face_classifier.detectMultiScale(gray,1.3,5)
    eyes=eye_classifier.detectMultiScale(gray,1.3,5)
    smiles=smile_classifier.detectMultiScale(gray,1.3,5)
    print(faces)

    #drawing rectangle boundries for the detected face
    for(x,y,w,h) in faces:
        cv2.rectangle(frame, (x,y), (x+w,y+h), (127,255,255), 2)
        cv2.imshow('Face detection', frame)
        cv2.putText(frame, 'Face',(x,y-20),cv2.FONT_HERSHEY_SIMPLEX,0.8,(0,255,0),2)
        picname=datetime.datetime.now().strftime("%y-%m-%d-%H-%M")
        cv2.imwrite(picname+".jpg",frame)

    #drawing rectangle boundries for the detected eyes
    for(ex,ey,ew,eh) in eyes:
        cv2.rectangle(frame, (ex,ey), (ex+ew,ey+eh), (127,0,255), 2)
        cv2.imshow('Face detection', frame)

    #drawing rectangle boundries for the detected smile
    for (sx, sy, sw, sh) in smiles:
        cv2.rectangle(frame,(sx,sy),((sx+sw),(sy+sh)),(0,0,255),2)
        cv2.imshow('Smile detection', frame)

    #waitKey(1)- for every 1 millisecond new frame will be captured
    Key=cv2.waitKey(1)
    if Key==ord('q'):
        #release the camera
        video.release()
        #destroy all windows
        cv2.destroyAllWindows()
        break
```

Screenshot of python code for Face, eyes and smile detection using Haar cascades



Face (Yellow rectangle), Eyes (Pink rectangle), Smile (Red rectangle) detection

2) Python code to detect Cat face using Haarcascades:

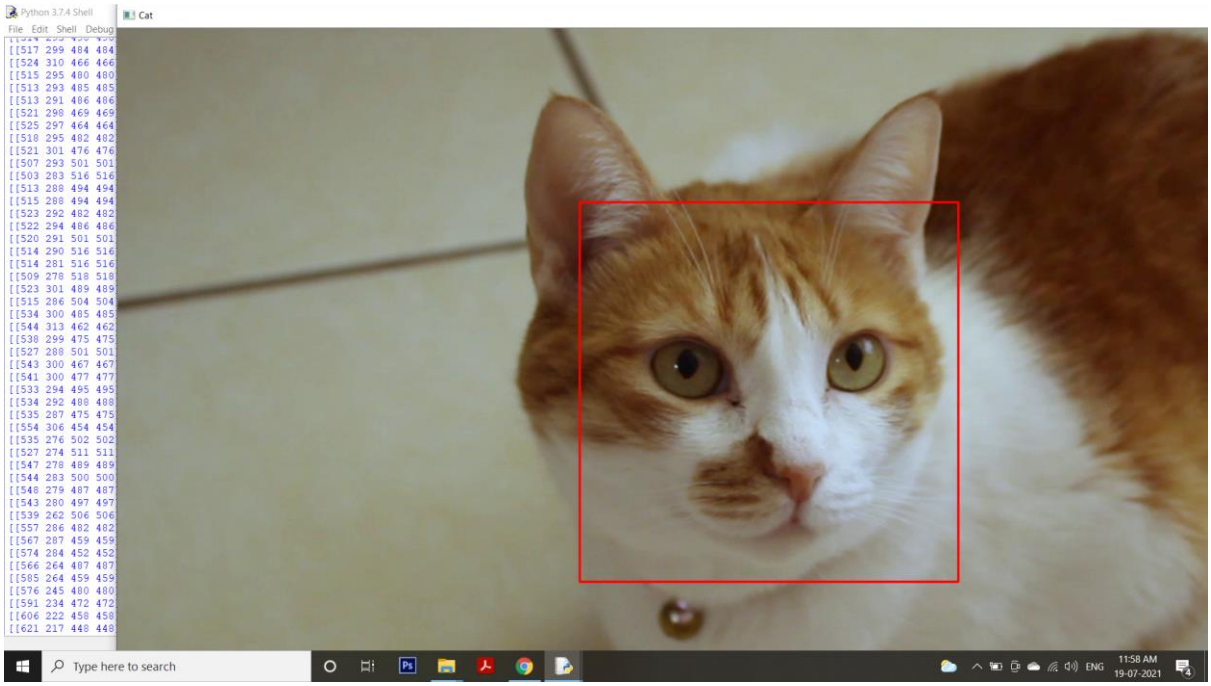
```
import cv2
#Read  video file from the folder by giving its path
video = cv2.VideoCapture(r'C:\Users\91995\OneDrive - vit.ac.in\Desktop\OpenCV\Cat.mp4')
face_cascade = cv2.CascadeClassifier('haarcascade_frontalcatface.xml')

while True:
    ret, img = video.read()
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    faces = face_cascade.detectMultiScale(gray, 1.3, 5)
    print(faces)

    for (x,y,w,h) in faces:
        # To draw a rectangle in a face
        cv2.rectangle(img,(x,y),(x+w,y+h),(0,0,255),2)
        roi_gray = gray[y:y+h, x:x+w]
        roi_color = img[y:y+h, x:x+w]
    cv2.imshow('Cat', img)



    k = cv2.waitKey(30) & 0xff
    if k == 27:
        break

video.release()
cv2.destroyAllWindows()
```

Cat.py - C:\Users\91995\OneDrive - vit.ac.in\Desktop\OpenCV\Cat.py (3.7.4)

File Edit Format Run Options Window Help

```
import cv2
#Read  video file from the folder by giving its path
video = cv2.VideoCapture(r'C:\Users\91995\OneDrive - vit.ac.in\Desktop\OpenCV\Cat.mp4')
face_cascade = cv2.CascadeClassifier('haarcascade_frontalcatface.xml')

while True:
    ret, img = video.read()
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    faces = face_cascade.detectMultiScale(gray, 1.3, 5)
    print(faces)

    for (x,y,w,h) in faces:
         # To draw a rectangle in a face
          cv2.rectangle(img,(x,y),(x+w,y+h),(0,0,255),2)
          roi_gray = gray[y:y+h, x:x+w]
          roi_color = img[y:y+h, x:x+w]
    cv2.imshow('Cat', img)


    k = cv2.waitKey(30) & 0xff
    if k == 27:
        break

video.release()
cv2.destroyAllWindows()
```

Screenshot of python code for Cat face detection using Haar cascades



Cat face (Red rectangle) detection