Chapter14: Use OpenCV to add expressions to face

！Note: When running the program of this course, there must be a desktop for displaying pictures. It is recommended that you use VNC to log in to the system so that the pictures can be displayed.

In this lesson. The key to the program is to import the Python PIL package, which is a common graphics processing tool in Python.

Note: The way to import the library in Python2 and Python3 is different:

```
import Image #python2
from PIL import Image #python3
```

The eyes and cigarettes in the expression are the same picture, so we only need to perform face position search once. The size of the expression needs to be set according to the size of the face. We need to use command:

```
resized_mask=mask.resize((w,h),Image.ANTIALIAS)
```

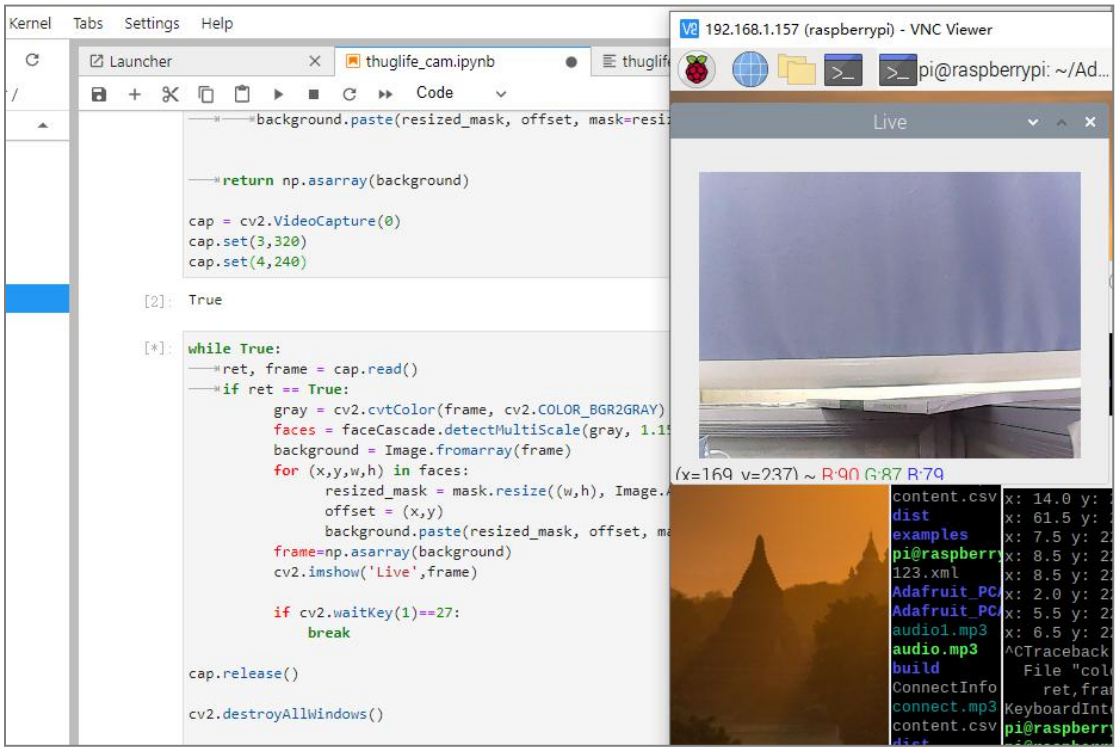
The source code of the program is located at:

/home/pi/yahboom/open_ar/thuglif_cam.py

```python
"""
    Created on Tue Nov  6 01:18:45 2018
    * @par Copyright (C): 2010-2019, Shenzhen Yahboom Tech
    * @file
    * @version      V1.0
    * @details
    * @par History

    @author: longfuSun
"""
import cv2
from PIL import Image
import numpy as np
import time



maskPath = "mask.png"
cascPath = "123.xml"

faceCascade = cv2.CascadeClassifier(cascPath)

mask = Image.open(maskPath)

def thug_mask(image):


    gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
    faces = faceCascade.detectMultiScale(gray, 1.15)

    background = Image.fromarray(image)

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

        resized_mask = mask.resize((w,h), Image.ANTIALIAS)
        offset = (x,y)

        background.paste(resized_mask, offset, mask=resized_mask)


    return np.asarray(background)

cap = cv2.VideoCapture(0)
cap.set(3,320)
cap.set(4,240)
```

```python


while True:
    ret, frame = cap.read()
    if ret == True:
        gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
        faces = faceCascade.detectMultiScale(gray, 1.15)
        background = Image.fromarray(frame)
        for (x,y,w,h) in faces:
            resized_mask = mask.resize((w,h), Image.ANTIALIAS)
            offset = (x,y)
            background.paste(resized_mask, offset, mask=resized_mask)
        frame=np.asarray(background)
        cv2.imshow('Live',frame)

        if cv2.waitKey(1)==27:
            break

cap.release()

cv2.destroyAllWindows()
```

The program runs as shown below.



The function of another program in the same folder is to change the expression into a hat and put a hat on the face recognized by the camera.

The source code of the program is located at:

/home/pi/yahboom/open_ar/thuglif_photo.py