Chapter12:Raspberry Pi face recognition

Face detection requires a classifier:

face_cascade=cv2.CascadeClassifier('123.xml')

123.xml is Haar cascading data, this xml can be obtained from data/haarcascades in the OpenCV3 source code. The actual face detection is then performed by face_cascade.detectMultiScale(). We can't directly pass each frame of the image captured by the camera into .detectMultiScale(). We should convert the image to a grayscale image, because face detection also requires such a color space.

!!! Note: Be sure to enter the correct location of 123.xml correctly.

The source code of the program is located at:

/home/pi/yahboom/face_tracking/face_tracking.py

```
#!/usr/bin/env python2
# -*- coding: utf-8 -*-
"""
    Created on Tue Nov  6 01:18:45 2018
    * @par Copyright (C): 2010-2019, Shenzhen Yahboom Tech
    * @file         face_tracking
    * @version      V1.0
    * @details
    * @par History

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"""
from __future__ import division
import cv2
#import Adafruit_PCA9685

import time

#This is a version without a servo

cap = cv2.VideoCapture(0)
cap.set(3, 320)
cap.set(4, 320)
#The location of face.xml should be in the same folder as the program.
face_cascade = cv2.CascadeClassifier( '123.xml' )
#loop
while True:
    ret,frame = cap.read()
    gray = cv2.cvtColor(frame,cv2.COLOR_BGR2GRAY)
    #First, convert each frame into a grayscale image and look it up in the gray
    faces = face_cascade.detectMultiScale( gray )
    max_face = 0
    value_x = 0
    if len(faces)>0:
        #print('face found!')
        for (x,y,w,h) in faces:
            #The parameters are "target frame", "rectangle", "rectangular size",
            cv2.rectangle(frame,(x,y),(x+h,y+w),(0,255,0),2)
            #max_face=w*h
            result = (x,y,w,h)

            x=result[0]
            y = result[1]

    cv2.imshow("capture", frame)
    if cv2.waitKey(1)==119:
        break

cap.release()
cv2.destroyAllWindows()

```

The result is as shown in the figure below. It will generate a rectangular around the face to framed the face.