

Chapter13: Raspberry Pi sends email face recognition

! 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.

The specific requirements of this project : Raspberry Pi start mail and OpenCV service. OpenCV real-time video surveillance of the camera, when the face is detected, the photo is taken, and the captured photo is sent to another mailbox by email in the form of a webpage picture.

The 2 methods of python sends emails.

The first method is to enable the sendmail service on the Raspberry Pi. This method is more complicated, you need to set your own domain name, address, etc., The second method is to use SMTP service of other email service providers (qq, Netease 163, Google gmail) . This time we use smtp service of QQ email and a QQ mailbox as the sender of the mail.

First, we need to enter the QQ mailbox by the browser, find the "Settings" under the user name at the top of the page - "Account" - "SMTP Service" - "POP3 / SMTP Service" - "select open"



Figure 1-1 Enter setting of email

邮箱设置

常规 帐户 换肤 收信规则 反垃圾 文件夹和标签 其他邮箱 我的订阅 信纸 体验室

显示

语言: English

文字大小: ☒ 标准 ☐ 中号 ☐ 大号

在邮件列表中: 每页显示 25(推荐) 封邮件

☒ 显示邮件摘要 ☐ 显示邮件大小

在首页上: ☐ 显示天气

所在地: 自动选择

(自动选择, 系统将根据你的IP自动显示你所在的城市的天明两天天气情况。)

☒ 在首页显示好友的生日提醒

左侧导航栏: 定制左侧导航应用...

左侧导航栏上有些应用(例: 漂流瓶、贺卡等)如果你不需要, 你可以进行定制, 不显示它们。

写信格式工具条: ☐ 显示格式工具条

QQ邮箱插件已安装 QQ邮箱插件能做什么?

写信默认字体: 字体: 默认 大小: 默认 颜色: 默认

保存更改

Figure 1-2 Switch language to English

Mail QQ邮箱 mail.qq.com

Compose Check Contacts

Inbox(102) Starred Group Mail(1) Draft(2) Sent Trash Spam(11) Subscription Pop Folder Calendar Notepad My Attachments File Hub

Mailbox Settings

General Accounts Filters Spam Folders and Labels Pop Folder Labs

Account Information

Send mail as: [Redacted]

(The nickname will appear as sender name in outgoing messages. You can set nickname for [Redacted])

Birthday: Lunar 五 廿六

☒ Birthday reminder to friends

(When your birthday is getting near, your friends will be noticed in the homepage of QQMail)

Default Sender Account

2448532184@qq.com

Mailbox Account

Mailbox Account: register english@qq.com account...

Figure 1-3 Select Accounts

Mail QQ邮箱
mail.qq.com

Compose
Check
Contacts

Inbox(102)
Starred ★
Group Mail(1)
Draft(2)
Sent
Trash
Spam(11) [Empty]
Subscription

Pop Folder

Calendar
Notepad
My Attachments
File Hub

Password

Lock Folders:
(Folder area contains "My Folders", "Pop Folder", "Notepad". You can lock these are

POP3/IMAP/SMTP/Exchange/CardDAV/CalDAV Service

Options: ☒ POP3/SMTP Service
☒ IMAP/SMTP Service
☐ Exchange Service
☒ CardDAV/CalDAV Service
(POP3/IMAP/SMTP/CardDAV/CalDAVservice support SSL Link)

When access mailbox via POP/SMTP: message(s)
☒ POP mails in My Folders
☒ POP mails in Trash
☒ After sending mail via SMTP, save a copy in server
(All above are available to POP3/IMAP/SMTP/Exchange)
☐ Remind me when there is a spam blocked
(This is available only to POP3.)

Options: ☐ Prevent Mail client from deleting messages
(Only available to POP3)

Close QQMail

(You will not receive any messages if you close your QQMail. The account and data

Association with other QQMail

Alternate QQMail can be suitable for different condition, for example, one is designed to se
Apply alternate mailbox automatically and the current associated with the mailbox, and you

Figure 1-4 Start SMTP service

Note: The QQ mailbox SMTP service may be require you to set a separate password for your email, this is normal case, but this password should be kept in mind, so as not to affect the normal use of the mailbox.

After the completion, the system will automatically generate a set of keys. After the key is saved, our configuration of the STMP service is completed.



Figure 1-5 Get the key

First, we need to configure SMTP service.

```
sendDate=0
sender = "xxxxxxx@qq.com"           #your QQ email
password = "xxxxxxx"                #Key of STMP service in the QQ mailbox
receiver = "xxxxxxx@xx.com"
#-----Mail service and port information-----#
smtp_server = "smtp.qq.com"
smtp_port = 465                      #STMP port of QQ
msg = MIMEMultipart('related')       #Use related to define the body of the
embedded resource
```

After the face is detected, the frame with the "face" is saved as a picture and saved locally. The file name is out.png. The path to the file needs to be reset by yourself. The existing out.png will be rewritten each time a new image is saved.

Then, setting the sender, receiver, and subject of the message.

Our requirement is to send a web page type message containing images, using the `MIMEText()` function. This method combines the text and images to be sent by html tags. Finally, add the generated web page to msg for sending.

```
img_file =
open('/home/pi/Adafruit_Python_PCA9685/face_warning_email/out.png','rb')
    img_data = img_file.read()
    img_file.close()
    img = MIMEImage(img_data)
    img.add_header('Content-ID', '0')
    msg.attach(img)
    msg["From"] = Header("yahboom", "utf-8")
    msg["To"] = Header(receiver, "utf-8")
    msg["Subject"] = Header("face detected", "utf-8")
    #-----Add the image as body content-----
    message = MIMEText("<p>careful!!!!</p><p>human approach
your device</p><img src='cid:0'/>", "html", "utf-8")
```

#plain Represent plain text
 msg.attach(message)

The source code of the program is located at:

/home/pi/yahboom/email_face/email_face.py

Before running the program, you need to modify the "sender", "password" and "receiver" in the file according to your actual situation.

```

1 |#!/usr/bin/env python2
2 |# -*- coding: utf-8 -*-
3 |"""
4 |    Created on Tue Nov  6 01:18:45 2018
5 |    * @par Copyright (C): 2010-2019, Shenzhen Yahboom Tech
6 |    * @file      email_face
7 |    * @version    V1.0
8 |    * @details
9 |    * @par History
10 |
11 |    @author: longfuSun
12 |"""
13 |
14 |from __future__ import division
15 |import cv2
16 |
17 |import time
18 |import signal
19 |import sys
20 |reload(sys)
21 |sys.setdefaultencoding('utf8')
22 |#-----The above is the control coding method
23 |import smtplib                                #Import SMTP protocol package
24 |from email.mime.text import MIMEText
25 |from email.header import Header
26 |from email.mime.multipart import MIMEMultipart #Create a message body with multiple parts
27 |from email.mime.base import MIMEBase
28 |from email.mime.image import MIMEImage
29 |import os.path                                #Analysis path
30 |from email import Encoders
31 |
32 |sendDate=0
33 |sender = "pi-motion@yahboom.com"              #Send mailbox
34 |password = "Yahboom0729"
35 |receiver = "sdsunlongfu2017@163.com"          #receive mailbox
36 |#-----Mail service and port information-----
37 |smtp_server = "smtp.yahboom.com"
38 |smtp_port = 465                               #STMP port of QQ
39 |msg = MIMEMultipart('related')
  
```

```

38 smtp_port = 465                                     #SMTP port of QQ
39 msg = MIMEMultipart('related')
40
41
42
43 cap = cv2.VideoCapture(0)
44 cap.set(3, 480)
45 cap.set(4, 320)
46 #Comparator xml location
47 face_cascade = cv2.CascadeClassifier( '123.xml' )
48
49 while True:
50     ret,frame = cap.read()
51     gray = cv2.cvtColor(frame,cv2.COLOR_BGR2GRAY)
52     faces = face_cascade.detectMultiScale( gray )
53     max_face = 0
54     value_x = 0
55     font=cv2.FONT_HERSHEY_SIMPLEX
56     #Record the time of shooting
57     cv2.putText(frame,time.strftime("%Y-%m-%d %H:%M:%S",time.localtime()),(20,20),font,0.8,(255,255,255),1)
58     if len(faces)>0:
59         print('face found!')
60         currentDate=time.time()
61
62         for (x,y,w,h) in faces:
63             cv2.rectangle(frame,(x,y),(x+h,y+w),(0,255,0),2)#0,255,0
64             #max_face=w*h
65             result = (x,y,w,h)
66             x=result[0]
67             y = result[1]
68
69             #Avoid repeating shots in a short time, set the timestamp
70             if currentDate-sendDate>600:
71                 cv2.imwrite("out.png", frame)
72
73
74                 img_file = open('out.png','rb')
75                 img_data = img_file.read()
76                 img_file.close()
77                 img = MIMEImage(img_data)
78
79                 img.add_header('Content-ID', '0') #The header of a normal attachment is different
80                 msg.attach(img)
81                 msg["From"] = Header("yahboom", "utf-8")
82                 msg["To"] = Header(receiver, "utf-8")
83                 msg["Subject"] = Header("face detected", "utf-8")
84
85                 message = MIMEText("<p>careful!!!!</p><p>human approach your device</p><img src='cid:0'/>", "html", "utf-8")
86                 msg.attach(message)
87                 contype = 'application/octet-stream'
88                 maintype, subtype = contype.split('/', 1)
89                 try:
90                     #QQ must use .SMTP_SSL
91                     #Other servertry:.SMTP
92                     smtpobject = smtplib.SMTP_SSL(smtp_server , smtp_port)
93                     smtpobject.login(sender , password)
94                     #message.as_string() change the MIMEText object into a string
95                     smtpobject.sendmail(sender , [receiver] , msg.as_string())
96                     print ("发送成功")
97                 except smtplib.SMTPException :
98                     print ("发送失败!")
99                     smtpobject.quit()
100                    sendDate=time.time()
101                    cv2.imshow("capture", frame)
102                    if cv2.waitKey(1)==119:
103                        break
104 cap.release()
105 cv2.destroyAllWindows()

```

The effect of the operation as shown figure1-6 below.



Figure1-6