

DLib 配置与 pip 安装

【操作步骤】

1. apt 安装一些基础软件
2. 配置 DLib 人脸探测, 尝试启动
3. 手工安装 face_recognition
 - a) 查看 HA 中 dlib_face_detect.py 源程序
 - b) pip 安装的程序包选择次序
 - c) pip 安装中的 USERBASE
 - d) pip 安装中的本地 wheel 包

【参考】

- Dlib 人脸探测配置说明文档
https://www.home-assistant.io/components/image_processing.dlib_face_detect/
- apt-get 安装命令
`sudo apt-get install libatlas-base-dev cmake`
- Dlib 人脸探测配置 (example_9_1_1.yaml)

```
image_processing:  
  - platform: dlib_face_detect  
    scan_interval: 1000000  
    source:  
      - entity_id: camera.cam7
```
- 手工安装 face_recognition
`export PYTHONUSERBASE=/home/pi/.homeassistant/deps`
`pip3 install face_recognition==1.0.0 --upgrade --user`
如果要指定从 piwheels 下载安装, 在 pip3 命令中增加
`-i https://www.piwheels.org/simple`

本地 DLib 人脸探测

【操作步骤】

1. 使用 vlc 配置一个抓屏摄像头
2. Dlib 人脸探测配置解说
3. 使用 packages 方式保存配置文件
4. 配置 whitelist_external_dirs
5. 演示人脸探测，观察 CPU 状态

【参考】

- VLC http mjpeg 输出配置

```
:sout=#transcode{vcodec=MJPEG,vb=800,scale=自  
动,acodec=none,scodec=none}:standard{access=http{mime=multipart/x-mixed-replace;  
boundary=7b3cc56e5f51db803f790dad720ed50a},mux=mpjpeg,dst=:8888} :no-sout-all :sout-keep
```

注：最新版的 vlc，可能会将 8888 仅监听到 ipv6 上；可以修改为：`dst=x.x.x.x:8888`

其中，x.x.x.x 是你的 pc 的 ip 地址

- DLib 人脸探测配置说明文档

https://www.home-assistant.io/components/image_processing.dlib_face_detect/

- DLib 人脸探测配置 (example_9_2_1.yaml)

```
# example_9_2_1.yaml  
image_processing:  
  - platform: dlib_face_detect  
    scan_interval: 1000000  
    source:  
      - entity_id: camera.cam_input  
        name: face  
script:  
  dlib_face_detect:  
    alias: 人脸探测并保存图片  
    sequence:  
      - service: image_processing.scan  
        data:  
          entity_id: image_processing.face  
      - service: camera.snapshot  
        data:  
          entity_id: camera.cam_input  
          filename: '/home/pi/Pictures/face.jpg'  
camera:  
  - platform: local_file  
    name: image_to_be_processed  
    file_path: /home/pi/Pictures/face.jpg
```

本地 DLib 人脸识别

【操作步骤】

1. 使用 vlc 配置一个抓屏摄像头 (同上一个视频)
2. 上传人物标准照片
3. DLib 人脸识别配置解说
4. 使用 packages 方式配置
5. 演示人脸识别, 观察 CPU 状态

【参考】

- VLC http mjpeg 输出配置 (同上一篇)

```
:sout=#transcode{vcodec=MJPEG,vb=800,scale=自  
动,acodec=none,scodec=none}:standard{access=http{mime=multipart/x-mixed-replace;  
boundary=7b3cc56e5f51db803f790dad720ed50a},mux=mpjpeg,dst=:8888} :no-sout-all :sout-keep
```

- DLib 人脸识别配置说明文档

https://www.home-assistant.io/components/image_processing.dlib_face_identify/

- DLib 人脸识别配置 (example_9_3_1.yaml)

```
# example_9_3_1.yaml  
image_processing:  
  - platform: dlib_face_identify  
    scan_interval: 1000000  
    source:  
      - entity_id: camera.cam_input  
        name: face_id  
    faces:  
      Trump: /home/pi/Pictures/trump.jpg  
      Obama: /home/pi/Pictures/obama.jpg  
      Clinton: /home/pi/Pictures/clinton.jpg  
script:  
  dlib_face_identify:  
    alias: 人脸识别  
    sequence:  
      - service: image_processing.scan  
        data:  
          entity_id: image_processing.face_id  
      # - service: camera.snapshot  
      # data:  
      #   entity_id: camera.cam_input  
      #   filename: '/home/pi/Pictures/face.jpg'  
# camera:  
# - platform: local_file  
#   name: image_to_be_processed  
#   file_path: /home/pi/Pictures/face.jpg  
  
automation:  
  - alias: Clinton coming  
    trigger:  
      platform: event  
      event_type: image_processing.detect_face  
      event_data:  
        entity_id: image_processing.face_id  
        name: 'Clinton'  
    action:  
      service: persistent_notification.create  
      data:  
        title: '发现认识的人'  
        message: '克林顿出现在屏幕上'  
  - alias: Obama coming  
    trigger:  
      platform: event
```

```
event_type: image_processing.detect_face
event_data:
  entity_id: image_processing.face_id
  name: 'Obama'
action:
  service: persistent_notification.create
  data:
    title: '发现认识的人'
    message: '奥巴马出现在屏幕上'
- alias: Trump coming
trigger:
  platform: event
  event_type: image_processing.detect_face
  event_data:
    entity_id: image_processing.face_id
    name: 'Trump'
action:
  service: persistent_notification.create
  data:
    title: '发现认识的人'
    message: '川普出现在屏幕上'
```

微软人脸特征检测

【操作步骤】

1. 申请免费的微软认知/人脸服务 key
2. 微软人脸特征检测配置解说
3. 使用 vlc 配置一个抓屏摄像头 (同上一个视频)
4. 效果实验

【参考】

- 微软人脸云服务
<https://azure.microsoft.com/zh-cn/services/cognitive-services/face/>
- HA 中微软人脸探测配置说明文档
https://www.home-assistant.io/components/image_processing.microsoft_face_detect/
- 微软人脸探测配置样例 (example_9_4_1.yaml)

```
# example_9_4_1.yaml
microsoft_face:
  api_key: xxxxxxxxxxxxxxxx
  azure_region: westcentralus

image_processing:
  - platform: microsoft_face_detect
    scan_interval: 1000000
    source:
      - entity_id: camera.cam_input
        name: ms_face_feature
    attributes:
      - age
      - gender
      - glasses

script:
  ms_face_detect:
    alias: 微软人脸特征识别
    sequence:
      - service: image_processing.scan
        data:
          entity_id: image_processing.ms_face_feature

automation:
  - alias: Somebody appearing
    trigger:
      platform: event
      event_type: image_processing.detect_face
      event_data:
        entity_id: image_processing.ms_face_feature
    action:
      service: tts.google_say
      entity_id: "all"
      data_template:
        message: >
          {% if trigger.event.data.glasses=="ReadingGlasses" %}
            {% set message = '眼镜' %}
            {% if trigger.event.data.gender=="male" %}
              {% set message=message+'男' %}
            {% else %}
              {% set message=message+'女' %}
            {% endif %}
          {% else %}
            {% if trigger.event.data.gender=="male" %}
              {% set message='男人' %}
            {% else %}
              {% set message='女人' %}
            {% endif %}
          {% endif %}
```

```
{% set message='女人' %}
{% endif %}
{% endif %}
发现一个{{ message }}, 大概{{ trigger.event.data.age|int }}岁。
```

- VLC http mjpeg 输出配置（同上一篇）

```
:sout=#transcode{vcodec=MJPEG,vb=800,scale=自  
动,acodec=none,scodec=none}:standard{access=http{mime=multipart/x-mixed-replace;  
boundary=7b3cc56e5f51db803f790dad720ed50a},mux=mpjpeg,dst=:8888/} :no-sout-all :sout-keep
```

微软人脸识别与认证

【操作步骤】

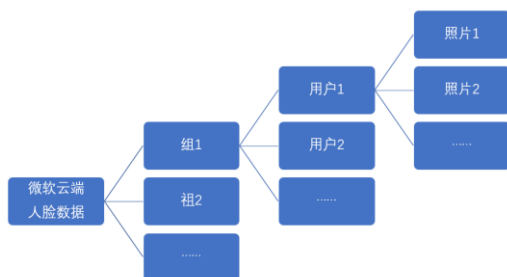
1. 准备标准照待用
2. 在微软人脸云服务中配置组、用户、标准照片
3. 微软人脸识别配置解说
4. 使用 vlc 配置一个抓屏摄像头（同上一个视频）
5. 效果实验

【参考】

- 微软人脸云服务 API 说明

<https://westcentralus.dev.cognitive.microsoft.com/docs/services/563879b61984550e40cbbe8d/operations/563879b61984550f30395236>

- 微软人脸云端数据结构



- 相关 API 调用命令

■ 创建组

```
curl -X PUT "https://westcentralus.api.cognitive.microsoft.com/face/v1.0/persongroups/presidents" \
-H "Content-Type: application/json" \
-H "Ocp-Apim-Subscription-Key: 4211c17af9b14ff581a41492bd7b069b" \
--data-ascii '{"name': 'PresidentsInUS', 'userData': 'Presidents of United States}'"
```

■ 创建用户

```
curl -X POST "https://westcentralus.api.cognitive.microsoft.com/face/v1.0/persongroups/presidents/persons" \
-H "Content-Type: application/json" \
-H "Ocp-Apim-Subscription-Key: 4211c17af9b14ff581a41492bd7b069b" \
--data-ascii '{"name': 'Clinton', 'userData': 'Bill Clinton}'"
```

■ 上传用户照片

```
curl -X POST \
"https://westcentralus.api.cognitive.microsoft.com/face/v1.0/persongroups/presidents/persons/bb6d222a-8956-40ee-8a78-e00ccd3c6503/persistedFaces" \
-H "Ocp-Apim-Subscription-Key: 4211c17af9b14ff581a41492bd7b069b" \
-H "Content-Type: application/octet-stream" \
--data-binary "@/home/pi/Pictures/clinton.jpg"
```

■ 训练组

```
curl -X POST "https://westcentralus.api.cognitive.microsoft.com/face/v1.0/persongroups/presidents/train" \
-H "Ocp-Apim-Subscription-Key: 4211c17af9b14ff581a41492bd7b069b" \
--data-ascii ""
```

- HA 中微软人脸识别配置说明文档

https://www.home-assistant.io/components/image_processing.microsoft_face_identify/

- 微软人脸识别与认证配置样例 (example_9_5_1.yaml)

```
# example_9_5_1.yaml
microsoft_face:
  api_key: 4211c17af9b14ff581a41492bd7b069b
  azure_region: westcentralus

image_processing:
  - platform: microsoft_face_identify
    scan_interval: 1000000
    group: presidents
    confidence: 10
    source:
      - entity_id: camera.cam_input
        name: ms_face_identify

script:
  ms_face_identify_script:
    alias: 微软人脸识别
    sequence:
      - service: image_processing.scan
        data:
          entity_id: image_processing.ms_face_identify

automation:
  - alias: Clinton Identify
    trigger:
      platform: event
      event_type: image_processing.detect_face
      event_data:
        entity_id: image_processing.ms_face_identify
        name: 'Clinton'
    action:
      service: persistent_notification.create
      data_template:
        title: '人脸认证'
        message: '克林顿出现在摄像头中, 可信度{{ trigger.event.data.confidence }}%'
```

- VLC http mjpeg 输出配置 (同上一篇)

```
:sout=#transcode{vcodec=MJPEG,vb=800,scale=自
动,acodec=none,scodec=none}:standard{access=http{mime=multipart/x-mixed-replace;
boundary=7b3cc56e5f51db803f790dad720ed50a},mux=mpjpeg,dst=:8888/} :no-sout-all :sout-keep
```


Facebox-在 docker 中运行人脸识别

【操作步骤】

1. 安装 docker
2. 获得 MB_KEY
3. 启动 machinebox/facebox
4. 在 facebox 的 web 界面中传入标准照并进行识别操作
5. 在 HA 中配置与使用 facebox

【参考】

- Linux 下 docker 的安装
`curl -fsSL get.docker.com -o get-docker.sh && sh get-docker.sh`
- Windows 下 docker 的安装
<https://docs.docker.com/docker-for-windows/install/>
- facebox 网站
<https://machinebox.io/docs/facebox>
- MB_KEY 获得
<https://machinebox.io/account>
- docker 运行 facebox
`docker run -d --name=facebox --restart=always -p 9999:8080 -e "MB_KEY=$MB_KEY" machinebox/facebox`
- 测试照片 URL
<https://a57.foxnews.com/static.foxnews.com/foxnews.com/content/uploads/2018/09/1862/1048/billhillaryclintonreut.jpg?ve=1&tl=1>
- HA 中 facebox 配置样例 (example_9_6_1.yaml)

```
# example_9_6_1.yaml
image_processing:
  - platform: facebox
    scan_interval: 1000000
    ip_address: 192.168.3.156
    port: 9999
    confidence: 10
    source:
      - entity_id: camera.cam_input
        name: facebox_identify

script:
  ms_face_identify_script:
    alias: facebox 人脸识别
    sequence:
      - service: image_processing.scan
        data:
          entity_id: image_processing.facebox_identify

automation:
  - alias: Clinton Identify
    trigger:
      platform: event
      event_type: image_processing.detect_face
      event_data:
        entity_id: image_processing.facebox_identify
        name: 'Clinton'
    action:
      service: persistent_notification.create
      data_template:
        title: '人脸认证'
        message: '克林顿出现在摄像头中, 可信度{{ trigger.event.data.confidence }}%
```