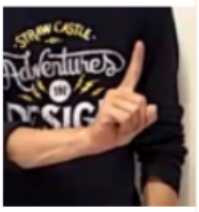
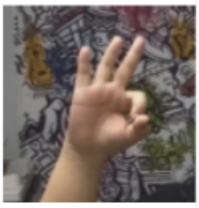
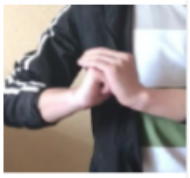
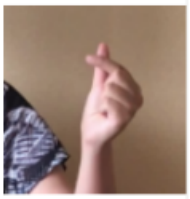
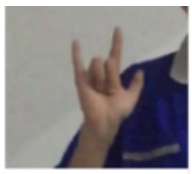
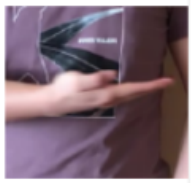
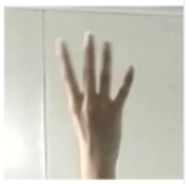
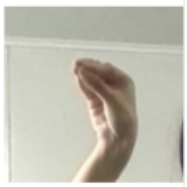
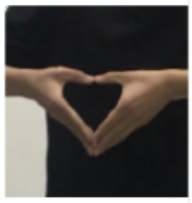
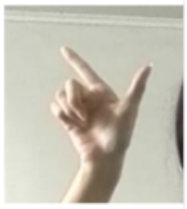
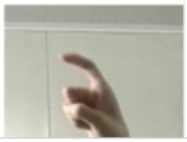
# 1.Gesture Recognition

Gestures supported by gesture recognition and example images:

| Serial number | Gestures name | Sample |
| --- | --- | --- |
| 1 | number_1 |  |
| 2 | number_5 |  |
| 3 | fist |  |
| 4 | ok |  |
| 5 | pray |  |
| 6 | congratulation |  |
| 7 | honour |  |
| 8 | heart_single |  |
| 9 | thumb_up |  |
| 10 | thumb_down |  |

| | | | | | |
|---|---|---|---|---|---|
| 11 | i_love_you |  | 17 | number_3 |  |
| 12 | palm_up |  | 18 | number_4 |  |
| 13 | heart_1 |  | 19 | number_6 |  |
| 14 | heart_2 |  | 20 | number_7 |  |
| 15 | heart_3 |  | 21 | number_8 |  |
| 16 | number_2 |  | 22 | number_9 |  |

| | | |
|---|---|---|
| 23 | rock |  |

API function

```
from aip import AipBodyAnalysis
""" your APPID AK SK """
APP_ID = 'your App ID'
API_KEY = 'your Api Key'
SECRET_KEY = 'your Secret Key'
client = AipBodyAnalysis(APP_ID, API_KEY, SECRET_KEY)
""" Read pictures """
def get_file_content(filePath):
with open(filePath, 'rb') as fp:
return fp.read()
image = get_file_content('example.jpg')
""" Invoking gesture recognition """
Res = client.gesture(image);
```

Gesture recognition return example:

```
{
"log_id": 4466502370458351471,
"result_num": 2,
"result": [{
"probability": 0.9844077229499817,
"top": 20,
"height": 156,
"classname": "Face",
"width": 116,
"left": 173
},
{
"probability": 0.4679304957389832,
"top": 157,
"height": 106,
"classname": "Heart_2",
"width": 177,
"left": 183
}
}
```

## Main code

Code path：/home/jetson/Dofbot/5.AI_Visuall/4.Gesture recognition.ipynb

When importing Baidu API, it is important to change the key to the one you applied for.

```
import cv2
import time
import demjson
import pygame
from aip import AipBodyAnalysis
from aip import AipSpeech
from PIL import Image, ImageDraw, ImageFont
import numpy
import ipywidgets.widgets as widgets
```

```
# For specific gestures, please see official information.
https://ai.baidu.com/ai-doc/BODY/4k3cpywrv
#Please refer to the official information for specific gestures
https://ai.baidu.com/ai-doc/BODY/4k3cpywrv
hand={'One':'number 1','Two':'number 2','Three':'number 3','Four':'number 4',
      'Five':'number 5', 'Six':'number 6','Seven':'number 7',
      'Eight':'number 8','Nine':'number 9','Fist':'Fist','Ok':'OK',
      'Prayer':'Prayer','Congratulation':'Bow','Honour':'Farewell',
      'Heart_single':'Show heart','Thumb_up':'Like','Thumb_down':'Diss',
      'ILY':'I love you','Palm_up':'Palm up','Heart_1':'Hands show heart1',
      'Heart_2':'Hands show heart2','Heart_3':'Hands show heart3','Rock':'Rock',
      'Insult':'Erect middle finger','Face':'Face'}

# The following keys need to be replaced with your own
#The key below needs to be replaced with one's own
""" Human analysis APPID AK SK """
APP_ID = '31069241'
API_KEY = 'pxVueLwdAGX4dafYeLsLdZa1'
SECRET_KEY = 'VsDmfGRlWGqzGhcWowoCT5km4TG4Gylq'


client = AipBodyAnalysis(APP_ID, API_KEY, SECRET_KEY)


g_camera = cv2.VideoCapture(0)
g_camera.set(3, 640)
g_camera.set(4, 480)
g_camera.set(5, 30)  #Set frame rate
g_camera.set(cv2.CAP_PROP_FOURCC, cv2.VideoWriter.fourcc('M', 'J', 'P', 'G'))
g_camera.set(cv2.CAP_PROP_BRIGHTNESS, 40) #Set brightness -64 - 64  0.0
g_camera.set(cv2.CAP_PROP_CONTRAST, 50) #Set contrast -64 - 64  2.0
g_camera.set(cv2.CAP_PROP_EXPOSURE, 156) #Set exposure value 1.0 - 5000  156.0

ret, frame = g_camera.read()
```

Camera display component

```
image_widget = widgets.Image(format='jpeg', width=600, height=500)  #Set up the
camera display component
display(image_widget)
image_widget.value = bgr8_to_jpeg(frame)
```

Main display and display results program.

```
try:

    while True:
        """1.Take photos """
        ret, frame = g_camera.read()

        #image = get_file_content('./image.jpg')

        """ 2.Invoking gesture recognition """
```

```
        raw = str(client.gesture(image_widget.value))
        text = demjson.decode(raw)
        try:
            res = text['result'][0]['classname']
        except:
    #         print('Recognition result: Nothing was recognized~' )
    #         img = cv2ImgAddText(frame, "Not recognized", 250, 30, (0, 0 , 255),
30)
            img = frame
        else:
    #         print('Recognition results: ' + hand[res])
    #         img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)
            if res == 'Prayer': # 1 pray
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == 'Thumb_up':# 2 like
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == 'Ok': # 3 OK
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == 'Heart_single': # 4 Showing heart with one hand
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == 'Five': # 5 number 5
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == "Eight": # number 8
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == "Rock": # rock
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == "Congratulation": # bow
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == "Seven": # number 7
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            elif res == "Thumb_down": # Thumb down
                print('Recognition results: ' + hand[res])
                img = cv2ImgAddText(frame, hand[res], 250, 30, (0, 255 , 0), 30)

            else:
                img = frame
        image_widget.value = bgr8_to_jpeg(img)
```

```
except KeyboardInterrupt:
    print(" Program closed! ")
    pass
```

After the code block is run, you can see the recognition screen. **Note, if you cannot identify Baidu, apply for your own secret key.**