4.1.3 Gesture recognition voice broadcast

Combining gesture recognition and voice broadcast.

The process is as follows:

1. Gesture recognition and speech synthesis initialization
2. Camera initialization
3. Read the camera
4. The camera data is transferred to the gesture recognition interface
5. The recognition result is passed to the speech synthesis interface
6. The result of voice broadcast recognition.

Code path:

/home/pi/Yahboom_Project/4.AI Voice course/04.Gesture_Recognition_Voice .ipynb

```
#bgr8 to jpeg format
import enum
import cv2

def bgr8_to_jpeg(value, quality=75):
    return bytes(cv2.imencode('.jpg', value)[1])
```

```
# Gesture recognition and camera initialization
import cv2
import time
import demjson
import pygame
from aip import AipBodyAnalysis
from aip import AipSpeech

import ipywidgets.widgets as widgets

hand={'One':'one','Five':'five','Fist':'fist','Ok':'OK',
      'Prayer':'pray','Congratulation':'congratulation','Honour':'honour',
      'Heart_single':'heart_single','Thumb_up':'thumb_up','Thumb_down':'thumb_
      down','ILY':'i_love_you','Palm_up':'palm_up','Heart_1':'heart_1',
      'Heart_2':'heart_2','Heart_3':'heart_3','Two':'two',
      'Three':'three','Four':'four','Six':'six','Seven':'seven',
      'Eight':'eight','Nine':'nine','Rock':'rock','Face':'face'}

# Change the key below to your own key
""" Analysis of body APPID AK SK """
APP_ID = '18550528'
API_KEY = 'K6PWqtiUTKYK1fYaz13O8E3i'
SECRET_KEY = 'IDBUII1j6srF1XVNDX32I2WpuwBWczzK'
""" voice technology APPID AK SK """
SpeechAPP_ID = '17852430'
```

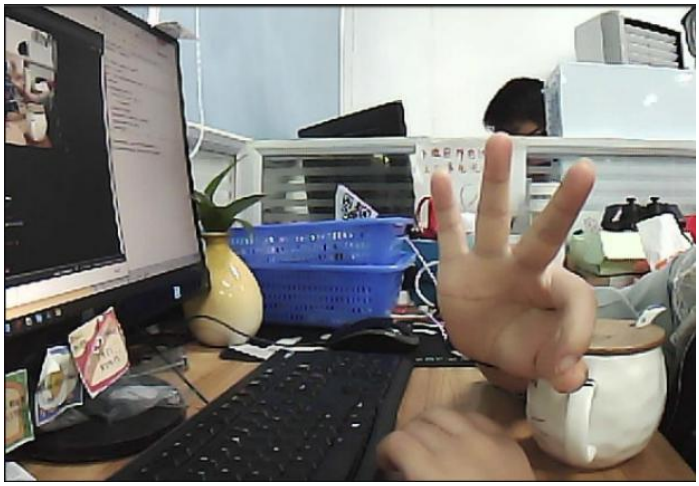
```
SpeechAPI_KEY ='eGeO4iQGAjHCrzBTYd1uvTtf'
SpeechSECRET_KEY = 'Cn1EVsUngZDbRLv4OxAFrDHSo8PsvFVP'


#camera = PiCamera()
client = AipBodyAnalysis(APP_ID, API_KEY, SECRET_KEY)
Speechclient = AipSpeech(SpeechAPP_ID, SpeechAPI_KEY, SpeechSECRET_KEY)

""" Reading picture """
# def get_file_content(filePath):
#         with open(filePath, 'rb') as fp:
#                 return fp.read()
pygame.mixer.init()


g_camera = cv2.VideoCapture(0)
g_camera.set(3, 640)
g_camera.set(4, 480)
g_camera.set(5, 120)    #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 1.0 - 5000    156.0

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

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

```
#Main process
while True:
        """1.Take a picture """
        pygame.mixer.music.stop()
        retval, frame = g_camera.read()

        ret, frame = g_camera.read()
        image_widget.value = bgr8_to_jpeg(frame)
        #image = get_file_content('./image.jpg')

        """ 2.Call gesture recognition function """
        raw = str(client.gesture(image_widget.value))
        text = demjson.decode(raw)
        try:
                res = text['result'][0]['classname']
```

```
        except:
            print('Result: nothing' )
        else:
            print('Result:' + hand[res])

            """ 3.Call text to speech function"""
            content = hand[res]
            result = Speechclient.synthesis(content, 'zh', 1, {'spd': 2, 'vol': 1, 'per': 1})
            #print(result)
            if not isinstance(result, dict):
                with open('./res.mp3', 'wb') as f:
                    f.write(result)
                pygame.mixer.init()
                pygame.mixer.music.load('./res.mp3')
                pygame.mixer.music.play()
                time.sleep(2)
```

After we run above program, we can see following interface.
When some gesture are recognized, the voice will be broadcast.



```
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result: nothing
Result:OK
Result:OK
Result:OK
Result:fist
```