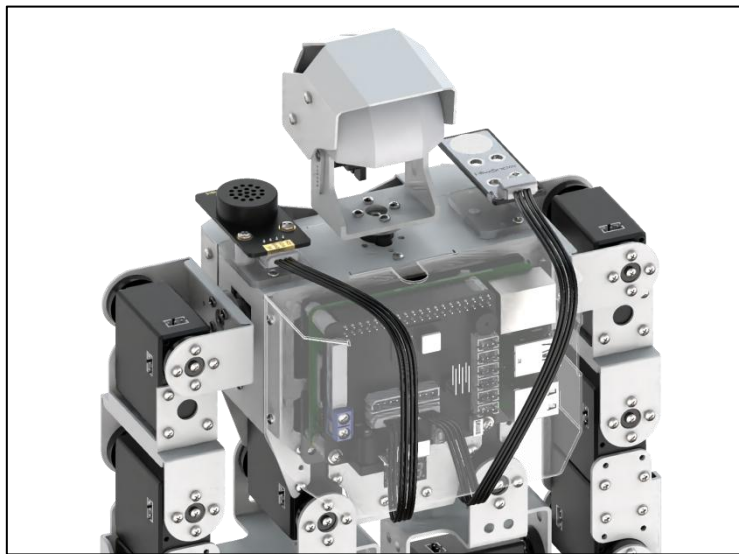# Lesson 2 Sing and Dance

1. Getting Ready

Prepare a touch sensor and MP3 module, and then install them on the expansion holes of shoulder (two elements, unlimited shoulder position). The specific installation method can refer to the file "Sensor Installing and Wiring" under the same directory.

2. Working Principle

Let's look at the working principle:

When touch the metal plate of the sensor, the controller will receive a low-level signal. Otherwise, it will receive a high-level signal. According to this characteristics, sum the number of the output low level signal and combine MP3 module, the number of touch corresponds to different song and dance.

The source code of the program is located in **home/pi/TonyPi/Extend/TouchColor_MP3.py**

```
17    # 触摸控制跳舞
18
19
20    servo_data = None
21  ⊟def load_config():
22        global servo_data
23
24        servo_data = yaml_handle.get_yaml_data(yaml_handle.
          servo_file_path)
25
26    load_config()
27    servo2_pulse = servo_data['servo2']
28
29    # 初始位置
30  ⊟def initMove():
31        Board.setPWMServoPulse(1, 1500, 500)
32        Board.setPWMServoPulse(2, servo2_pulse, 500)
33
34
35  ⊟def setBuzzer(sleeptime):
```
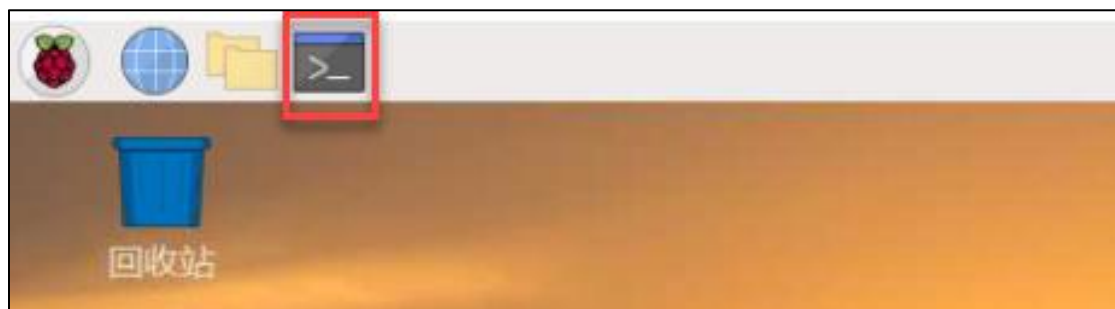
3. Operation Steps

ℹ The entered command must pay attention to case sensitivity and space.

1) Turn on the robot and connect to Raspberry Pi desktop with VNC.

2) Click ![terminal icon] or press "Ctrl+Alt+T" to open LX terminal.

3) Enter "cd TonyPi/Extend/" and press "Enter" to come to the directory of game programmings.

4) Enter "sudo python3 FaceTrack_Fan.py" command, and then press "Enter" to start the game.

5) If want to exit the game, press "Ctrl+C" in the LX terminal. Please try multiple times if fail to exit.

4. Project Outcome

After the program is started, touch the touch sensor on the robot's shoulder, and then the buzzer will give feedback. The robot will perform corresponding dance and song according to the number of touches, as the table shown below:

The number of touches	Song
1	小苹果

2	超级冠军
3	爱出发

5. Function Extension

The default volume of playing song is 30. If want to adjust the volume (This section takes reducing the volume to 10 as example), please refer to the following steps.

1) Enter "cd TonyPi/Extend/" command and press "Enter" to come to the directory of the game programmings.

```
pi@raspberrypi:~ $ cd TonyPi/Extend/
```

2) Enter "sudo vim TouchColor_MP3.py" command and press "Enter" to open the game program file.

```
pi@raspberrypi:~ $ cd TonyPi/Extend/
pi@raspberrypi:~/TonyPi/Extend $ sudo vim TouchColor_MP3.py
```

3) Find the code shown in the figure below:

4) Press "i" on keyboard. When "Insert" appears in the lower left corner, which means it has entered the editing mode.

5) Modify "30" in "mp3.volume(30)" to "10", as the figure shown below:

```
69          if Timewait:
70              if int(time.time() - time_) >= 1 :
71                  print(num)
72                  if num == 1:
73                      mp3.volume(10) #设置音量为10，注意在播放前设置
74                      mp3.playNum(18) #播放歌曲18
75                      time.sleep(0.8)
76                      AGC.runActionGroup('18号小苹果舞蹈')
77                  elif num == 2:
78                      mp3.volume(10)
79                      mp3.playNum(22)
80                      time.sleep(0.8)
81                      AGC.runActionGroup('22号超级冠军舞蹈')
82                  elif num == 3:
83                      mp3.volume(10)
84                      mp3.playNum(24)
85                      time.sleep(0.8)
86                      AGC.runActionGroup('24号爱出发舞蹈')
87                  else:
88                      time.sleep(0.3)
89                      setBuzzer(0.2)
90                      time.sleep(0.1)
91                      setBuzzer(0.2)
-- 插入 --                                        82,31          91%
```

6) After modification, press "Esc" and then enter ":wq" (Please note that the colon is in front of wq). Then press "Enter" to save and exit the modified content.


```
69          if Timewait:
70              if int(time.time() - time_) >= 1 :
71                  print(num)
72                  if num == 1:
73                      mp3.volume(10) #设置音量为10，注意在播放前设置
74                      mp3.playNum(18) #播放歌曲18
75                      time.sleep(0.8)
76                      AGC.runActionGroup('18号小苹果舞蹈')
77                  elif num == 2:
78                      mp3.volume(10)
79                      mp3.playNum(22)
80                      time.sleep(0.8)
81                      AGC.runActionGroup('22号超级冠军舞蹈')
82                  elif num == 3:
83                      mp3.volume(10)
84                      mp3.playNum(24)
85                      time.sleep(0.8)
86                      AGC.runActionGroup('24号爱出发舞蹈')
87                  else:
88                      time.sleep(0.3)
89                      setBuzzer(0.2)
90                      time.sleep(0.1)
91                      setBuzzer(0.2)
:wq
```