

## Unpacking test

### 1. The role of Unpacking test

In order to ensure the quality of products, we have tested the quality of products before leaving the factory.

However, we cannot completely avoid the product damage caused by the product in the process of transportation, storage and express delivery.

In order to reduce subsequent troubles, we have made unpacking test documents for you to ensure that the product quality is intact before you use the product.

If there is a module failure, please contact us: [support@adeept.com](mailto:support@adeept.com)

### 2. Preparing for the test

1. You need to prepare a Raspberry Pi 3B or 3B+ or 4B (we do not provide Raspberry Pi and SD card, users need to purchase additionally)

**2. Complete the first three courses under the path: "Tutorials/3. Basic course/".** (This step is the basis of the test, please be sure to complete it.)

3. You need to use 18650 battery for power supply, please confirm that the 18650 battery is fully charged. (18650 batteries need to be charged with 18650 battery chargers, users need to purchase additional battery chargers)

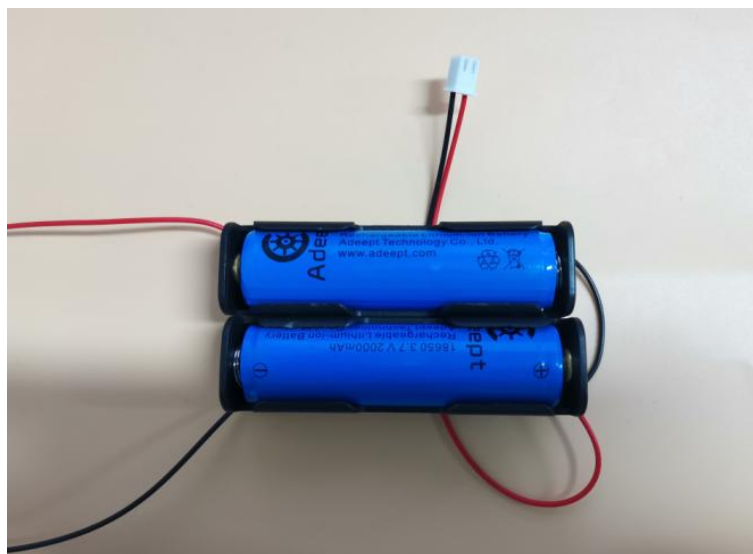
### 3. Sensor module

Name	Quantity
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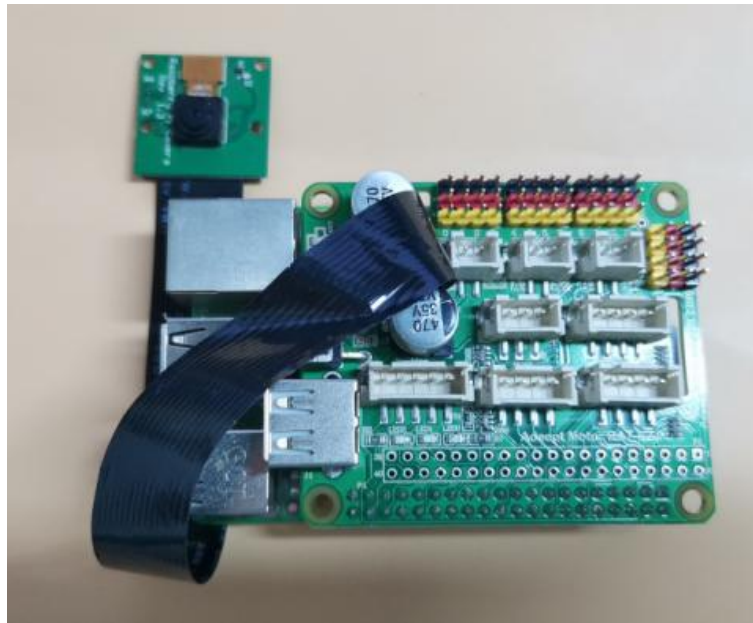
Raspberry Pi Camera	1
Adeept Motor HAT	1
18650 Battery Holder Set	1
Ultrasonic Module	1
Tracking Module	1
WS2812 LED	4
GA12-N20 Gear Motor	2
Servo	5

## 4. Circuit connection

### 4.1 Put the fully charged 18650 battery into the battery case correctly.



## 4.2 Install the camera and Motor HAT on the Raspberry Pi.



## 4.3 Install the sensor module and power supply.

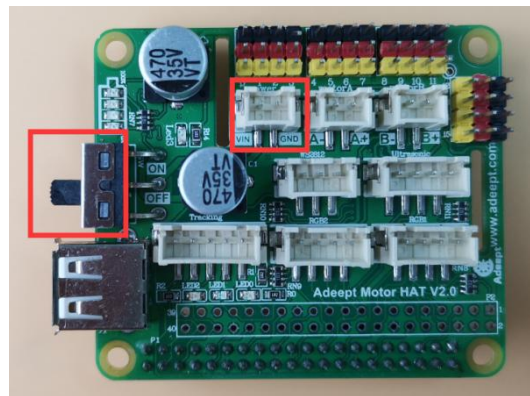
### Install 4 WS2812 modules using 3-pin wires.

Pay attention to the direction of the signal line when connecting. The signal line needs to be connected to the “**IN**” port of WS2812 LED after being led from the Raspberry Pi. When the next WS2812 LED needs to be connected, we connect a signal wire drawn from the “**OUT**” port of the previous WS2812 LED with the “**IN**” port of the next WS2812 LED.

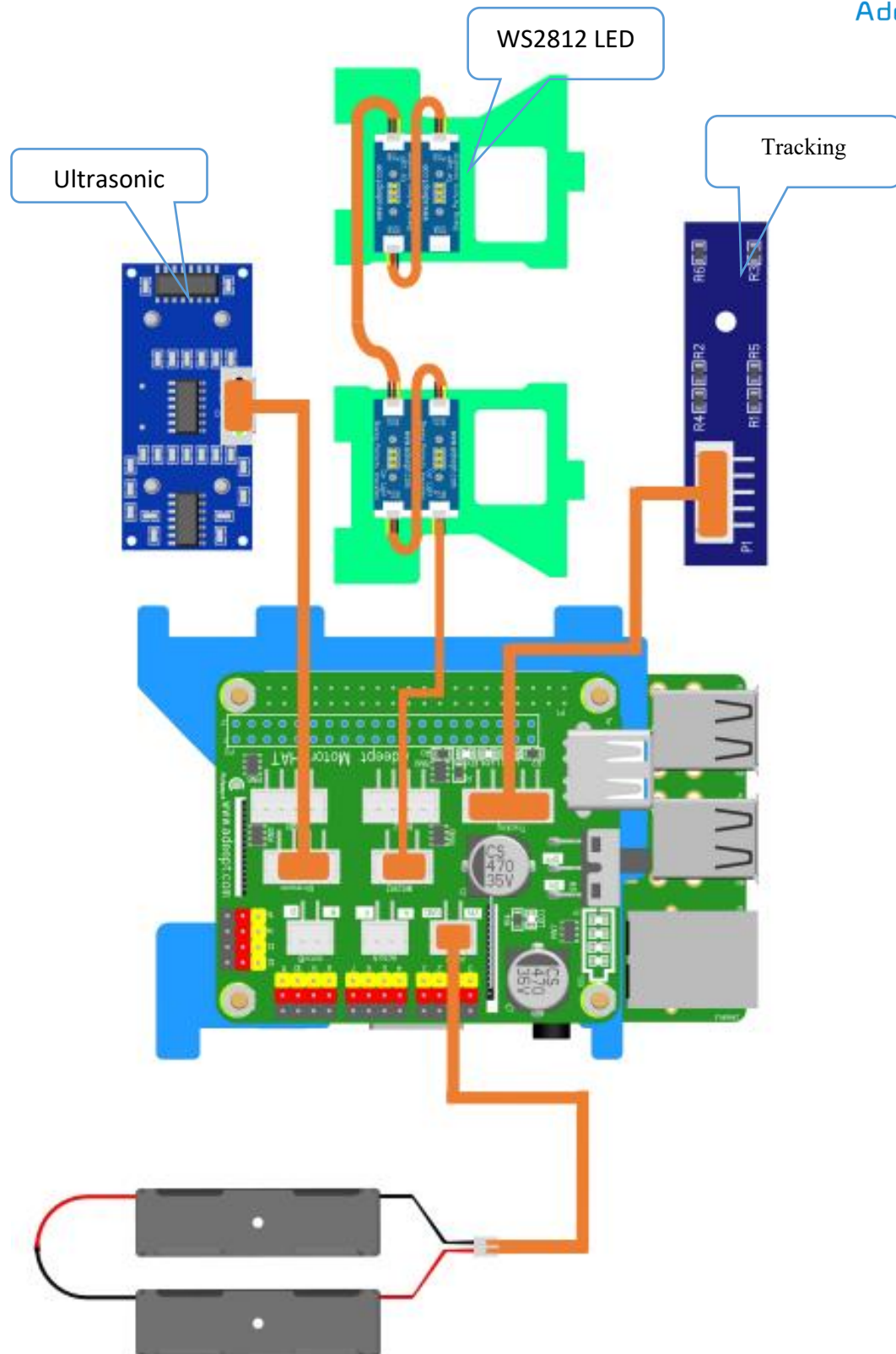
Install the Tracking module using a 5-pin cable.

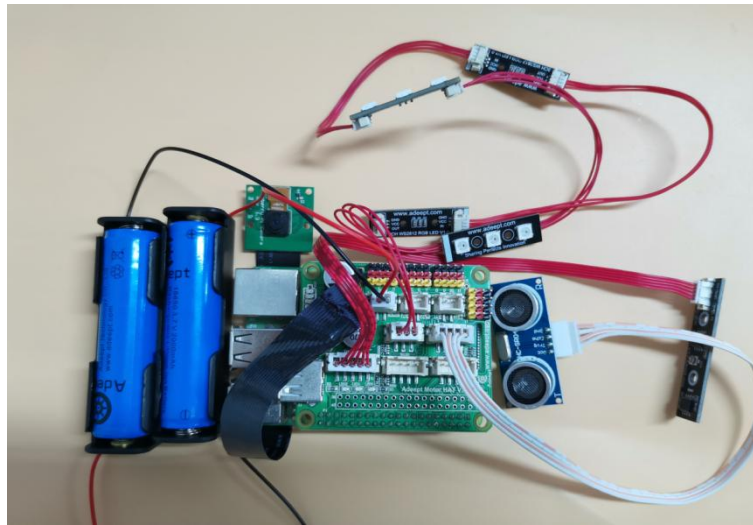
Install the ultrasonic module using the white 4-pin wire.

Note where the battery compartment is attached to the HAT. If the light on the HAT is on after installing the power supply, turn off the switch to disconnect the power supply.



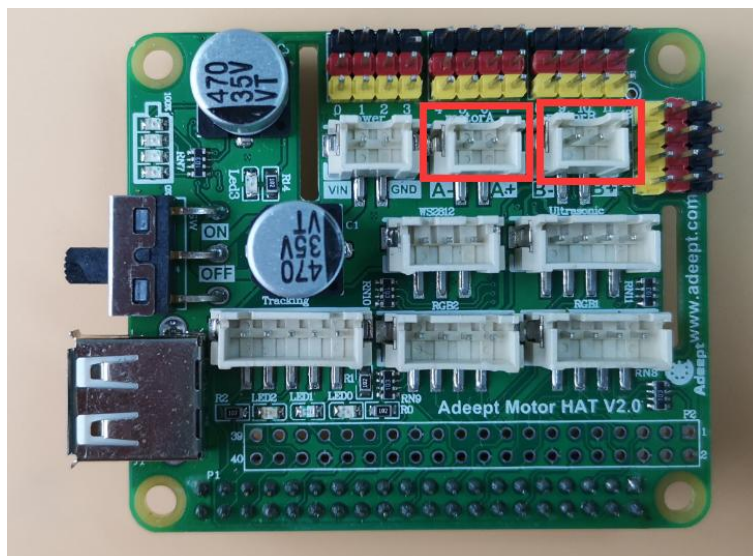
The following figure is a schematic diagram of the circuit connection:





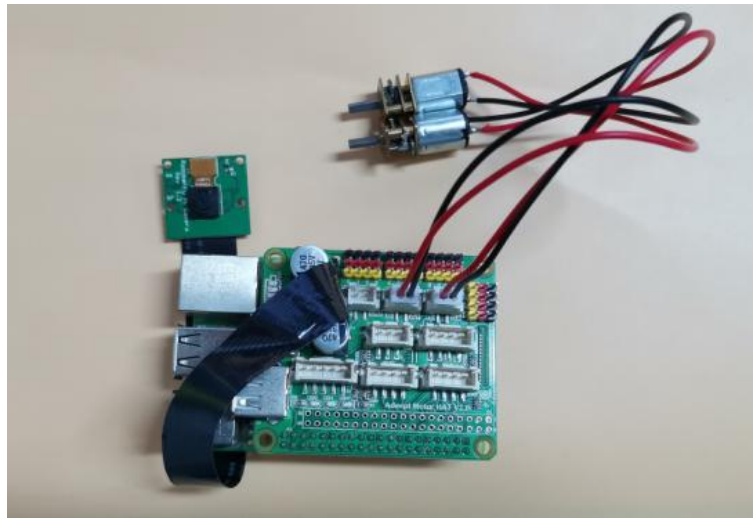
#### 4.4 Install the motor.

Install 2 motors to the HAT.



In order to take a picture and show, the module installed in the previous step is not installed in the picture.

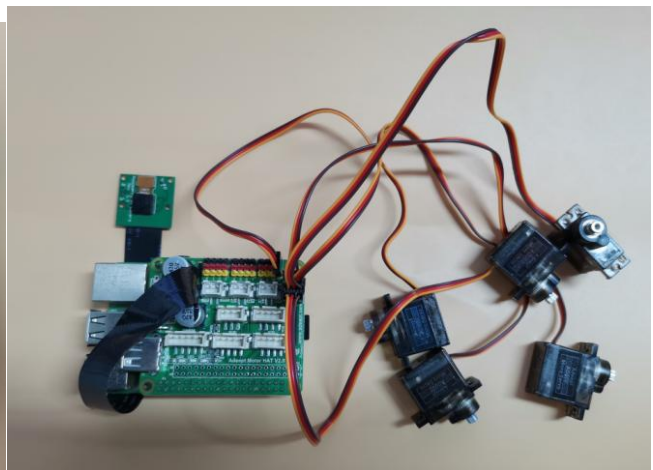
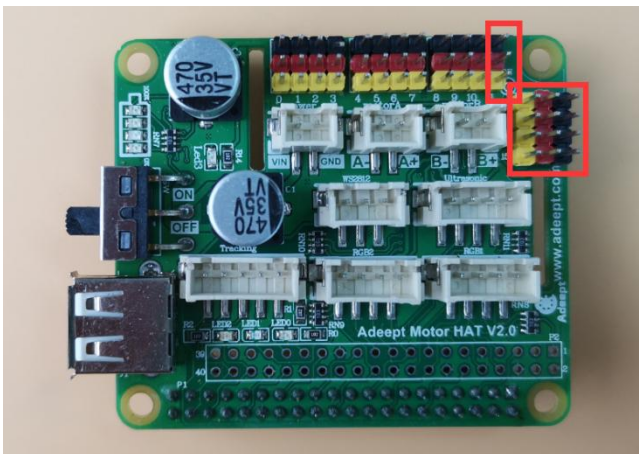




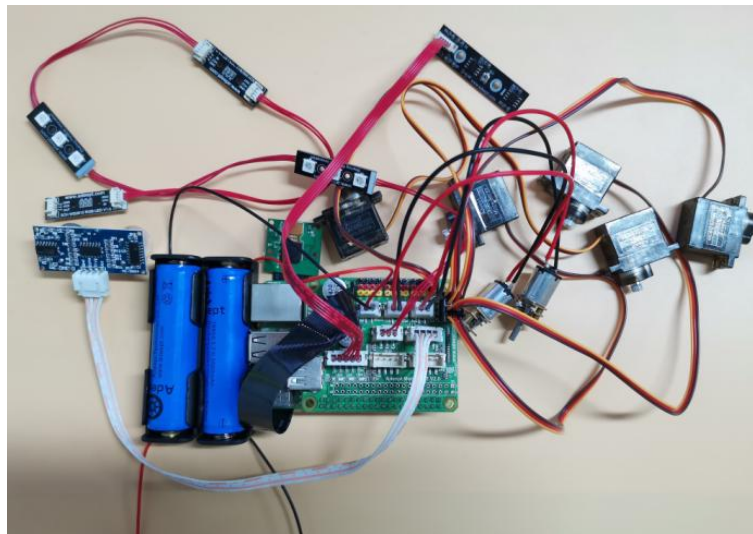
#### 4.5 Install the servo.

Install 5 servos to pins 11-15 of the HAT. (For the picture display, the installed modules are not installed in the picture.)

Note: The yellow wire is connected to the yellow pin, the red wire is connected to the red pin, and the brown wire is connected to black pin.



The installation is complete.



## 5. Run the program to view the test results

Turn on the power switch on the HAT and power up the Raspberry Pi.

According to the previous course content, access the Raspberry Pi command line through the remote login tool.

```
login as: pi
pi@192.168.3.57's password:

? MobaXterm Personal Edition v21.5 ?
(SSH client, X server and network tools)

> SSH session to pi@192.168.3.57
? Direct SSH      : ✓
? SSH compression : ✓
? SSH-browser     : ✓
? X11-forwarding  : ✓ (remote display is forwarded through SSH)
> For more info, ctrl+click on help or visit our website.

Linux raspberrypi 5.4.72-v7+ #1356 SMP Thu Oct 22 13:56:54 BST 2020 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Mar 23 09:20:06 2022

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a
new password.

pi@raspberrypi:~$
pi@raspberrypi:~$
```

In the Raspberry Pi enter:



## 5.1 Abort the boot self-starting program.

**sudo killall python3**

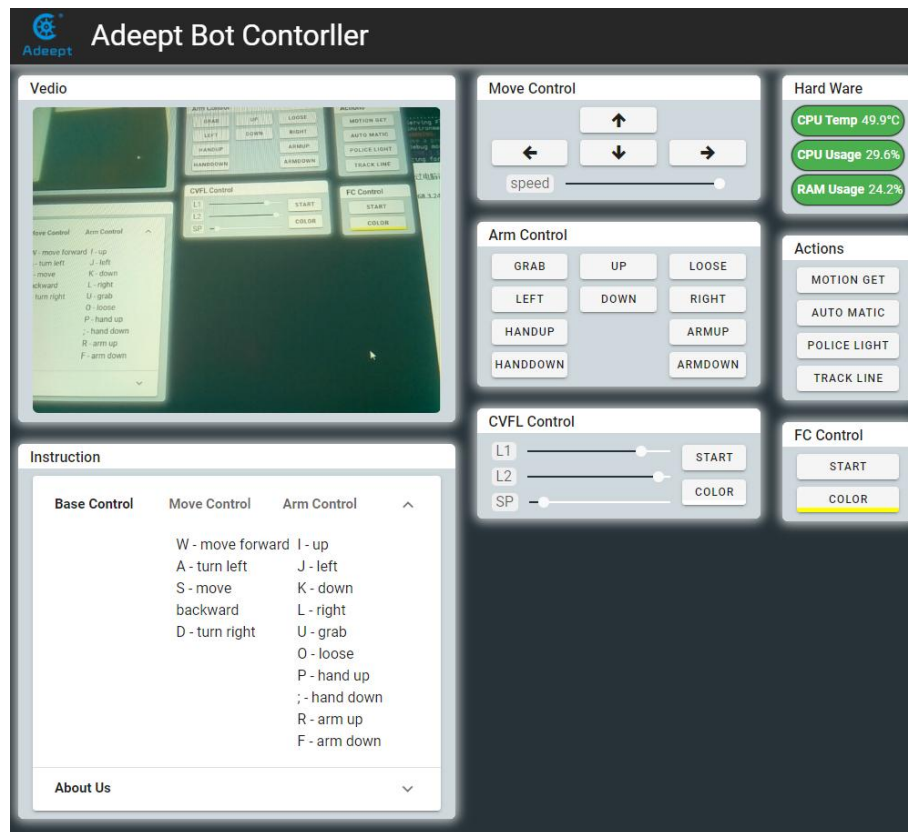
```
pi@raspberrypi:~ $  
pi@raspberrypi:~ $ sudo killall python3
```

## 5.2 Run the program to test the sensor module

**sudo python3 adeept\_rasptank/server/webServer.py**

```
pi@raspberrypi:~ $  
pi@raspberrypi:~ $ sudo python3 adeept_rasptank/server/webServer.py  
.....pause.....  
Starting camera thread.  
OLED disconnected  
OLED没有连接  
Exception in thread Thread-9:  
Traceback (most recent call last):  
  File "/usr/lib/python3.7/threading.py", line 917, in _bootstrap_inner  
    self.run()  
  File "/home/pi/adeept_rasptank/server/OLED.py", line 49, in run  
    with canvas(device) as draw:  
NameError: name 'device' is not defined  
  
.....pause.....  
* Serving Flask app "app" (lazy loading)  
* Environment: production  
  WARNING: Do not use the development server in a production environment.  
  Use a production WSGI server instead.  
* Debug mode: off  
192.168.3.57  
waiting for connection...
```

**5.3 Through the computer browser (Google Chrome), enter the Raspberry Pi IP+: 5000 in the address bar, for example: 192.168.3.242:5000**



## Test Camera:

Camera is OK: The real-time picture can be displayed in the WEB interface.

WS2812 LED is faulty: The WEB interface cannot be opened, and an error message appears when the program runs. Maybe the camera is not installed correctly, please try to solve the problem according to the Q&A in Tutorials/3. Basic course/Lesson 3. If that doesn't solve the problem, please contact us and provide a screenshot of the program error message.

## Test WS2812 LED :

WS2812 LED is OK: Every light of WS2812 will flash.

WS2812 LED is faulty: WS2812 LEDs are not flashing or some LEDs are not lit. Maybe the wiring sequence of the WS2812 LED is wrong, please make sure that the "IN" terminal of each WS2812

LED is the signal input terminal, and the "OUT" terminal is the signal output terminal that transmits the signal to the next WS2812 LED. If you can't solve the problem, please contact us and provide relevant pictures.

### Test GA12-N20 Gear Motor:

Motor is OK: Press the forward or backward button, the rotation direction of the two motors is opposite. Press the left or right button, the rotation direction of the two servos is the same.

Motor is faulty: If the motor does not spin, check that the motor is properly connected. If the direction of rotation of the motor is different from the description, please contact us and provide a video.



### Test Servo:

Press the button in "Arm Control", the corresponding servo will rotate slowly. The range of servo rotation is roughly 0-180 degrees. When the servo rotates to the limit (0 degrees or 180 degrees), it will not continue to rotate in this direction. Need to control the reverse rotation of the servo.



Servo is OK:

"GRAB" and "LOOSE": Control No. **15** servo to rotate left and right.

"LEFT" and "RIGHT": Control No. **14** servo to rotate left and right.

"HANDUP" and "HANDDOWN": Control No. **13** servo to rotate left and right.

"ARMUP" and "ARMDOWN": Control No. **12** servo to rotate left and right.

"UP" and "DOWN": Control No. **11** servo to rotate left and right.

Servo is faulty: The controlled servo does not rotate, or the servo is hot, or the servo can continue to rotate 360 degrees, please contact us.

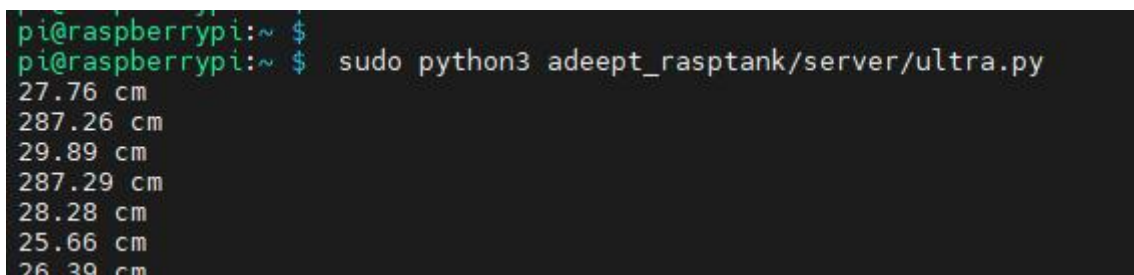
#### 5.4 Stop the program on the Raspberry Pi command line and run another program.

##### Test Ultrasonic Module:

Press or hold down "Ctrl + C" to abort the program.

To run the ultrasound program:

**sudo python3 adeept\_rasptank/server/ultra.py**



```
pi@raspberrypi:~ $  
pi@raspberrypi:~ $ sudo python3 adeept_rasptank/server/ultra.py  
27.76 cm  
287.26 cm  
29.89 cm  
287.29 cm  
28.28 cm  
25.66 cm  
26.39 cm
```

Ultrasonic is OK: You can see that the ultrasonic measurements are displayed on the Raspberry Pi command line. Move the ultrasonic module and the numbers change.

Ultrasonic is faulty: Moving produces an ultrasonic module, and the numbers do not change. Please contact us.

### 5.5 Stop the program on the Raspberry Pi command line and run another program.

#### Test Tracking Module:

Press or hold down "Ctrl + C" to abort the program.

To run the ultrasonic test program:

**`sudo python3 adeept_rasptank/server/trackingMoudle.py`**

Ultrasonic is OK: Covering the three different points of the line follower module will show different results in the Raspberry Pi command line.

```
pi@raspberrypi:~$ sudo python3 adeept_rasptank/server/trackingMoudle.py
LF3: 1  LF2: 1  LF1: 1
LF3: 1  LF2: 1  LF1: 0
LF3: 1  LF2: 1  LF1: 0
LF3: 1  LF2: 1  LF1: 1
LF3: 1  LF2: 1  LF1: 0
LF3: 1  LF2: 0  LF1: 1
```



Ultrasonic is faulty: The value will not change after any occlusion in the 3 positions. Please contact us and provide relevant pictures.

Press or hold down "Ctrl + C" to abort the program.

Finished test.