

## 1. Learning target

In this course, we mainly learn to use the Raspberry Pi and laser ranging module. Then, use the OLED on the RGB Cooling HAT to display the current distance.

# 2. Preparation

2.1 The laser ranging module uses I2C communication, and connect the SDA and SCL of the module to the SDA and SCL pins of the Raspberry Pi board. VCC and GND are respectively connected to 5V and GND of the Raspberry Pi.

!Tip: Raspberry Pi needs to enable I2C service.



2.2 After the Raspberry Pi I2C is enabled, input command **Imusb** in the terminal to check whether the I2C is successfully started.



```
videobuf2_dma_contig
                        20480 1 bcm2835 codec
videobuf2_vmalloc
                        16384 1 bcm2835_v4l2
videobuf2_memops
                        16384 2 videobuf2_dma_contig,videobuf2_vmal
videobuf2_v4l2
                        24576 3 bcm2835_codec,bcm2835_v4l2,v4l2_mem
videobuf2_common
                       45056 4 bcm2835_codec, bcm2835_v4l2, v4l2_mem
videodev
                       200704 6 bcm2835_codec,v4l2_common,videobuf2
media
                        36864
                              2 videodev, v4l2 mem2mem
argon_mem
                        16384
uio_pdrv_genirq
                        16384
                               1 uio_pdrv_genirq
                        20480
                        16384
                              Θ
i2c dev
snd bcm2835
                        24576
                       102400 1 snd bcm2835
snd_pcm
snd_timer
                        32768
                              1 snd_pcm
                               7 snd timer, snd bcm2835, snd pcm
                        73728
ip tables
                        24576
                              Θ
x tables
                        32768
                              1 ip_tables
                      450560
ipv6
                               26
pi@raspberrypi:~/speech $
```

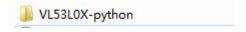
2.3 Download i2c-tools, the software can monitor the usage and faults of hardware devices.

Input command: **sudo apt-get install i2c-tools**Input command: **i2cdetect -y -a 1** in the terminal.

Check if there is an IIC device: 0x52 or 0x29

# 3. About code

3.1 Transfer this file into Raspberry Pi system



3.2 Input following command to enter VL53L0X folder.

## cd VL53L0X-python

3.3 Input following command to compile this file.

#### make

3.4 Input following command to enter python folder.

## cd python

3.5 Input command to run program

python VL53L0X\_Cooling\_HAT.py

### 4. Phenomenon

After the program is downloaded successfully, after the program is running, the RGB Cooling HAT will light up the purple breathing light, the cooling fan rotates with 50% speed. At the same time, OLED displays the current CPU usage, current temperature, and distance.