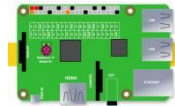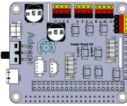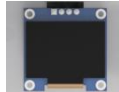# Lesson 10 Displaying Text on the OLED Screen

In this lesson, we will learn how to display text on the OLED screen.

10.1 Components used in this course
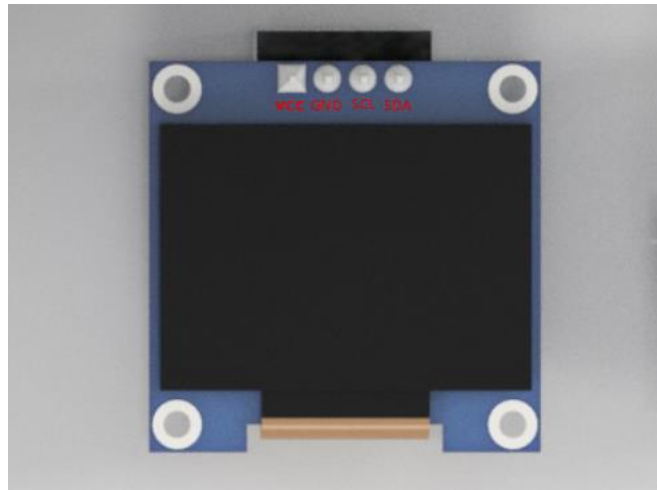
Components	Quantity	Picture
Raspberry Pi	1	
Robot HAT	1	
4 pin wire	1	
OLED screen	1	

10.2 Introduction of OLED Screen

OLED (Organic Light-Emitting Diode), also known as organic electric laser display, organic light emitting semiconductor (Organic Electroluminesence Display, OLED). OLED is a kind of current-type organic light-emitting device, which produces light by the injection and recombination of carriers, and the luminous intensity is proportional to the injected current. The PiCar Pro robot uses an OLED screen to display the expressions or some parameters of the robot. OLED Screen is a commonly used module on robot products. Due to the black non-luminous feature of OLED Screen, this type of screen has extremely high contrast. Even if the ambient light is strong, you can see the

information on the OLED Screen clearly, and the power consumption is relatively low. We only need to connect the power supply and the GPIO port to control it.
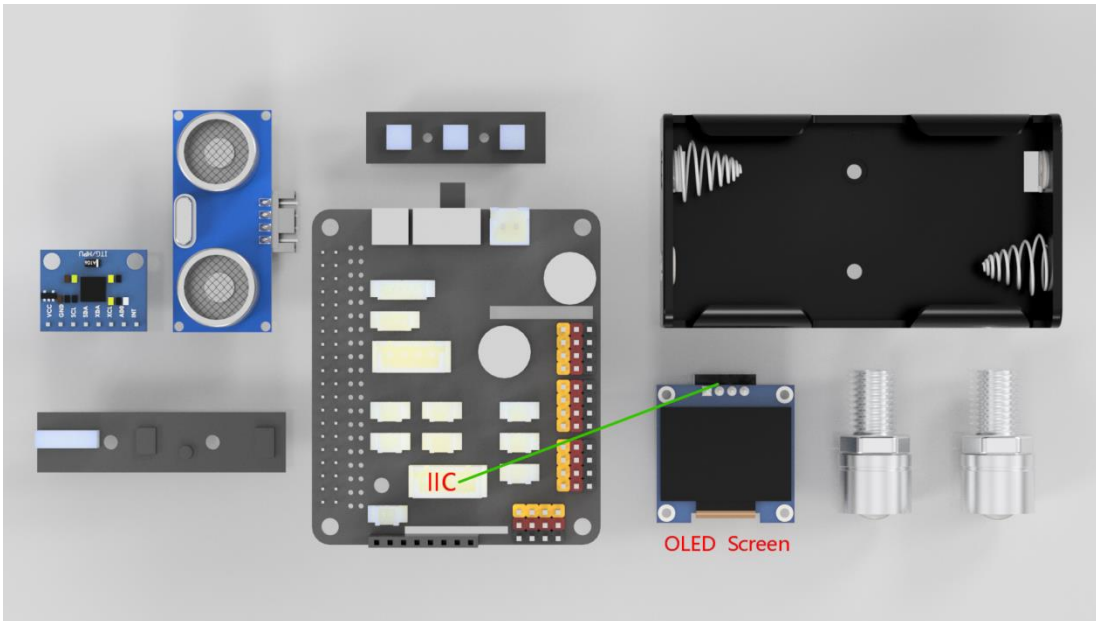
If you want to use OLED Screen, you need to use a 4-pin cable with anti-reverse interface to connect the OLED screen to the IIC interface on the Robot HAT.

If you do not use Robot HAT driver board to connect with Raspberry Pi driver board, then you need to connect Vin of OLED screen to 5V or 3.3V of Raspberry Pi, and connect GND of OLED screen to GND of Raspberry Pi. Connect SCL of Robot HAT to SCL of OLED, and SCA of Robot HAT to SCA of Raspberry Pi. Please refer to the pin definition diagram of Raspberry Pi for specific pins.

10.3 Wiring diagram (Circuit diagram)

If you want to use the OLED Screen module, you need to connect the IIC interface on the Robot HAT driver board, as shown in the figure below:

OLED Screen

IIC

10.4 How to display text on the OLED screen

10.4.1 Run the code

1. Remotely log in to the Raspberry Pi terminal.

```
Linux raspberrypi 4.19.118-v7l+ #1311 SMP Mon Apr 27 14:26:42 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: Sat Aug 29 08:17:49 2020 from 192.168.3.208

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:~ $
```

2. Enter the command and press Enter to enter the folder where the program is located:

cd adeept_picarpro/server/

```
pi@raspberrypi:~ $ cd adeept_picarpro/server/
pi@raspberrypi:~/adeept_picarpro/server $
```

3. View the contents of the current directory file:

```
ls
```

```
pi@raspberrypi:~ $ cd adeept_picarpro/server/
pi@raspberrypi:~/adeept_picarpro/server $ ls
app.py             findline.py    instruction.txt    OLED.py         servo.py
appserver.py       FPV.py         Kalman_filter.py   PID.py          switch.py
base_camera.py     FPVtest.py     LEDapp.py          __pycache__     ultra.py
camera_opencv.py   functions.py   LED.py             robotLight.py   webServer.py
dist               info.py        move.py            RPIservo.py
pi@raspberrypi:~/adeept_picarpro/server $
```

4. Enter the command and press Enter to run the program:

```
sudo python3 OLED.py
```

```
pi@raspberrypi:~/adeept_picarpro/server $ sudo python3 OLED.py
```

5. After running the program successfully, you will observe that the word "ADEEPT.COM" will be displayed on the OLED screen.

6. When you want to terminate the running program, you can press the shortcut key "Ctrl + C" on the keyboard.

10.5 The main code program of this lesson

For the complete code, please refer to the file OLED.py.

```python
1.  from luma.core.interface.serial import i2c
2.  from luma.core.render import canvas
3.  from luma.oled.device import ssd1306
4.  import time
5.
6.  serial = i2c(port=1, address=0x3C)
7.  device = ssd1306(serial, rotate=0)
8.
9.  text_1 = 'ADEEPT.COM' # Define the text displayed on the OLED screen, up to 6 lines.
10. text_2 = 'IP:CONNECTING'
11. text_3 = '<ARM> OR <PT> MODE'
12. text_4 = 'MPU6050 DETECTING'
13. text_5 = 'FUNCTION OFF'
14. text_6 = 'Message:None'
```

Import dependent libraries and initialize.

```
1.  def run():
2.      with canvas(device) as draw:
3.          draw.text((0, 0), text_1, fill="white")
4.          draw.text((0, 10), text_2, fill="white")
5.          draw.text((0, 20), text_3, fill="white")
6.          draw.text((0, 30), text_4, fill="white")
7.          draw.text((0, 40), text_5, fill="white")
8.          draw.text((0, 50), text_6, fill="white")
9.
10. if __name__ == '__main__':
11.     run()
```

Light up the OLED screen.