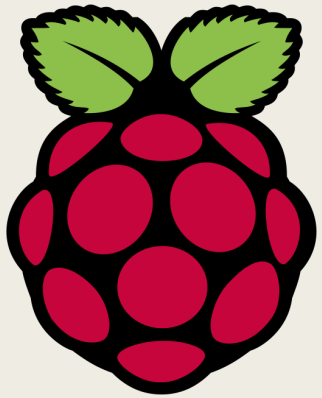
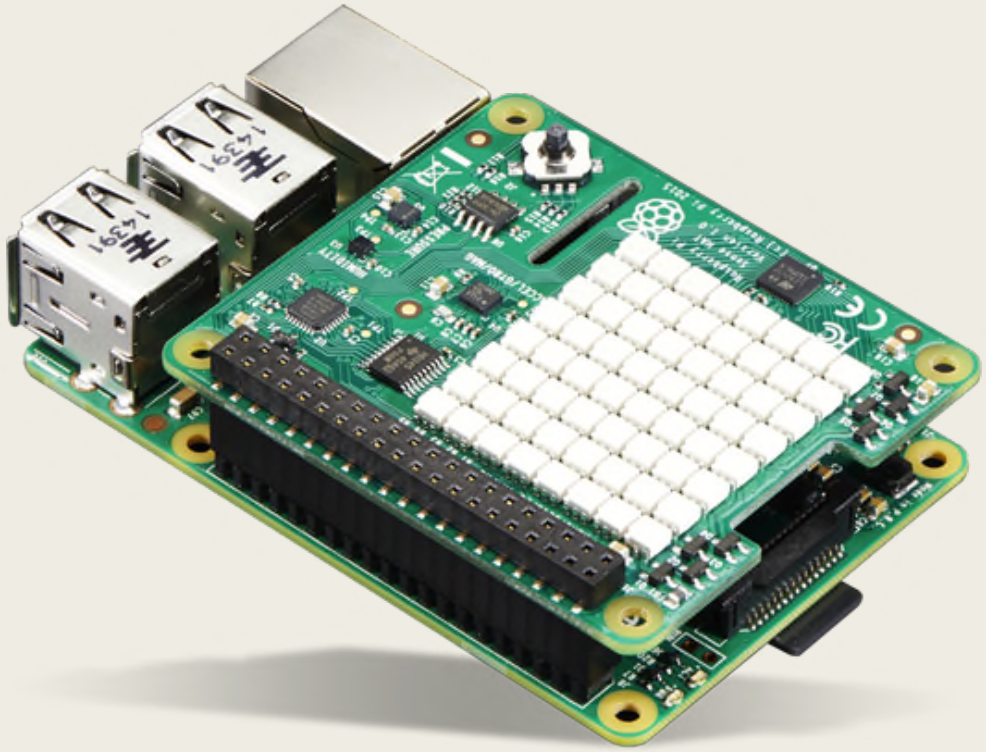
SENSE HAT

朱克剛



硬體規格

- 8 X 8 全彩 LED 矩陣
- 溫度感測器
- 濕度感測器
- 氣壓感測器
- 九軸感測器（加速儀、陀螺儀、電子羅盤）
- 五向搖桿



文件與模擬器

- 文件
  - *https://pythonhosted.org/sense-hat/api/*
- 模擬器
  - *https://trinket.io/sense-hat*

旋轉與鏡像

- 旋轉

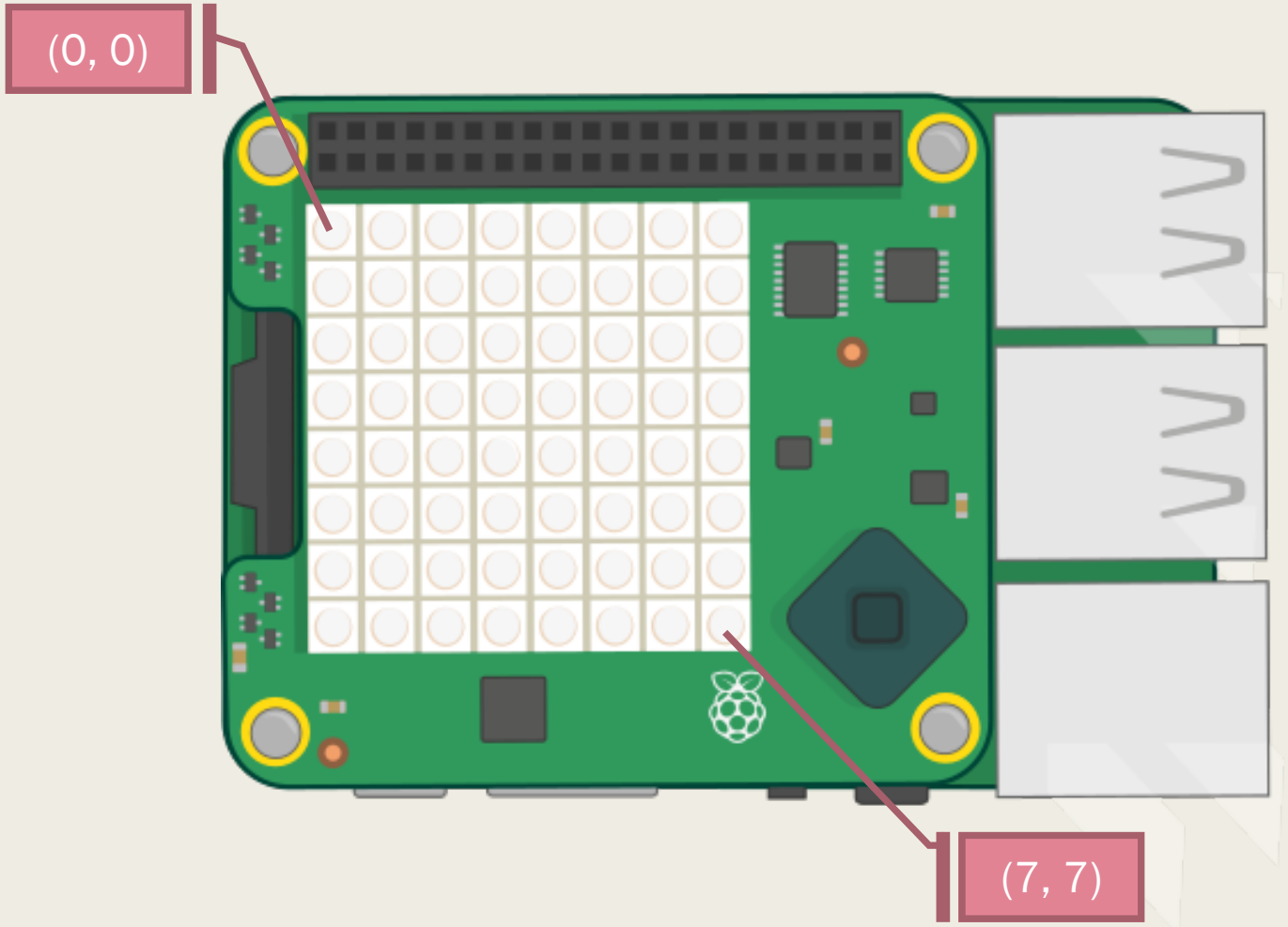
```
from sense_hat import SenseHat
sense = SenseHat()
sense.rotation = 90  # 0, 90, 180 270
```

- 鏡像
  - *水平*

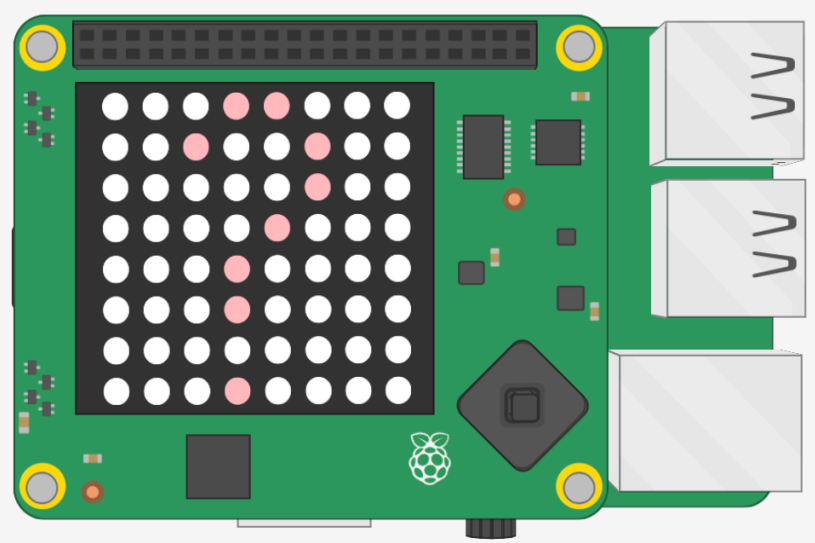
    sense.flip_h()
  - *垂直*

    sense.flip_v()

LED矩陣座標



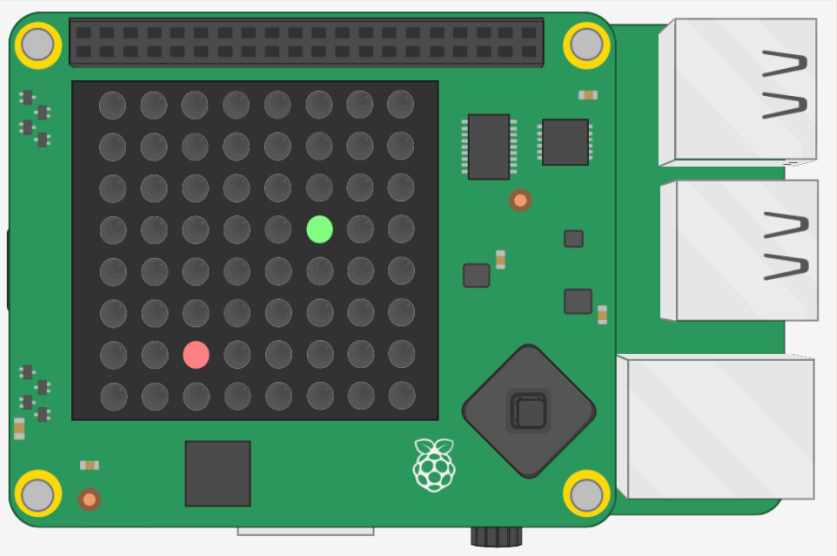
點亮 LED矩陣



```
from sense_hat import SenseHat

sense = SenseHat()

X = [255, 0, 0] # Red
O = [255, 255, 255] # White

question_mark = [
    O, O, O, X, X, O, O, O,
    O, O, X, O, O, X, O, O,
    O, O, O, O, O, X, O, O,
    O, O, O, O, X, O, O, O,
    O, O, O, X, O, O, O, O,
    O, O, O, X, O, O, O, O,
    O, O, O, O, O, O, O, O,
    O, O, O, X, O, O, O, O
]

sense.set_pixels(question_mark)

input('enter to exit')
sense.clear()
```

點亮個別LED

```
from sense_hat import SenseHat

sense = SenseHat()
green = [0, 255, 0]

sense.set_pixel(5, 3, green)
sense.set_pixel(2, 6, 255, 0, 0) # red

input('enter to exit')
sense.clear()
```

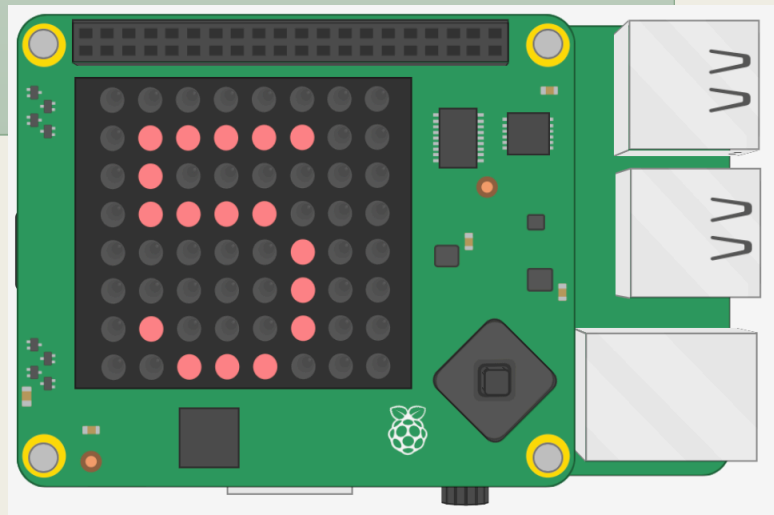


顯示訊息

```
from sense_hat import SenseHat

blue = [255, 0, 0]
yellow = [255, 255, 0]

sense = SenseHat()
sense.show_message('Hello', text_colour=blue)
sense.show_message('Nice Day', scroll_speed=0.5, text_colour=yellow)
```

顯示字母 – 倒數計時

```
from sense_hat import SenseHat
import time

sense = SenseHat()

for i in range(9, -1, -1):
    sense.show_letter(str(i), text_colour=[255, 0, 0])
    time.sleep(1)

sense.clear()
```



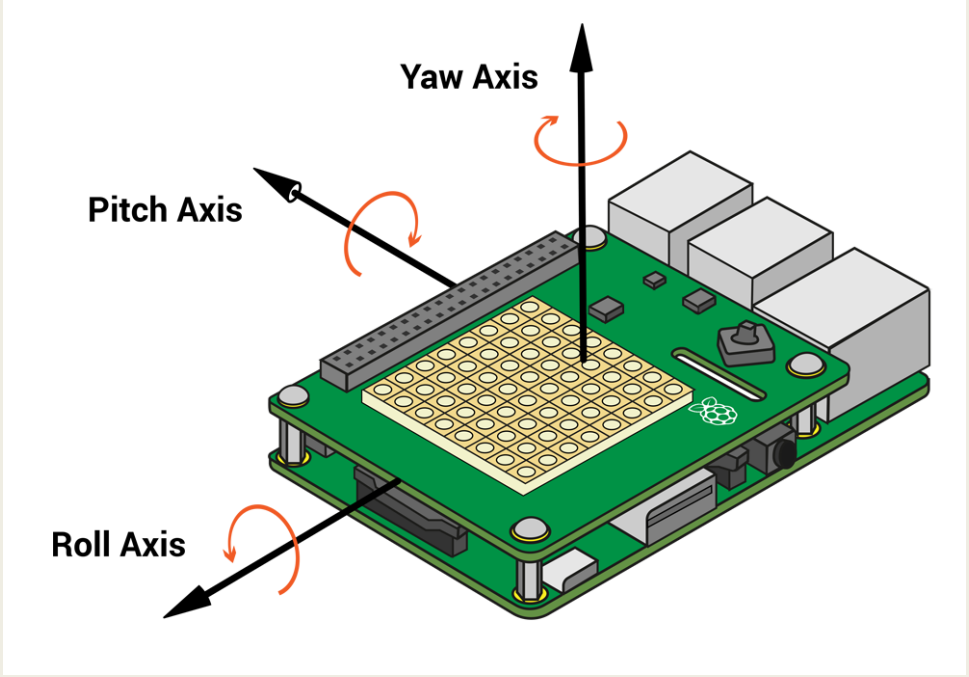
取得溫濕度與氣壓資料

```
from sense_hat import SenseHat

sense = SenseHat()

print('溫度: {:4.1f} 度C'.format(sense.temperature))
print('濕度: {:4.1f}%'.format(sense.humidity))
print('氣壓: {:6.1f} 豪巴'.format(sense.pressure))
```

加速儀 – 單位G

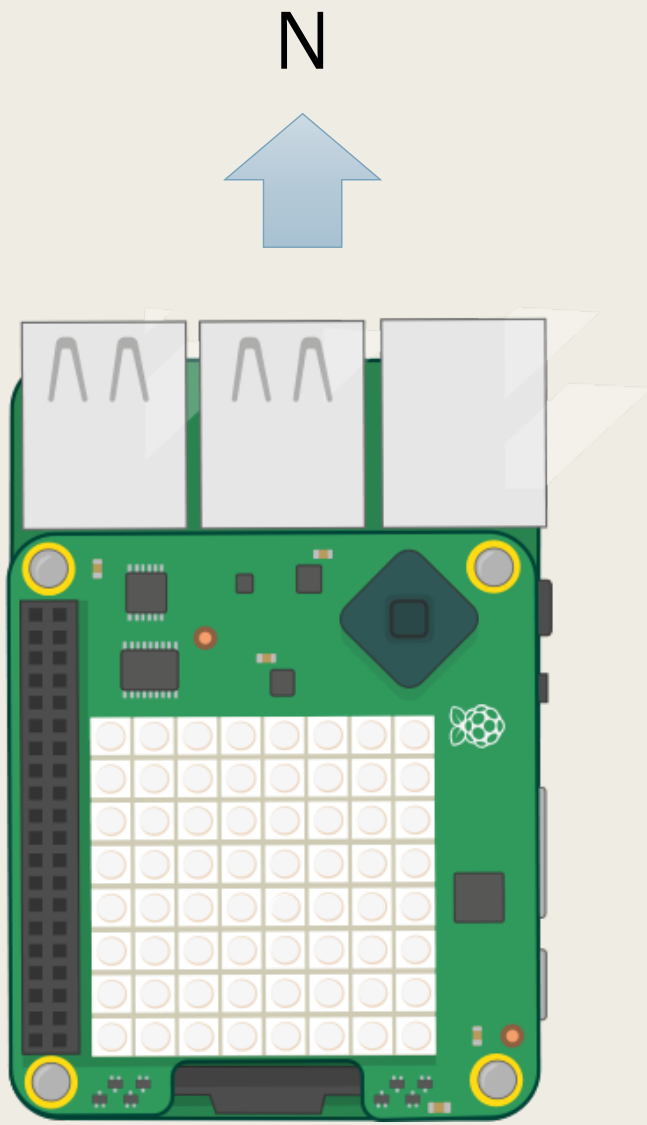
```
from sense_hat import SenseHat

sense = SenseHat()
while True:
    raw = sense.accel_raw
    print("x: {x:0.2f}, y: {y:0.2f}, z: {z:0.2f}".format(**raw))
```

陀螺儀



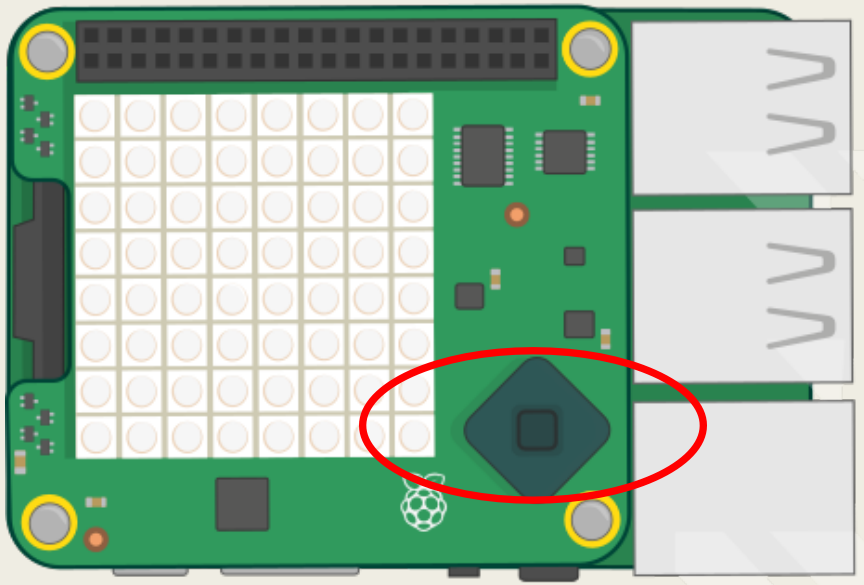

```
from sense_hat import SenseHat

sense = SenseHat()
while True:
    gyro = sense.gyro
    print("p: {pitch}, r: {roll}, y: {yaw}".format(**gyro))
```

電子羅盤-北方0度




```
from sense_hat import SenseHat

sense = SenseHat()
while True:
    print('North: {:.0f}'.format(sense.compass))
```

搖桿



```
from sense_hat import SenseHat

sense = SenseHat()
while True:
    for event in sense.stick.get_events():
        print("The joystick was {} {}".format(event.action, event.direction))
```