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專題進度報告

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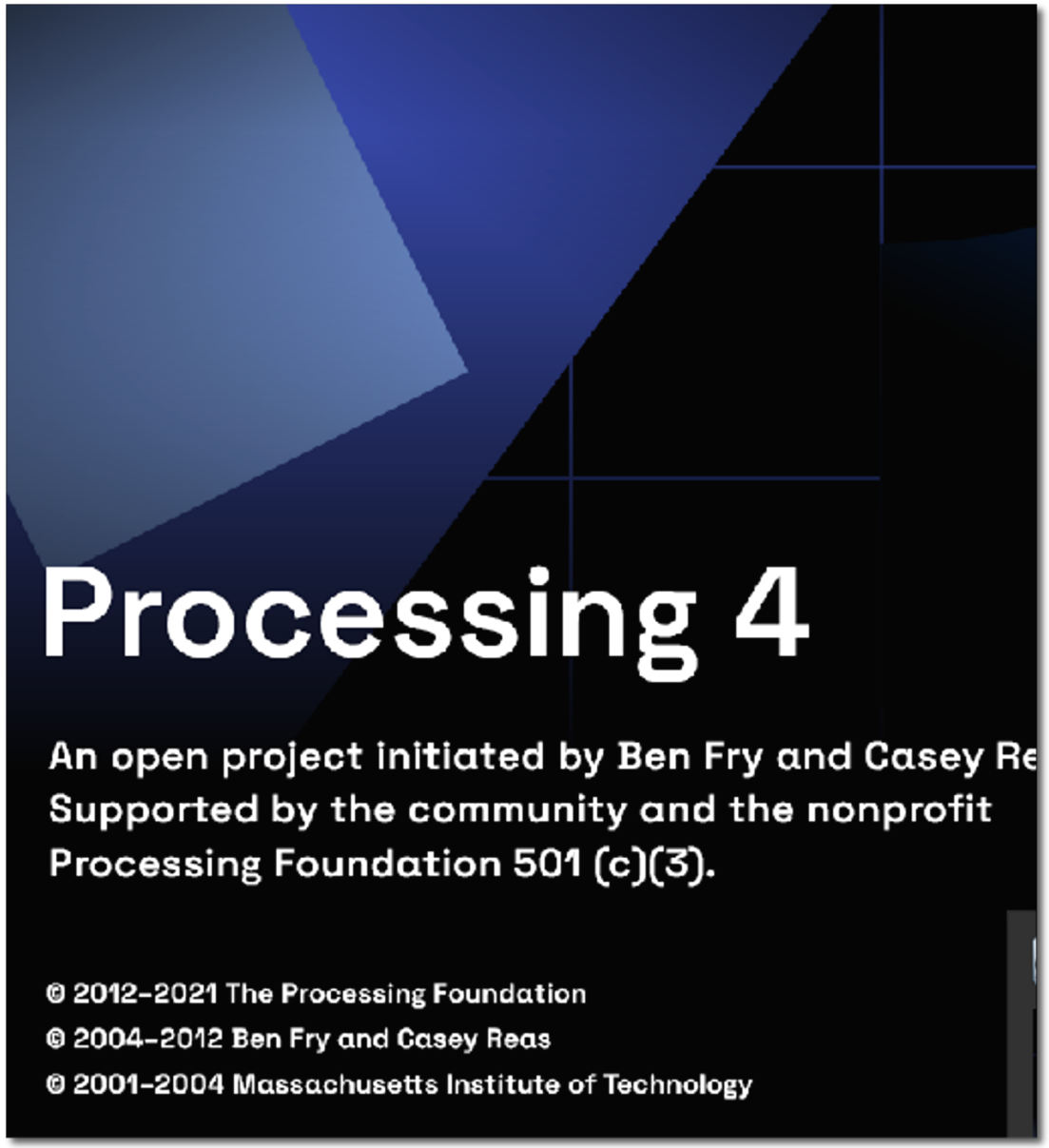
Processing

1. 工具使用 Processing4.0b2

下載連結: https://processing.org/download



2 Void setup()中寫與Arduino連接Bluetooth的code

```
import processing.serial.*;

Serial myPort;        // The serial port

int radius = 0;
float a,b,c;
void setup () {
  size(800, 600,P3D);// set the window size:
  printArray(Serial.list()); // List all the available serial ports
  myPort = new Serial(this, "/dev/cu.TW-ESP32SPP", 115200); // Open whatever port is the one you're using.
  myPort.bufferUntil('\n'); // don't generate a serialEvent() unless you get a newline character:
  background(0xff); // set inital background:
  fill(255); //color
}

```

3 Void draw()用來畫圖

```
17 void draw () {
18   //Map and draw the line for new data point
19   background(0);
20   //lights(); //shallow
21
22   //if(mousePressed) {
23   //  float fov = PI/1.0;
24   //  float cameraZ = (height/2.0) / tan(fov/2.0);
25   //  perspective(fov, float(width)/float(height), cameraZ/2.0, cameraZ*2.0);
26   //} else {
27   //  ortho(-width/2, width/2, -height/2, height/2);
28   //}
29   //translate(width/2, height/2, c);
30   line(400,300,200,(a*10)+400,(b*10)+300,(c*100)+200);
31   stroke(255);
32   //rotateX(-PI/6);
33   //rotateY(PI/3);
34   //box(160);
35 }
```

將接收進來X,Y,Z數值放大和改變初始點:將數值向中間點移動

4 Void serialEvent()用來接受sensor的x,y,z數值

processing端

```
void serialEvent (Serial myPort) {
  // get the ASCII string:
  String x = myPort.readStringUntil(' ');
  String y = myPort.readStringUntil(' ');
  String z = myPort.readStringUntil('\n');
  a = Float.parseFloat(x);
  b = Float.parseFloat(y);
  c = Float.parseFloat(z);
  //String inString = myPort.readStringUntil('\n');
  println(a);
  println(b);
  println(c);
  //println(inString);
  //if (inString != null) {
  //  // trim off any whitespace:
  //  inString = trim(inString);
  //}

}
```

Arduino端

```
void loop()
{
  //serialEvent();
  //Look for reports from the IMU
  if (myIMU.dataAvailable() == true)
  {
    float x = myIMU.getMagX();
    float y = myIMU.getMagY();
    float z = myIMU.getMagZ();
   // byte accuracy = myIMU.getMagAccuracy();
   //serial mag data
    //Serial.print("Mag:  ");
    Serial.print(x,2);
    //Serial.print(F(","));
    Serial.print(" ");
    Serial.print(y, 2);
    Serial.print(" ");
   // BT.print(y,2);
   // Serial.print(F(","));
    Serial.println(z, 2);
   // BT.print(z,2);
```

① 正確獲取多軸穩定器的資料

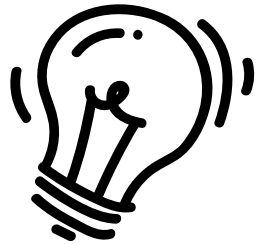
② 將資料做成表格並轉為CSV檔

流程

運用藍芽接收sensor的資料

撰寫python，讀取port資料

將資料表格化



程式

```
import serial
import csv
import pandas as pd
from time import sleep
serialPort = serial.Serial(port='/dev/cu.TW-ESP32SPP', baudrate=115200, timeout=2, parity=se
size = 1024
xg =[]
yg =[]
zg =[]
mx =[]
my =[]
mz =[]
for i in range (0,40):
    serialPort.write("csdcsdc\n".encode("UTF-8"))#str.encode("init"))
#     sleep(1)
    data = serialPort.readline(size).decode()
#     print(data)
    data=data.split(',')
    if len(data)==7:
        mx.append(data[0])
        my.append(data[1])
        mz.append(data[2])
        xg.append(data[3])
        yg.append(data[4])
        zg.append(data[5])
pandasData={"Xg":xg,"Yg":yg,"Zg":zg,"Xm":mx,"Ym":my,"Zm":mz}
df = pd.DataFrame(pandasData)
print(df)
df.to_csv('output.csv')
serialPort.close()
```

Output.csv

spinmov

	Xg	Yg	Zg	Xm	Ym	Zm
0	0	0	0	-0.31	-23.69	-23.62
1	0	0	0	-0.31	-24.37	-22
2	0	0	0	-0.31	-24.37	-22
3	0	0	0	-0.69	-24.06	-21.25
4	0	0	0	-0.69	-24.06	-21.25
5	0	0	0	-1.44	-22.56	-22.44
6	0	0	0	-1.44	-22.56	-22.44
7	0	0	0	-0.69	-22.94	-23.19
8	0	0	0	-0.69	-22.94	-23.19
9	0	0	0	-1.81	-22.94	-22.81
10	0.01	0	0	-1.81	-22.94	-22.81

spin.csv

11	0.01	0	0	-1.81	-24.75	-21.62
12	-0.01	0	0	-1.81	-24.75	-21.62
13	-0.01	0	0	-1.06	-24.37	-22.44
14	0	0	0	-1.06	-24.37	-22.44
15	0	0	0	-0.31	-24.37	-22.44
16	0	0	0	-0.31	-24.37	-22.44
17	0	0	0	-0.69	-24.75	-22.37
18	0	0	0	-0.69	-24.75	-22.37
19	0	0	0	0	-24.37	-22.37
20	0	0	0	0	-24.37	-22.37

更多資料：https://github.com/tim1207/IOBB

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