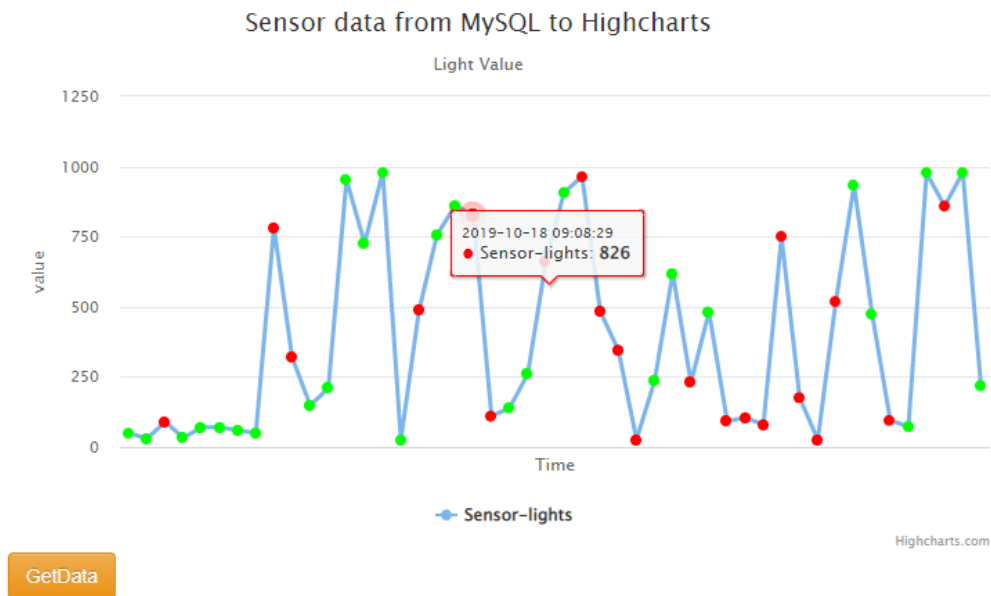


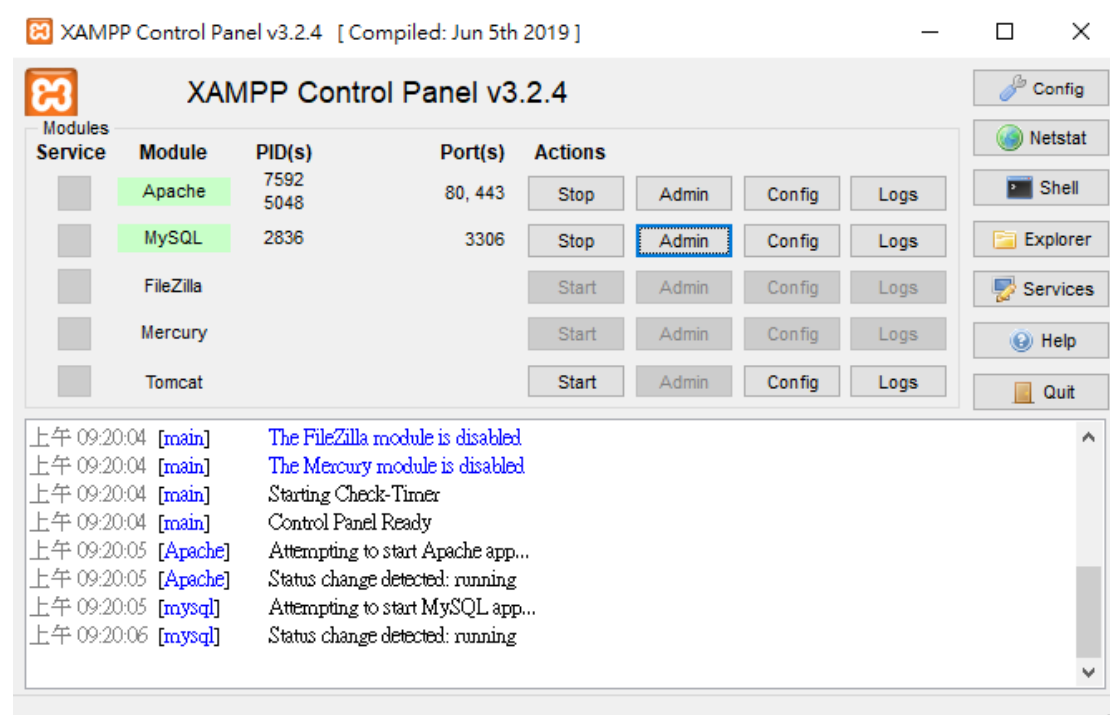
物聯網作業 HW5

資工碩一 403401263 蘇亭云

(20%) Part 1: localhost 呈現 highchart 圖形

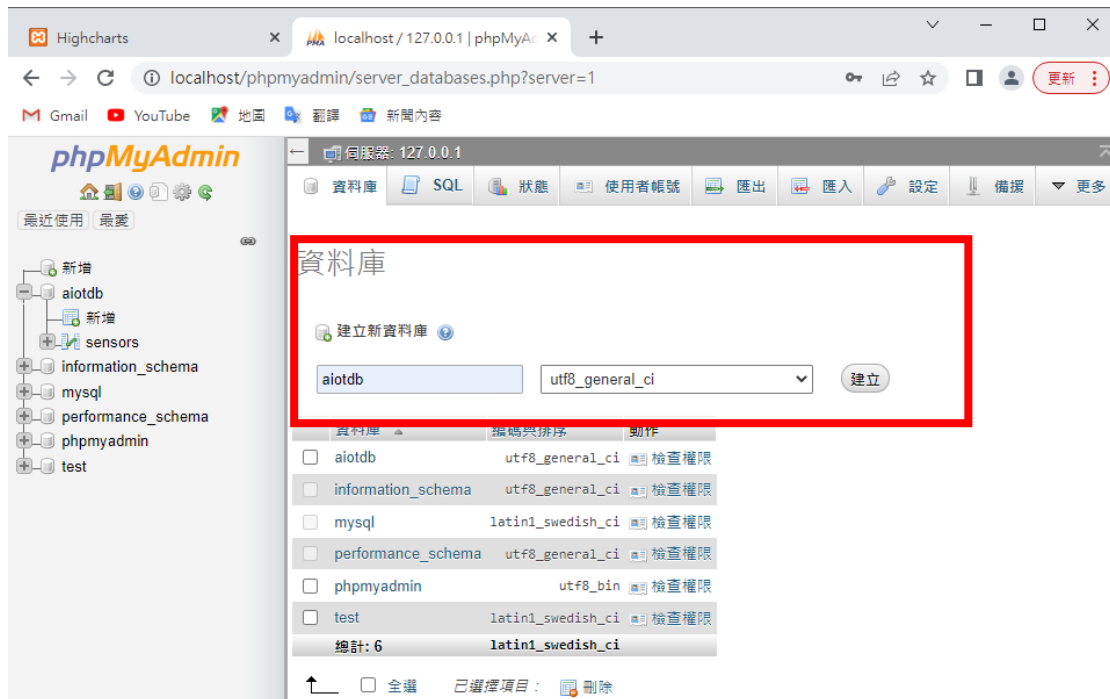


STEP1. 開啟 XAMPP 的 Apache 和 MySQL

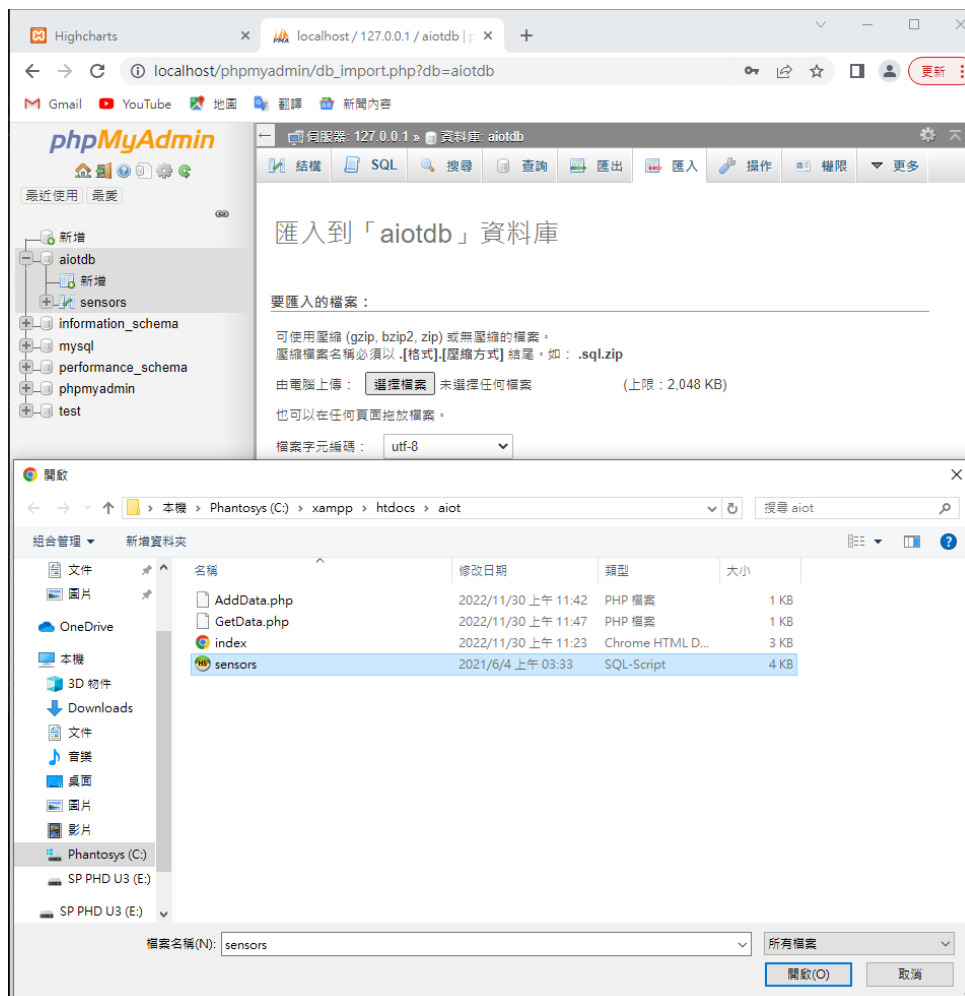


STEP2.按 MySQL Admin 開啟 phpmyadmin localhost/phpMyAdmin

STEP.2-1 創 aiotdb 資料庫



STEP.2-2 匯入資料表 sensors



Highcharts localhost / 127.0.0.1 / aiotdb / 更新

localhost/phpmyadmin/sql.php?server=1&db=aiotdb&table=sensors&pos=0

Gmail YouTube 地圖 翻譯 新聞內容

phpMyAdmin

最近使用 最愛

新增
aiotdb
新增
sensors
information_schema
mysql
performance_schema
phpmyadmin
test

伺服器: 127.0.0.1 資料庫: aiotdb 資料表: sensors

瀏覽 結構 SQL 搜尋 新增 匯出 匯入 權限 更多

顯示第 0 - 24 列 (總計 48 筆, 查詢用了 0.0005 秒。)

SELECT * FROM `sensors`

☐ 效能分析 ☐ [行內編輯] ☐ [編輯] ☐ [SQL 語句分析] ☐ [建立 PHP 程式碼] ☐ [重新整理]

1 > >> ☐ 全部顯示 資料列數: 25 篩選資料列: 搜尋此資料表

+ 選項

| | id | time | value | temp | humi | status |
|-----------------------------------|----|---------------------|-------|------|------|--------|
| <input type="checkbox"/> 編輯 複製 刪除 | 1 | 2019-10-18 09:08:27 | 219 | 26 | 99 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 2 | 2019-10-18 09:08:27 | 979 | 70 | 58 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 3 | 2019-10-18 09:08:27 | 859 | 12 | 89 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 4 | 2019-10-18 09:08:28 | 92 | 93 | 42 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 5 | 2019-10-18 09:08:28 | 481 | 42 | 35 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 6 | 2019-10-18 09:08:28 | 230 | 5 | 31 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 7 | 2019-10-18 09:08:28 | 140 | 83 | 70 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 8 | 2019-10-18 09:08:28 | 620 | 47 | 94 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 9 | 2019-10-18 09:08:28 | 236 | 19 | 23 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 10 | 2019-10-18 09:08:28 | 27 | 78 | 60 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 11 | 2019-10-18 09:08:28 | 345 | 11 | 70 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 12 | 2019-10-18 09:08:28 | 483 | 12 | 10 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 13 | 2019-10-18 09:08:28 | 105 | 13 | 19 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 14 | 2019-10-18 09:08:28 | 80 | 86 | 31 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 15 | 2019-10-18 09:08:28 | 750 | 51 | 51 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 16 | 2019-10-18 09:08:28 | 976 | 77 | 66 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 17 | 2019-10-18 09:08:28 | 73 | 66 | 97 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 18 | 2019-10-18 09:08:28 | 95 | 51 | 4 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 19 | 2019-10-18 09:08:28 | 110 | 86 | 59 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 20 | 2019-10-18 09:08:28 | 474 | 97 | 18 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 21 | 2019-10-18 09:08:28 | 933 | 49 | 71 | 1 |
| <input type="checkbox"/> 編輯 複製 刪除 | 22 | 2019-10-18 09:08:28 | 521 | 21 | 49 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 23 | 2019-10-18 09:08:28 | 26 | 48 | 39 | 0 |
| <input type="checkbox"/> 編輯 複製 刪除 | 24 | 2019-10-18 09:08:28 | 176 | 7 | 55 | 0 |

主控台 新增 複製 刪除

STEP.2-3 創使用者名稱: 帳號: test123 密碼: test123

The screenshot shows the 'Add user' form in phpMyAdmin. The browser address bar indicates the URL: localhost/phpmyadmin/server_privileges.php?adduser=1. The form is titled '登入資訊' (Login Information) and contains the following fields:

- 使用者名稱 (Username): test123
- 主機名稱 (Host): %
- 密碼 (Password): [masked]
- 密碼強度 (Password Strength): 極差 (Very Weak)
- 認證外掛程式 (Authentication Plugin): 原生 MySQL 認證 (Native MySQL Authentication)
- 產生密碼 (Generate Password): [button]

Below the login information, there is a section for '使用者帳號的資料庫' (Database for user account) with two options:

- ☐ 建立與使用者同名的資料庫，並授予所有權限。
- ☐ 給以 帳號_ 開頭的資料庫 (username_) 授予所有權限。

The '全域權限' (Global Privileges) section is also visible, with a '全選' (Select All) button. The privileges are organized into three columns:

- 資料 (Data):** SELECT, INSERT, UPDATE, DELETE, FILE
- 結構 (Structure):** CREATE, ALTER, INDEX, DROP, CREATE TEMPORARY TABLES, SHOW VIEW, CREATE ROUTINE, ALTER ROUTINE, EXECUTE, CREATE VIEW, EVENT, TRIGGER
- 管理 (Management):** GRANT, SUPER, PROCESS, RELOAD, SHUTDOWN, SHOW DATABASES, LOCK TABLES, REFERENCES, REPLICATION CLIENT, REPLICATION SLAVE, CREATE USER

Highcharts localhost / 127.0.0.1 | phpMyAdmin

localhost/phpmyadmin/server_privileges.php?adduser=1

phpMyAdmin

最近使用 | 最愛

新增

- aiotdb
- 新增
- sensors
- information_schema
- mysql
- performance_schema
- phpmyadmin
- test

伺服器: 127.0.0.1

資料庫 SQL 狀態 使用者帳號 匯出 匯入 設定 更多

新增使用者帳號

登入資訊

使用者名稱: 使用文字方塊: test123

⚠ 已有與此帳號相同名稱的使用者，但其主機名稱可能不同。

主機名稱: 本機 localhost

密碼: 使用文字方塊: Strength: 極差

確認密碼:

認證外掛程式: 原生 MySQL 認證

產生密碼: 產生

使用者帳號的資料庫

☐ 建立與使用者同名的資料庫，並授予所有權限。

☐ 給以 帳號_ 開頭的資料庫 (username_) 授予所有權限。

全域權限 ☒ 全選

注意: MySQL 權限名稱會以英文表示。

資料

☒ SELECT

☒ INSERT

☒ UPDATE

☒ DELETE

☒ FILE

結構

☒ CREATE

☒ ALTER

☒ INDEX

☒ DROP

☒ CREATE TEMPORARY TABLES

☒ SHOW VIEW

管理

☒ GRANT

☒ SUPER

☒ PROCESS

☒ RELOAD

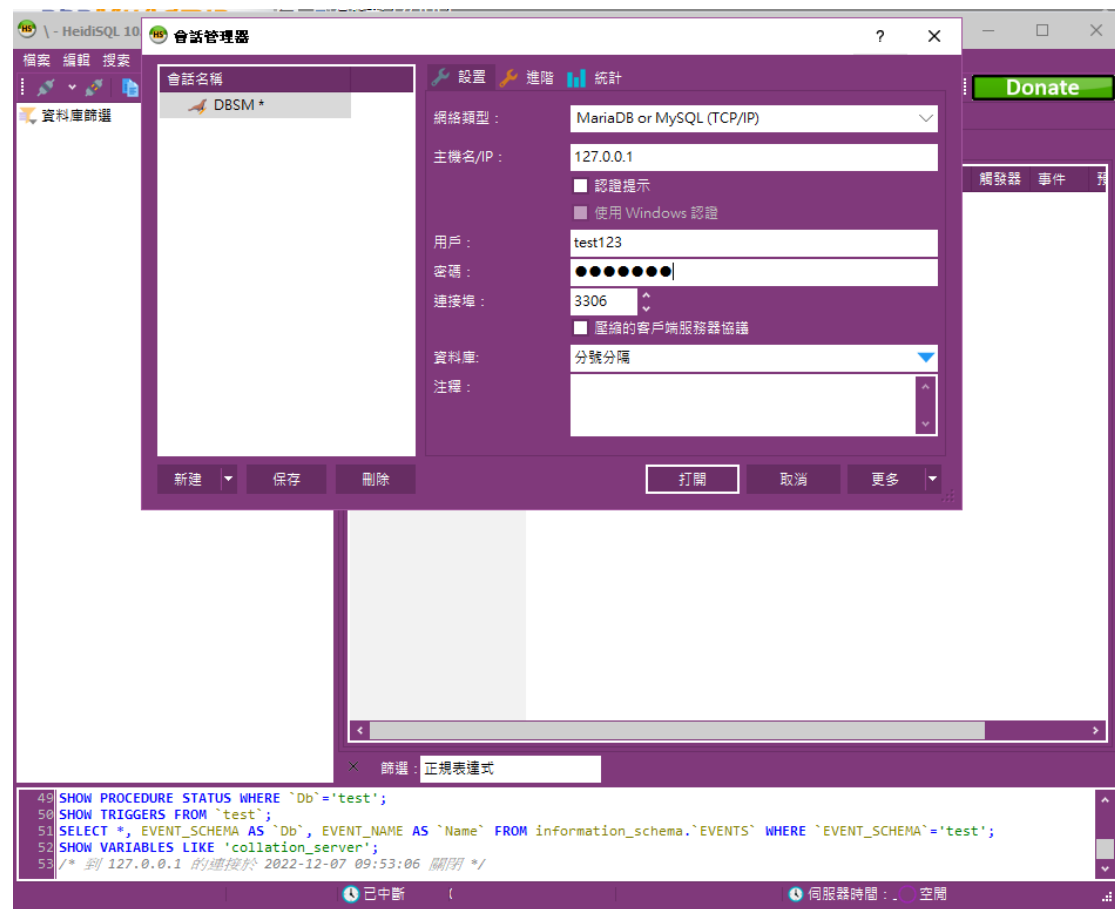
☒ SHUTDOWN

☒ SHOW DATABASES

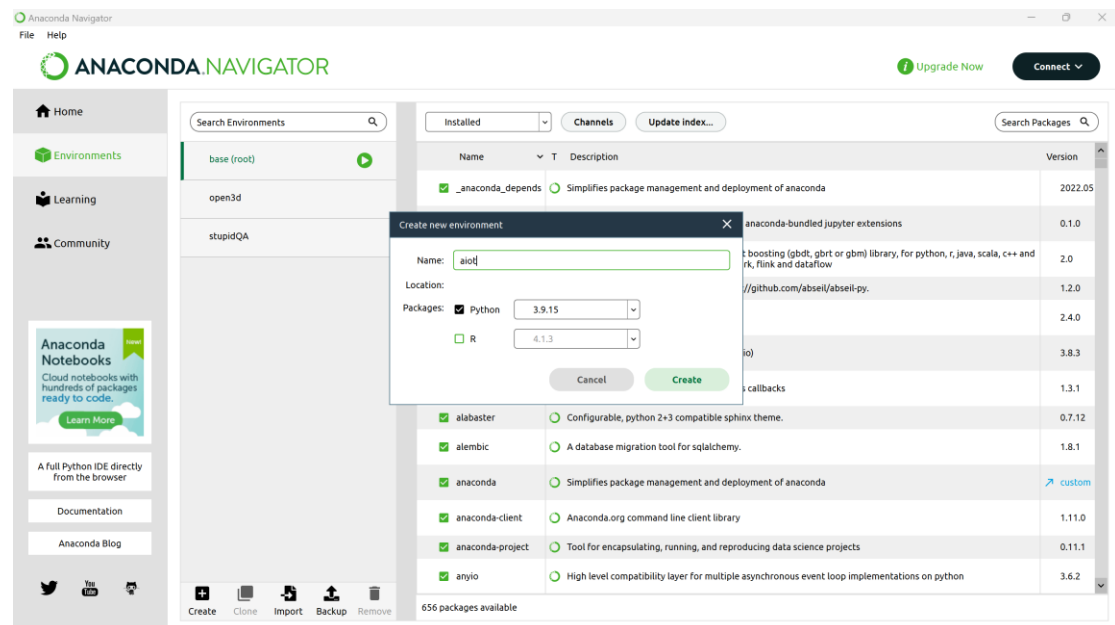
使用者帳號一覽

| | 使用者名稱 | 主機名稱 | 密碼 | 全域權限 | 使用者群組 | 允許授權(Grant) | 動作 |
|--------------------------|---------|-----------------|----|----------------|-------|-------------|---------|
| <input type="checkbox"/> | 任何 | % | 否 | USAGE | 否 | | 編輯權限 匯出 |
| <input type="checkbox"/> | pma | localhost | 否 | USAGE | 否 | | 編輯權限 匯出 |
| <input type="checkbox"/> | root | 127.0.0.1 | 否 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |
| <input type="checkbox"/> | root | :::1 | 否 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |
| <input type="checkbox"/> | root | ec2amaz-1qpqh3j | 否 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |
| <input type="checkbox"/> | root | localhost | 否 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |
| <input type="checkbox"/> | test123 | % | 是 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |
| <input type="checkbox"/> | test123 | localhost | 是 | ALL PRIVILEGES | 是 | | 編輯權限 匯出 |

STEP3 使用軟體 HeidiSQL 下 SQL 指令



STEP4 用 ANACONDA 建新環境



Anaconda Navigator

File Help

ANACONDA NAVIGATOR

Upgrade Now Sign in to Anaconda.org

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Environments

Learning

Community

Documentation

Developer Blog

Search Environments

base (root)

aiot

py310

py35

py38

py39

Create Clone Import Remove

Installed

Channels Update index...

| Name | T | Description | Version |
|---|---|---|---------|
| <input checked="" type="checkbox"/> _anaconda_depends | | | 2019.10 |
| <input checked="" type="checkbox"/> _ipyw_jlab_nb_ex... | | A configuration metapackage for enabling anaconda-bundled jupyter extensions | 0.1.0 |
| <input checked="" type="checkbox"/> alabaster | | Configurable, python 2+3 compatible sphinx theme. | 0.7.12 |
| <input checked="" type="checkbox"/> anaconda | | Simplifies package management ... | custom |
| <input checked="" type="checkbox"/> anaconda-client | | Anaconda.org command line client library | 1.7.2 |
| <input checked="" type="checkbox"/> anaconda-project | | Tool for encapsulating, running, and reproducing data science projects | 0.8.3 |
| <input checked="" type="checkbox"/> argh | | | 0.26.2 |
| <input checked="" type="checkbox"/> asn1crypto | | Python asn.1 library with a focu... | 0.24.0 |
| <input checked="" type="checkbox"/> astroid | | A abstract syntax tree for python with inference support. | 2.2.5 |
| <input checked="" type="checkbox"/> astropy | | Community-developed python library for astronomy | 3.2.1 |
| <input checked="" type="checkbox"/> atomicwrites | | Atomic file writes. | 1.3.0 |
| <input checked="" type="checkbox"/> attrs | | Attrs is the python package that ... | 19.1.0 |
| <input checked="" type="checkbox"/> autopep8 | | A tool that automatically formats python code to conform to the pep 8 style guide | 1.5.4 |
| <input checked="" type="checkbox"/> babel | | Utilities to internationalize and localize python applications | 2.7.0 |

Loading packages of C:\Users\user\Anaconda: Cancel

下載套件 1.Scikit-learn 2.pandas 3.numpy

ANACONDA NAVIGATOR

Upgrade Now Sign in to Anaconda.org

Search Environments

base (root)

aiot

py310

py35

py38

py39

All

Channels Update index...

scik

| Name | T | Description | Version |
|--|---|--|----------|
| <input type="checkbox"/> dask-searchcv | | Tools for doing hyperparameter search with scikit-learn and dask | 0.2.0 |
| <input type="checkbox"/> scikit-build | | | 0.11.1 |
| <input type="checkbox"/> scikit-image | | Image processing routines for scipy. | 0.18.3 |
| <input checked="" type="checkbox"/> scikit-learn | | A set of python modules for ma... | 1.0.2 |
| <input type="checkbox"/> scikit-learn-intelex | | | 2021.4.0 |
| <input type="checkbox"/> scikit-rf | | Object oriented microwave engineering. | 0.18.1 |

Search Environments

Q

base (root)

aiot

py310

py35

py38

py39

+

+

+

+

Create

Clone

Import

Remove

All

Channels

Update index...

numpyX

| Name | T | Description | Version |
|--|---|---|---------|
| <input type="checkbox"/> blaze | | Numpy and pandas interface to big data | 0.11.3 |
| <input type="checkbox"/> bottleneck | | Fast numpy array functions specialized for use in orange | 0.7.1 |
| <input type="checkbox"/> bottleneck | | Fast numpy array functions written in cython. | 1.3.2 |
| <input type="checkbox"/> cupy | | Cupy is an implementation of a numpy-compatible multi-dimensional array on cuda. | 8.3.0 |
| <input checked="" type="checkbox"/> mkl_fft | | Numpy-based implementation of fast Fourier transform using intel (r) math kernel library. | 1.3.1 |
| <input checked="" type="checkbox"/> mkl_random | | Intel (r) mkl-powered package F... | 1.2.2 |
| <input type="checkbox"/> msgpack-numpy | | Numpy data serialization using msgpack | 0.4.7.1 |
| <input type="checkbox"/> numba | | Numpy aware dynamic python compiler using llvm | 0.55.0 |
| <input type="checkbox"/> numexpr | | Fast numerical expression evaluator for numpy. | 2.8.1 |
| <input checked="" type="checkbox"/> numpy | | Array processing for numbers, st... | 1.21.5 |
| <input checked="" type="checkbox"/> numpy-base | | | 1.21.5 |
| <input type="checkbox"/> numpy-devel | | | 1.9.3 |
| <input type="checkbox"/> numpydoc | | Sphinx extension to support docstrings in numpy format | 1.1.0 |
| <input type="checkbox"/> pytables | | Brings together python, hdf5 an... | 3.6.1 |

15 packages available matching "numpy"

登入

物聯網作業HW5 - Word

共用

ANALYTICS

ANALYTICS

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All

Channels

Update index...

pandas X

base (root)

aiot

py310

py35

py38

py39

Open Terminal

Open with Python

Open with IPython

Open with Jupyter Notebook

Name

T

Description

Version

☒ pandas

☐ pandas-datareader

☐ pandas-profiling

☐ pandasql

☐ qgrid

☐ streamz

An auto-visualization library for pandas dataframes

Numpy and pandas interface to big data

Geographic pandas extensions.

High-performance, easy-to-use data structures and data analysis tools.

Up to date remote data access for pandas, works for multiple versions of pandas

Generate profile report for pandas dataframe

SqlDf for pandas

Pandas dataframe viewer for jupyter notebook

Manage streaming data, optionally with dask and pandas

0.18.0

0.11.3

0.9.0

1.3.5

0.9.0

2.9.0

0.7.3

1.3.1

0.6.3

Create

Clone

Import

Remove

10 packages available matching "pandas"

第 9 頁，共 10 頁

152 個字

中文 (台灣)

90%

Windows Taskbar

```
ca. 選択 C:\Windows\system32\cmd.exe

(aiot) C:\Users\user>pip list
Package          Version
-----
certifi           2022.9.24
pip               22.2.2
setuptools        65.5.0
wheel             0.37.1
wincertstore      0.2

(aiot) C:\Users\user>pip list
Package          Version
-----
Bottleneck        1.3.5
certifi           2022.9.24
joblib            1.1.1
mkl-fft           1.3.1
mkl-random        1.2.2
mkl-service       2.4.0
numexpr           2.8.4
numpy             1.21.5
packaging         21.3
pandas            1.3.5
pip               22.2.2
pyparsing         3.0.9
python-datentil   2.8.2
pytz              2022.1
scikit-learn      1.0.2
scipy             1.7.3
setuptools        65.5.0
six               1.16.0
threadpoolctl     2.2.0
wheel             0.37.1
wincertstore      0.2

(aiot) C:\Users\user>pip install pymysql
Collecting pymysql
  Downloading PyMySQL-1.0.2-py3-none-any.whl (43 kB)
----- 43.8/43.8 kB 1.0 MB/s eta 0:00:00
Installing collected packages: pymysql
Successfully installed pymysql-1.0.2

(aiot) C:\Users\user>
```

Home




Environments

Learning

Community

Documentation

Developer Blog

Search Environments

base (root)

aiot

py310

py35

py38

py39

Create

Clone

Import

Remove

All

Channels

Update index...

pymysql


| Name | Description | Version |
|---------|--------------------------|---------|
| pymysql | Pure python mysql driver | 1.0.2 |

1 package available matching "pymys" 1 package selected

Apply

Clear

base (root)

aiot 

py310

py35

py38

py39

+

+

+

+











CreateCloneImportRemove

All

Channels

Update index...

pandas X

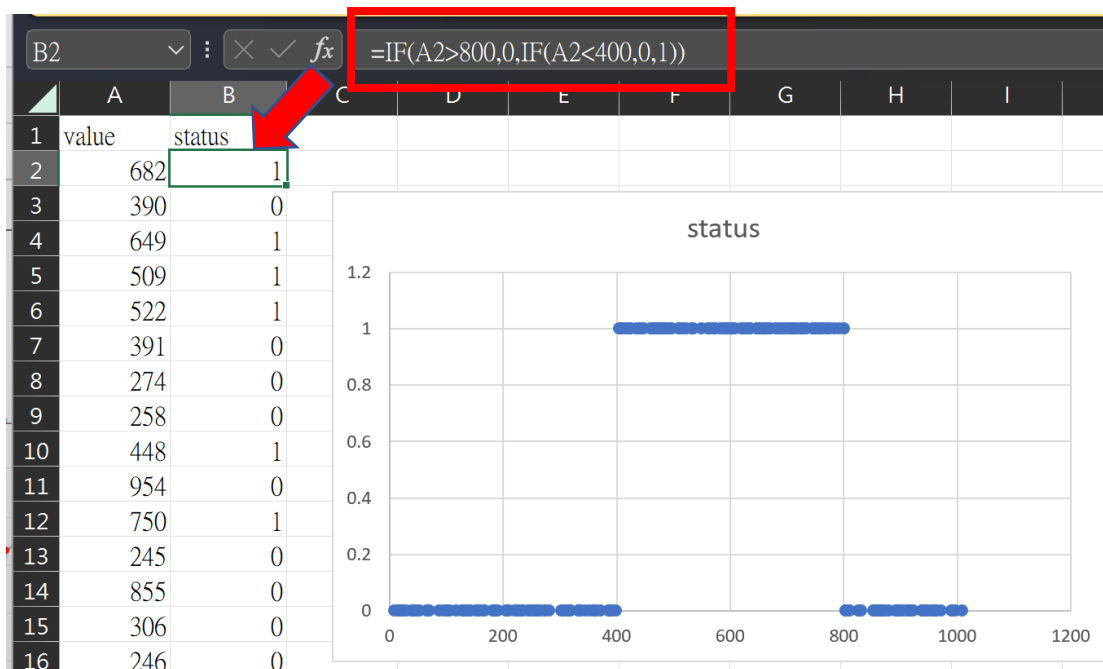
| Name | T | Description | Version |
|--|--|---|---------|
| <input type="checkbox"/> autovizwidget |  | An auto-visualization library for pandas dataframes | 0.18.0 |
| <input type="checkbox"/> blaze |  | Numpy and pandas interface to big data | 0.11.3 |
| <input type="checkbox"/> geopandas |  | Geographic pandas extensions. | 0.9.0 |
| <input type="checkbox"/> geopandas-base |  | | 0.9.0 |
| <input checked="" type="checkbox"/> pandas |  | High-performance, easy-to-use data structures and data analysis tools. | 1.3.5 |
| <input type="checkbox"/> pandas-datareader |  | Up to date remote data access for pandas, works for multiple versions of pandas | 0.9.0 |
| <input type="checkbox"/> pandas-profiling |  | Generate profile report for pandas dataframe | 2.9.0 |
| <input type="checkbox"/> pandasql |  | Sqlidf for pandas | 0.7.3 |
| <input type="checkbox"/> qgrid |  | Pandas dataframe viewer for jupyter notebook | 1.3.1 |
| <input type="checkbox"/> streamz |  | Manage streaming data, optionally with dask and pandas | 0.6.3 |

10 packages available matching "pandc" 1 package selected

Apply

Clear

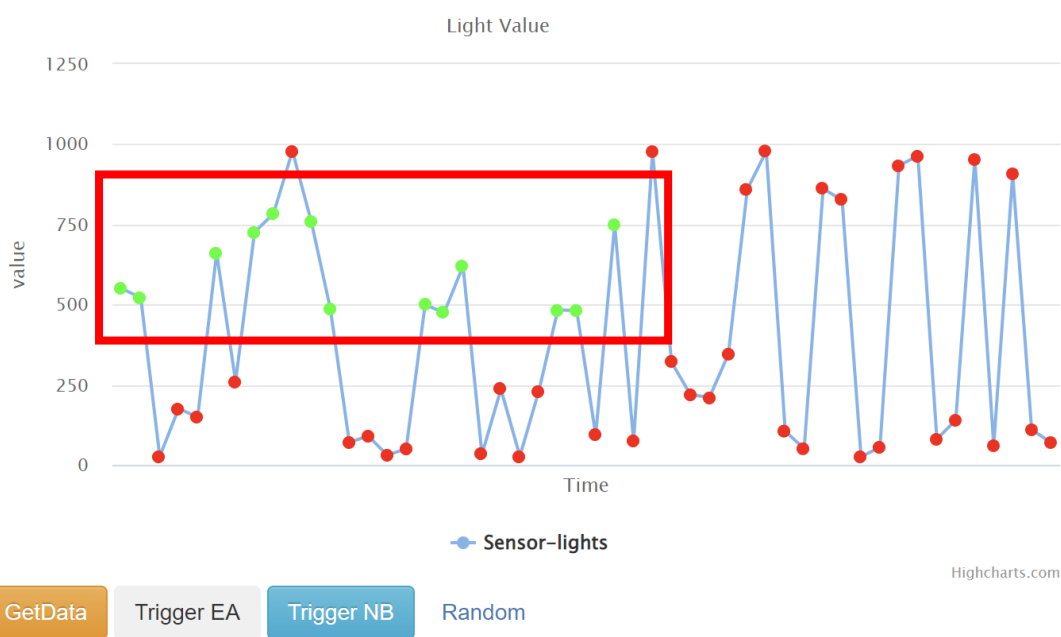
(20%) Part 2: AI Module 與 web 互動 (要實現 AI 複雜一點的判斷 非線性 using trainN.csv)



Light value 400~800 >> status=1

Light value < 400 or > 800 >> status=0

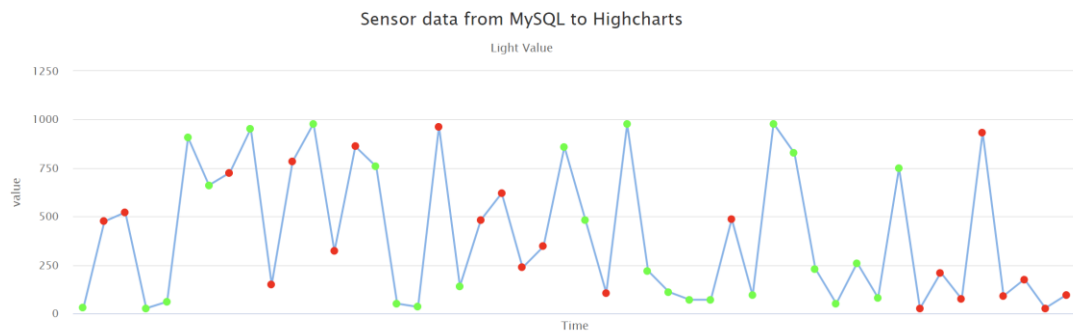
Sensor data from MySQL to Highcharts



```
// show last 50 筆 data 小於50筆:0 大於50筆-50
for (var i = ((data.length<50)? 0:data.length-50); i < data.length; i++)
```



按 Random button 可以將 status 狀態用亂 >> 紅綠點隨機

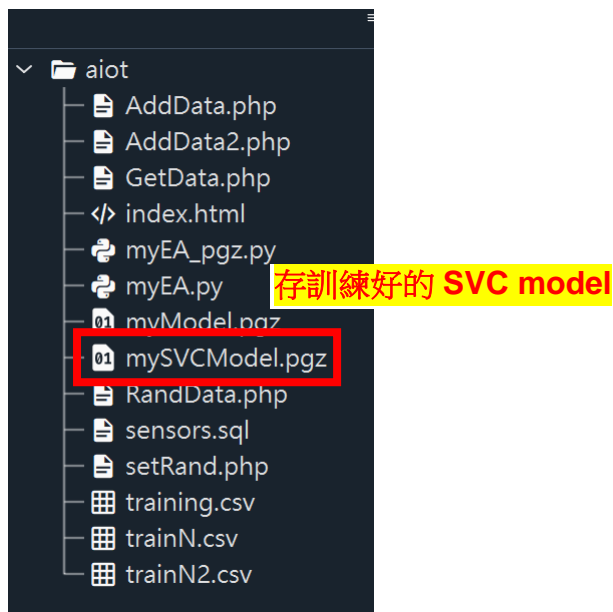


再執行 EA.py 可恢復

(20%) Part 3: AI module myAI.pkz 訓練出來放到 web, (也就是不再需要 training.csv)

- 使用 pickle 儲存模型並利用 gzip 壓縮

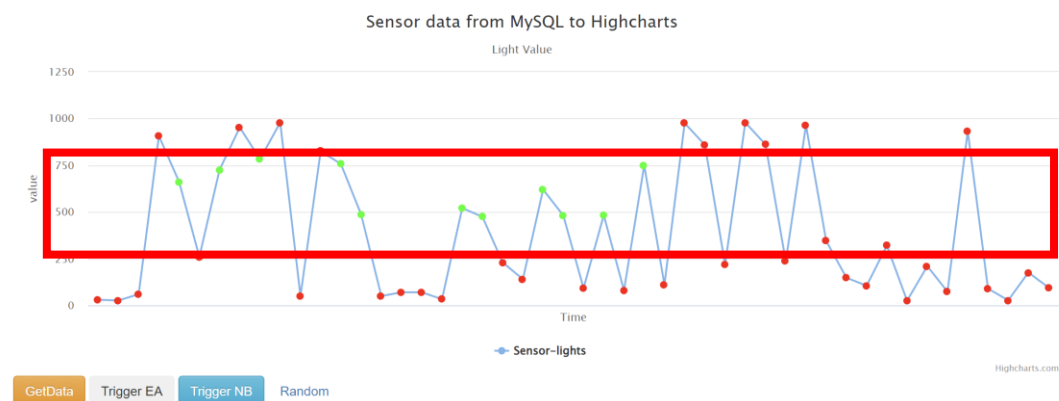
```
#=== gzip and pickle
import pickle
import gzip
with gzip.GzipFile('mySVCMODEL.pgZ', 'w') as f:
    pickle.dump(model, f)
```



存訓練好的 SVC model

用存好的 SVC model 做訓練

```
#===== load model =====  
import pickle  
import gzip  
  
#讀取Model  
with gzip.open('mySVCModel.pgz', 'r') as f:  
    model = pickle.load(f)
```



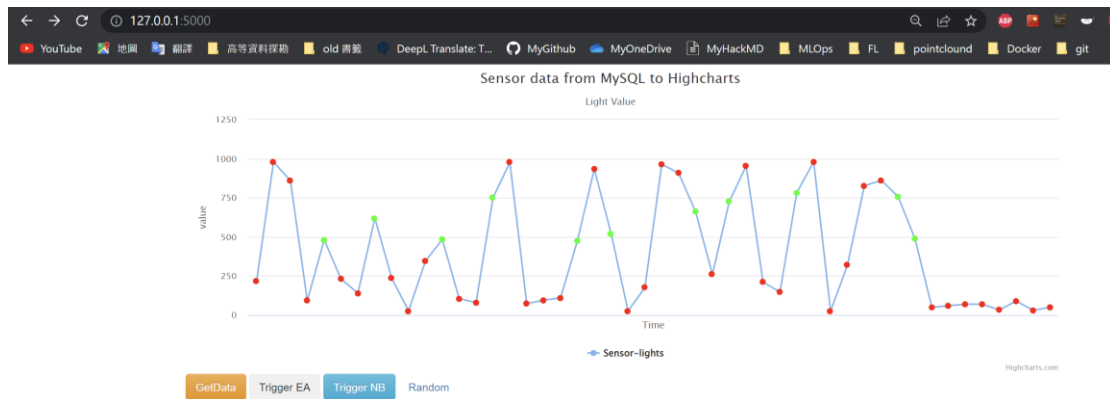
(20%) Part 4: 改用 flask 框架

Demo 影片：<https://youtu.be/esFO0mnexmM>

python app.py

```
if __name__ == '__main__':  
    app.run(debug=True, use_reloader=True, port=5000)
```

```
(aiot) C:\xampp\htdocs\flask_AIoT>python app.py  
* Serving Flask app 'app' (lazy loading)  
* Environment: production  
  WARNING: This is a development server. Do not use it in a production deployment.  
  Use a production WSGI server instead.  
* Debug mode: on  
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.  
* Running on http://127.0.0.1:5000  
Press CTRL+C to quit  
* Restarting with watchdog (windowsapi)  
* Debugger is active!  
* Debugger PIN: 372-687-086
```



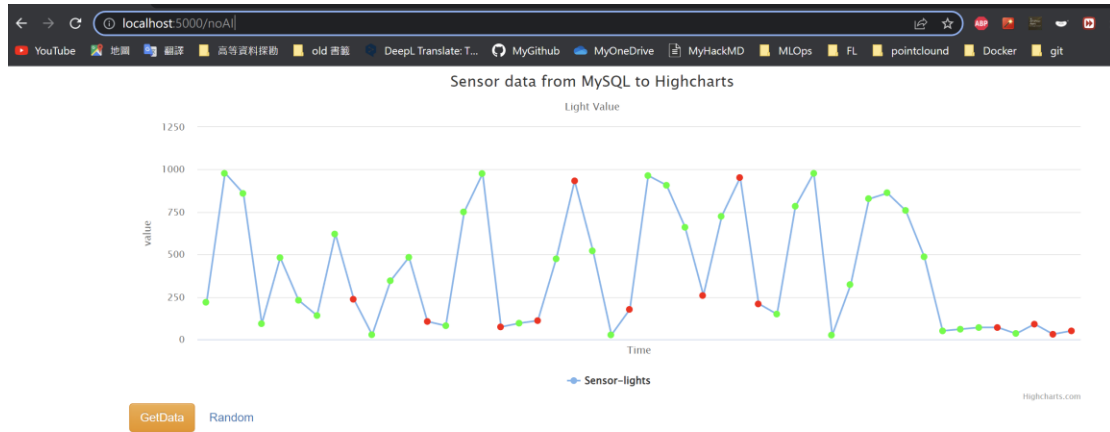
getData.php 改成 getData

```
$(function () {  
    $.ajax({  
        url: '/getData',//連接的URL  
        data: {}, //空值的參數  
        dataType: 'json', //資料格式  
        success: function(data) //傳送成功的function  
        {  
            lights = [];  
            humis=[];  
            temps = [];  
            time = [];  
  
            // show last 50 筆 data 小於50筆:0 大於50筆-50  
            for (var i = ((data.length<50)? 0:data.length-50); i < data.length; i++)  
            {  
                if(parseInt(data[i][5])!=0){  
                    lights.push({y:parseInt(data[i][2]), color: '#FF0000' });  
                    humis.push({y:parseInt(data[i][3]), color: '#FF0000' });  
                    temps.push({y:parseInt(data[i][4]), color: '#FF0000' });  
                }else{  
                    lights.push({y:parseInt(data[i][2]), color: '#00FF00' });  
                    humis.push({y:parseInt(data[i][3]), color: '#00FF00' });  
                    temps.push({y:parseInt(data[i][4]), color: '#00FF00' });  
                }  
                time.push(data[i][1]);  
            }  
            highcharsinit();  
        } //success end  
    }); //ajax end  
}); //function end  
</script>
```

```
@app.route("/getData")  
def getData():  
    myserver = "localhost"  
    myuser = "test123"  
    mypassword = "test123"  
    mydb = "aiotdb"  
  
    debug = 0  
    from pandas import DataFrame as df  
    import pandas as pd # 引用套件並縮寫為 pd  
    import numpy as np  
  
    import pymysql.cursors  
    #db = mysql.connector.connect(host="140.120.15.45",user="toto321", passwd="12345678", db='')  
    #conn = mysql.connector.connect(host=myserver,user=myuser, passwd=mypassword, db=mydb)  
    conn = pymysql.connect(host=myserver,user=myuser, passwd=mypassword, db=mydb)  
  
    c = conn.cursor()  
    if debug:  
        input("pause.. conn.cursor() ok.....")  
  
    #===== 執行 MySQL 查詢指令 =====#  
    c.execute("SELECT * FROM sensors")
```

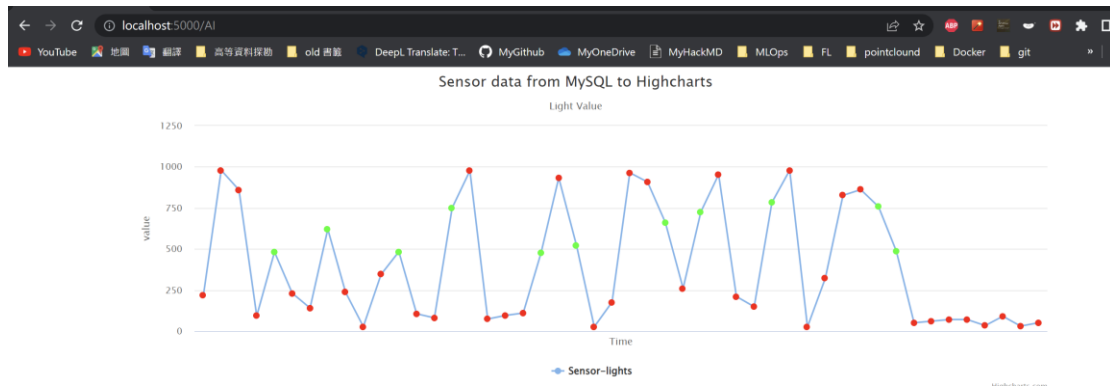
一開始下 SQL 弄亂 各點 status

```
#===== 執行 MySQL 更新指令 =====#  
c.execute("UPDATE sensors SET STATUS=RAND()")  
conn.commit()
```



用預訓練模型 train

```
# 原EA.py  
@app.route("/getPredict")  
def getPredict():  
  
    # step 1 : connect DB  
    myserver = "localhost"  
    myuser = "test123"  
    mypassword = "test123"  
    mydb = "aiotdb"  
  
    debug = 0  
    from pandas import DataFrame as df  
    import pymysql.cursors  
    conn = pymysql.connect(host=myserver, user=myuser, passwd=mypassword, db=mydb)  
    c = conn.cursor()  
    if debug:  
        input("pause.. conn.cursor() ok.....")  
  
    #step 2: load model #讀取Model###  
    import pickle  
    import gzip  
    with gzip.open('model/mySVModel.pg', 'r') as f:  
        model = pickle.load(f)
```



(20%) Part 5:改成 ngrok 讓他有一個 domain name

```
C:\Users\yun\Desktop\常用教 × + v
ngrok
Add Single Sign-On to your ngrok dashboard via your Identity Provider: https://ngrok.com/dashSSO
Session Status online
Account yam8572@gmail.com (Plan: Free)
Version 3.1.0
Region Japan (jp)
Latency -
Web Interface http://127.0.0.1:4040
Forwarding https://0d3f-140-120-13-178.jp.ngrok.io -> http://localhost:5000
Connections
ttl opn rt1 rt5 p50 p90
0 0 0.00 0.00 0.00 0.00
```