

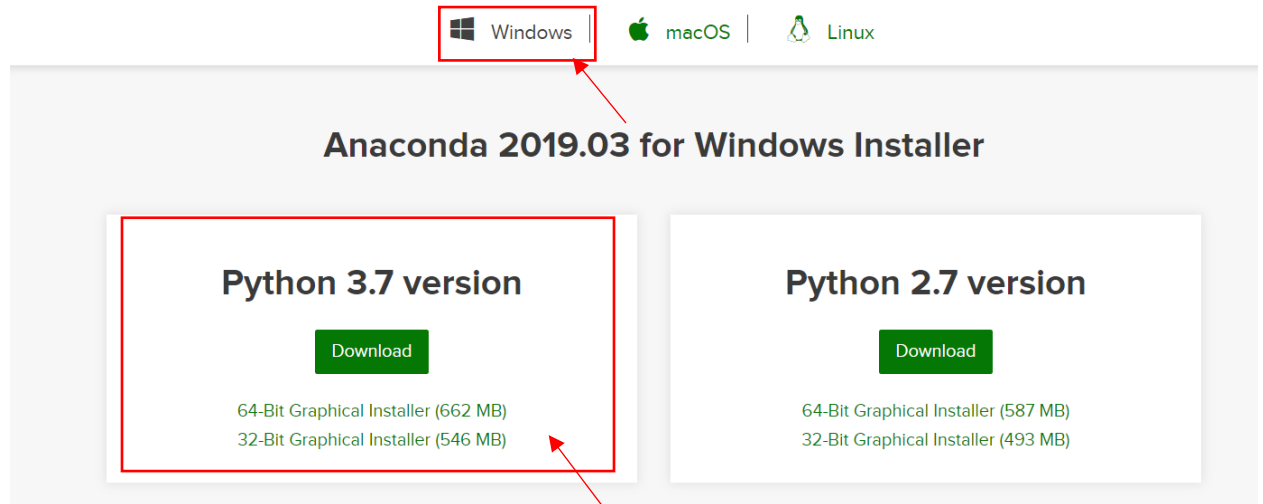
使用 CNN 進行人臉辨識的教學

(一)環境建立

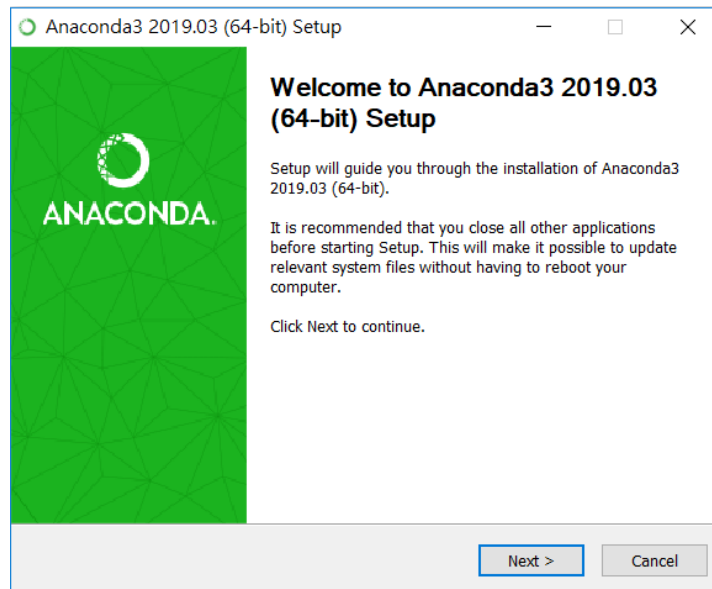
Anaconda 下載

<https://www.anaconda.com/distribution/#download-section>

(1)去這個網站下載 (根據電腦的規格與作業系統選擇)



(2)執行下載封裝



Anaconda3 2019.03 (64-bit) Setup



License Agreement

Please review the license terms before installing Anaconda3 2019.03 (64-bit).

Press Page Down to see the rest of the agreement.

=====

Anaconda End User License Agreement

=====

Copyright 2015, Anaconda, Inc.

All rights reserved under the 3-clause BSD License:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install Anaconda3 2019.03 (64-bit).

Anaconda, Inc.

< Back

I Agree

Cancel

Anaconda3 2019.03 (64-bit) Setup



Select Installation Type

Please select the type of installation you would like to perform for Anaconda3 2019.03 (64-bit).

Install for:

☒ Just Me (recommended)

☐ All Users (requires admin privileges)

Anaconda, Inc.

< Back

Next >

Cancel

選擇下載存取路徑

Anaconda3 2019.03 (64-bit) Setup



Choose Install Location

Choose the folder in which to install Anaconda3 2019.03 (64-bit).

Setup will install Anaconda3 2019.03 (64-bit) in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.

Destination Folder

C:\Users\vegetableclean\Anaconda3

Browse...

Space required: 3.1GB

Space available: 14.4GB

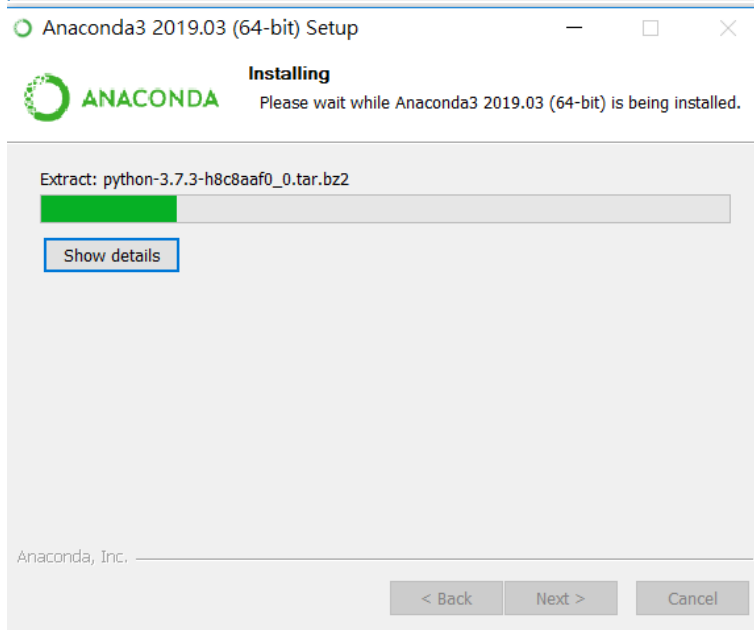
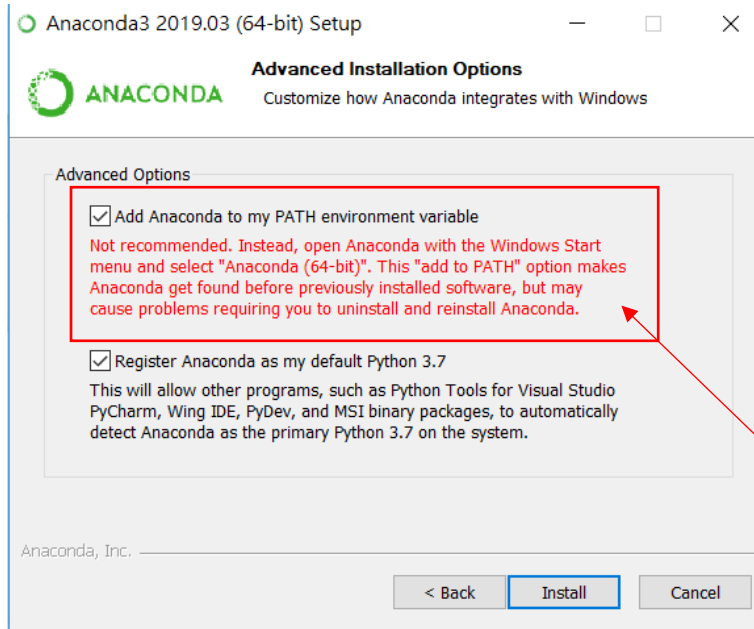
Anaconda, Inc.

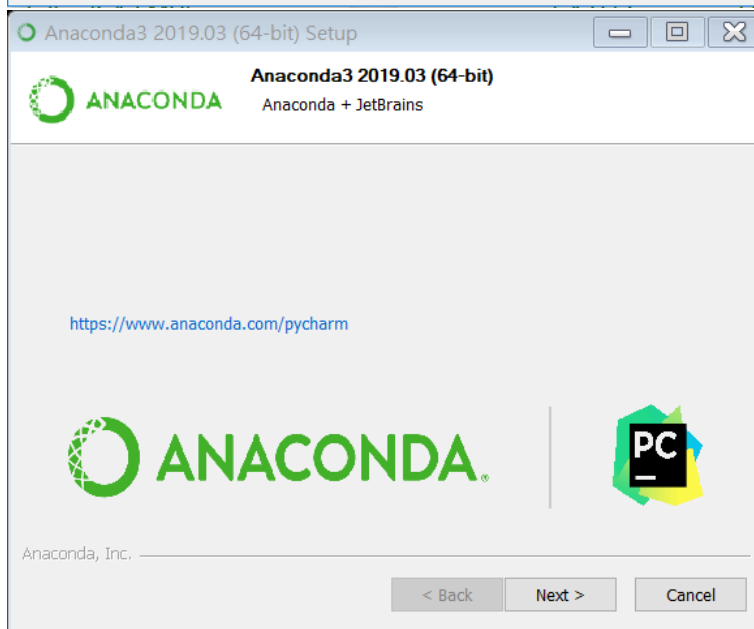
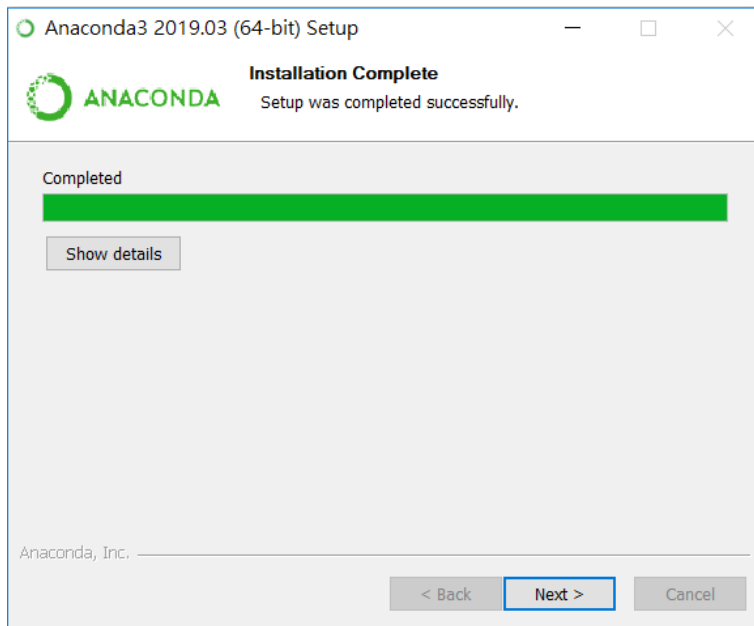
< Back

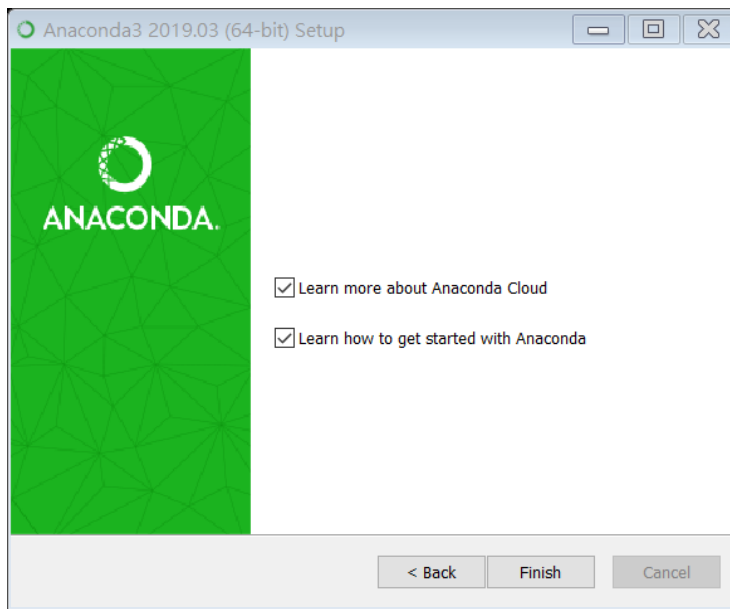
Next >

Cancel

將下載檔案設定道路徑

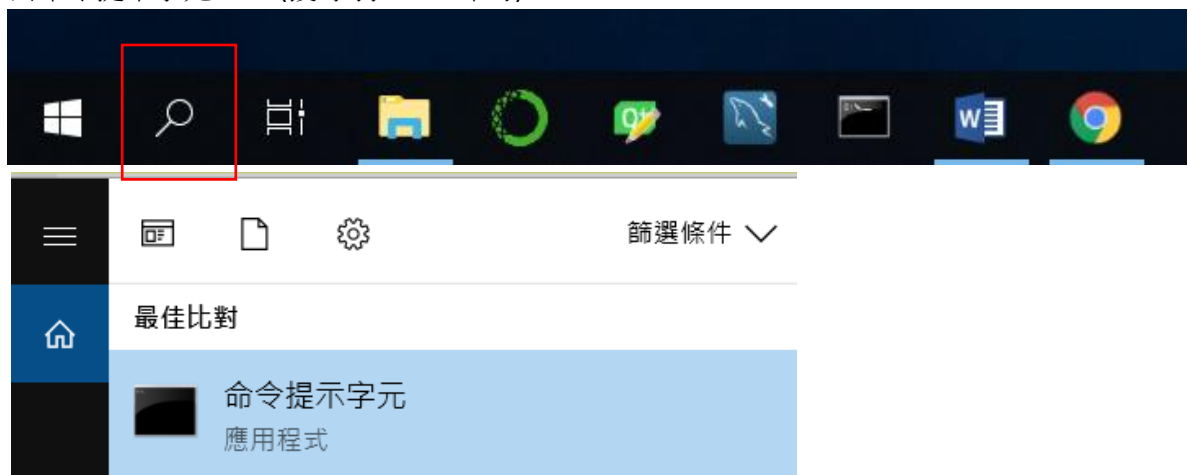




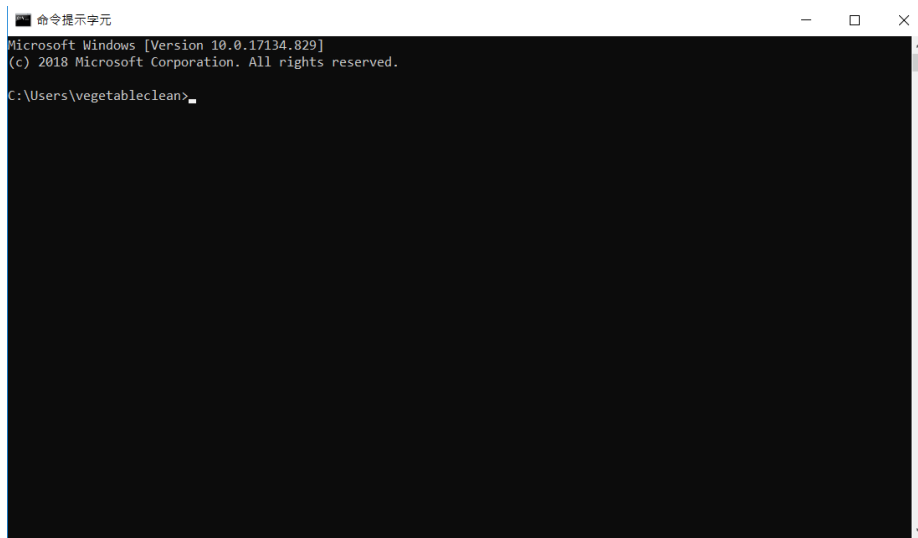


安裝完成!

1. 確認 Anaconda 與 python 是否安裝成功
去命令提示字元 CMD(搜尋 打 CMD 即可)



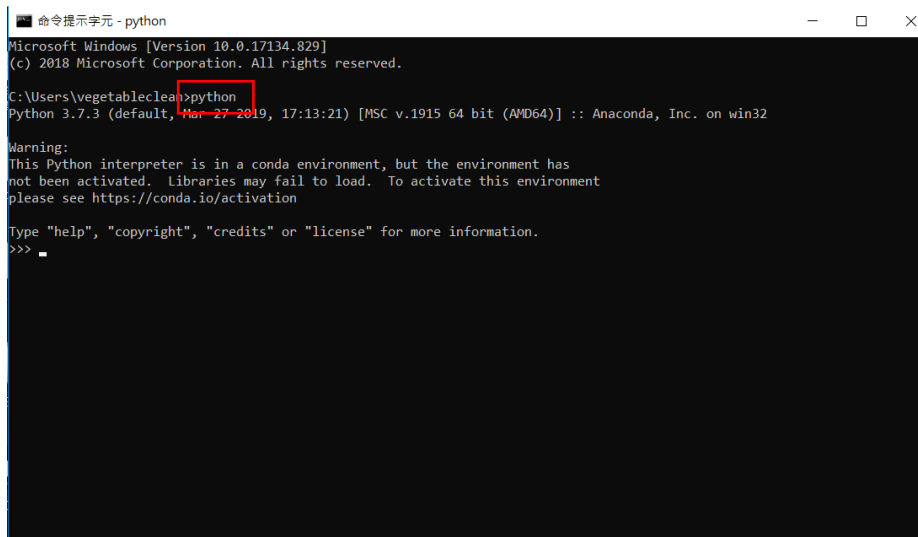
進入命令提示字元 CMD



```
命令提示字元
Microsoft Windows [Version 10.0.17134.829]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\vegetableclean>
```

輸入 python



```
命令提示字元 - python
Microsoft Windows [Version 10.0.17134.829]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\vegetableclean>python
Python 3.7.3 (default, Mar 27 2019, 17:13:21) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32

Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated. Libraries may fail to load. To activate this environment
please see https://conda.io/activation

Type "help", "copyright", "credits" or "license" for more information.
>>> _
```

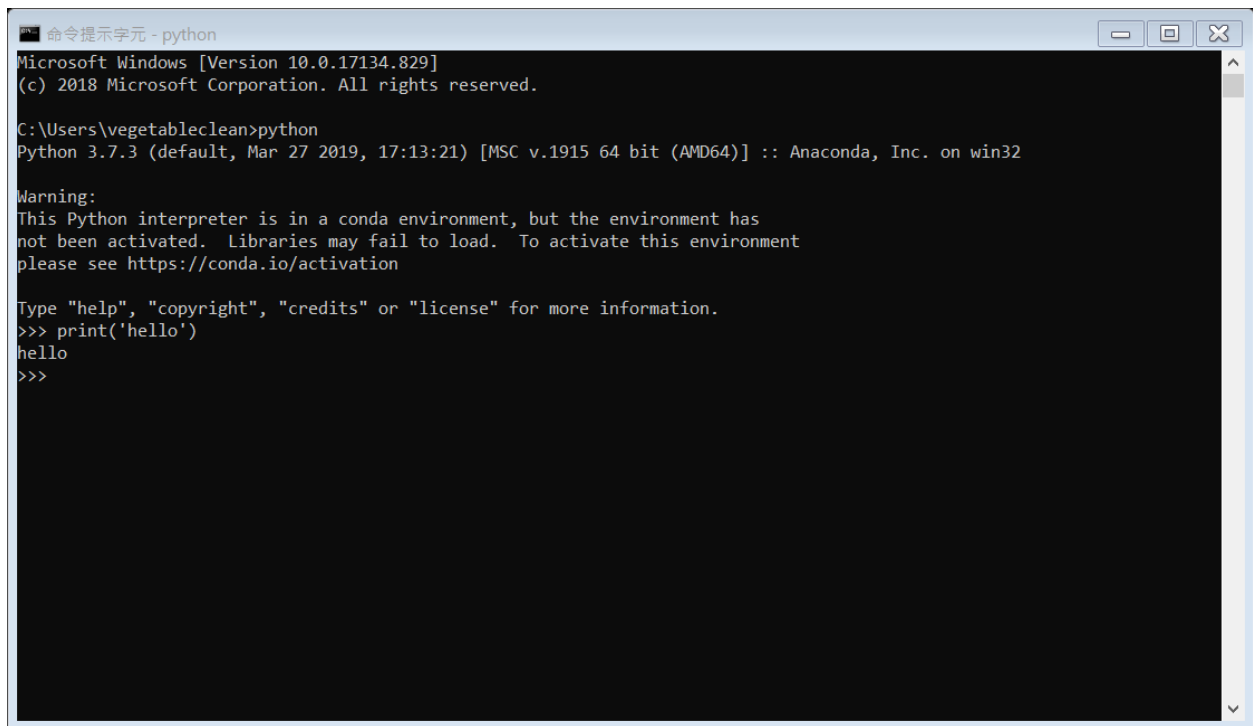
Python 安裝成功!

3. python 在命令提示字元基本功能介紹

(1)如果要直接在命令提示字元執行程式

開啟命令提示字元並且輸入 python 就會跳出 python 的介面

再來輸入要執行的 python 指令即可 (註: 在命令提示字元 一次只能執行一行 python 指令)



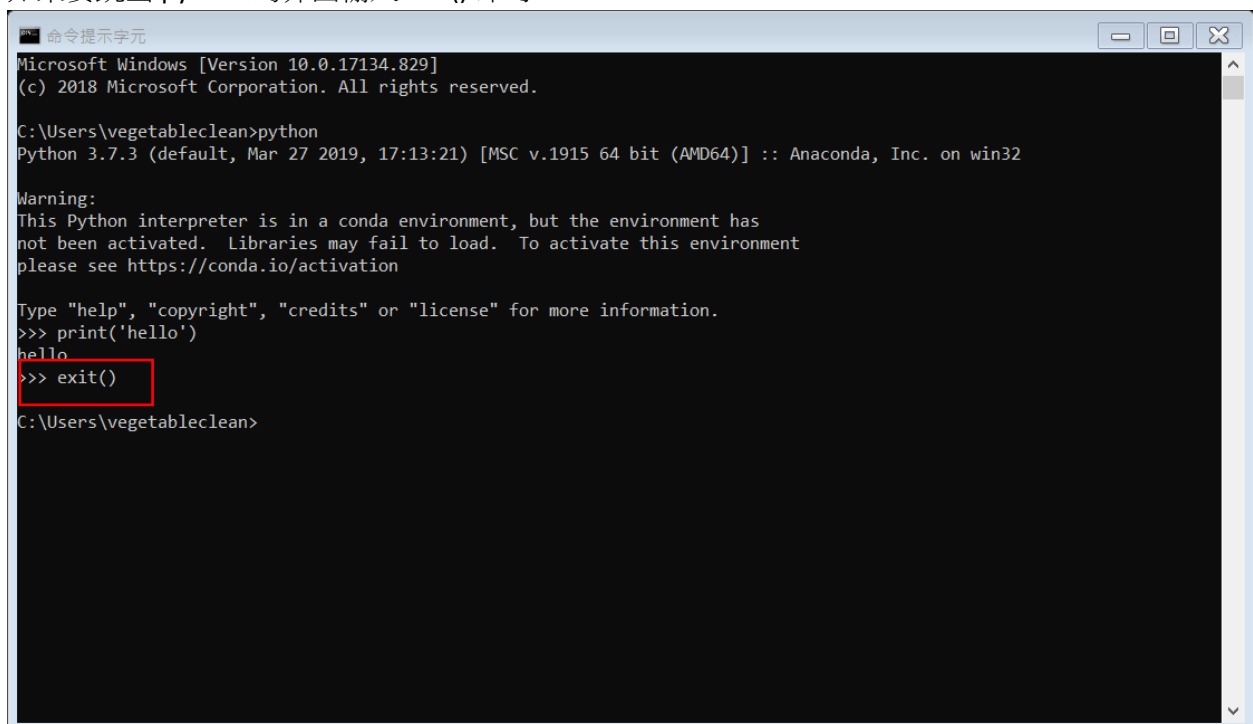
```
命令提示字元 - python
Microsoft Windows [Version 10.0.17134.829]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\vegetableclean>python
Python 3.7.3 (default, Mar 27 2019, 17:13:21) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32

Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated. Libraries may fail to load. To activate this environment
please see https://conda.io/activation

Type "help", "copyright", "credits" or "license" for more information.
>>> print('hello')
hello
>>>
```

如果要跳出 python 的介面輸入 `exit()` 即可



```
命令提示字元
Microsoft Windows [Version 10.0.17134.829]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\vegetableclean>python
Python 3.7.4 (default, Mar 27 2019, 17:13:21) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32

Warning:
This Python interpreter is in a conda environment, but the environment has
not been activated. Libraries may fail to load. To activate this environment
please see https://conda.io/activation

Type "help", "copyright", "credits" or "license" for more information.
>>> print('hello')
hello
>>> exit()
C:\Users\vegetableclean>
```

`cd` 路徑 代表切換到某個路徑

EX: `cd desktop` == 切換到桌面

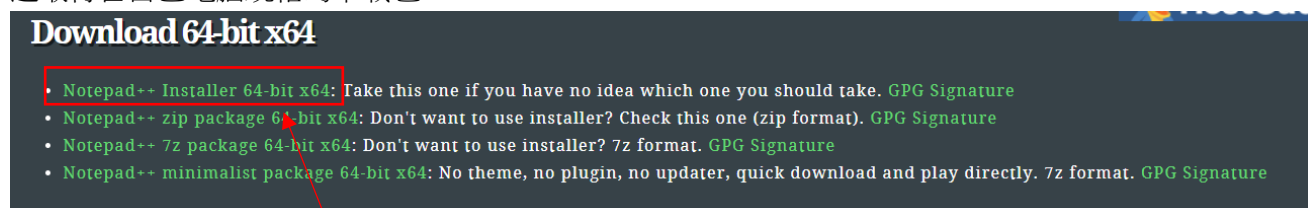
```
C:\Users\vegetableclean>cd desktop  
C:\Users\vegetableclean\Desktop>_
```

(2) 在命令提示字元執行 python 程式(使用 notepad++ 編譯器)

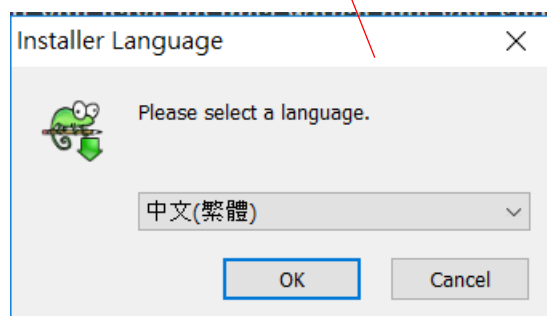
下載 notepad++

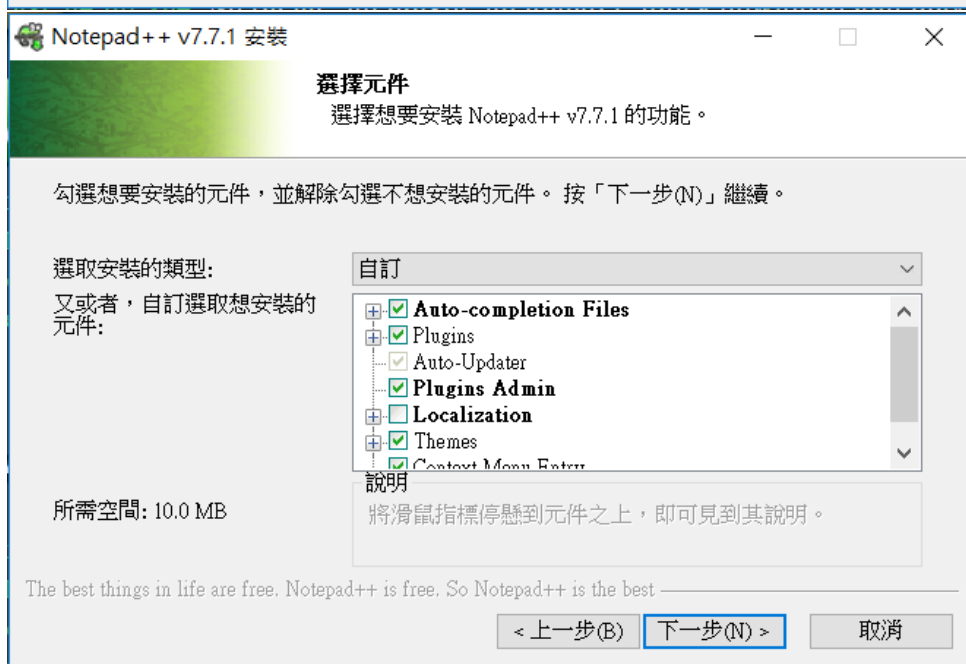
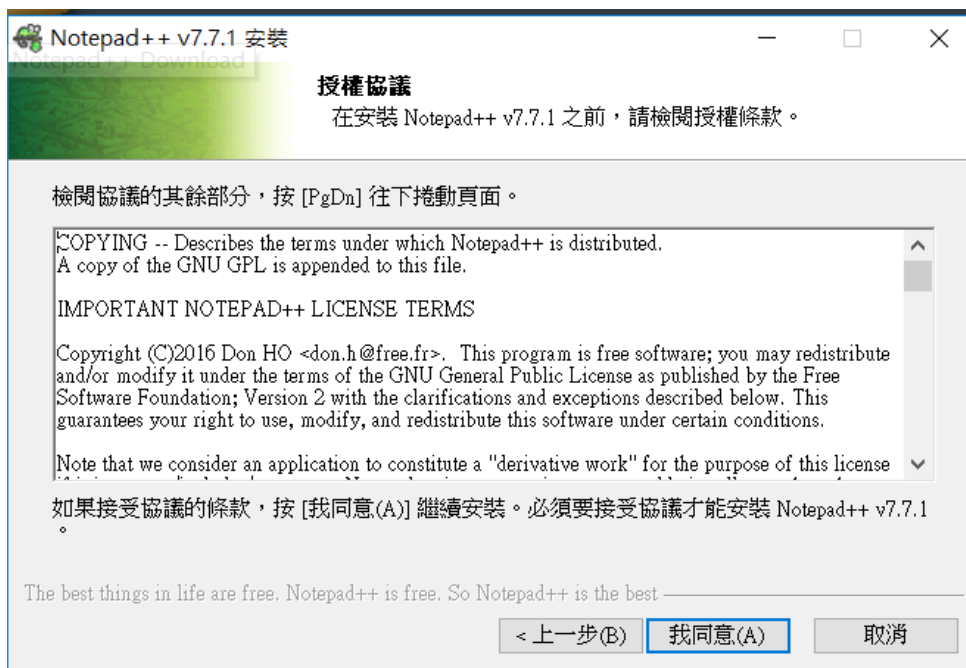
<https://notepad-plus-plus.org/zh/>

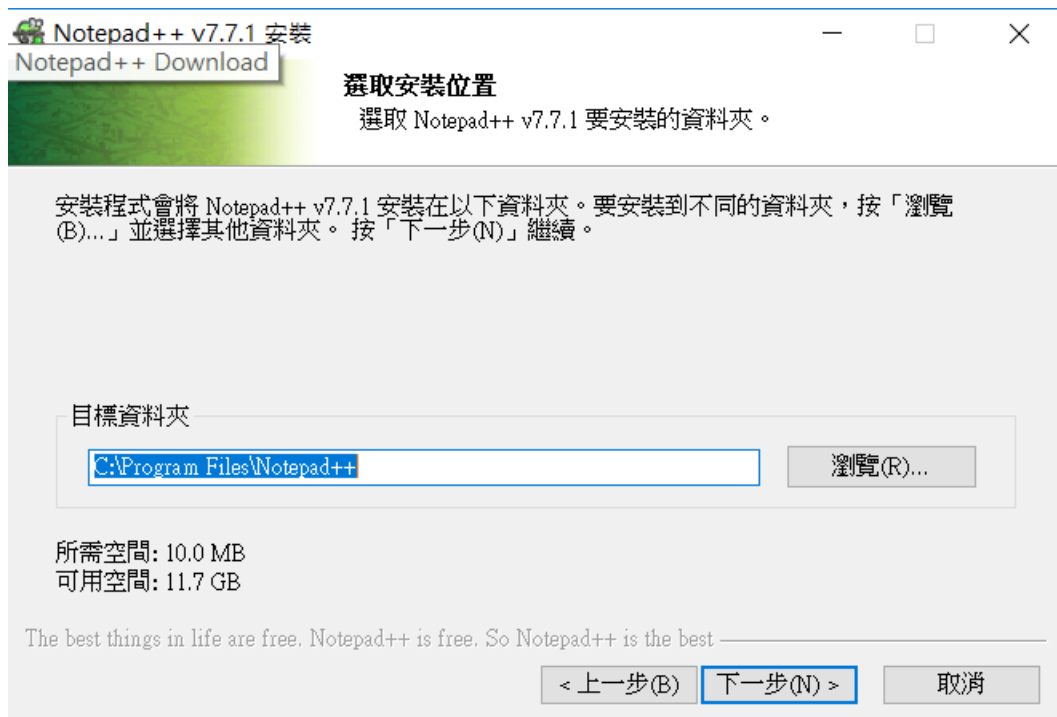
選取符合自己電腦規格的下載包



安裝 Notepad++ (一直下一步即可)



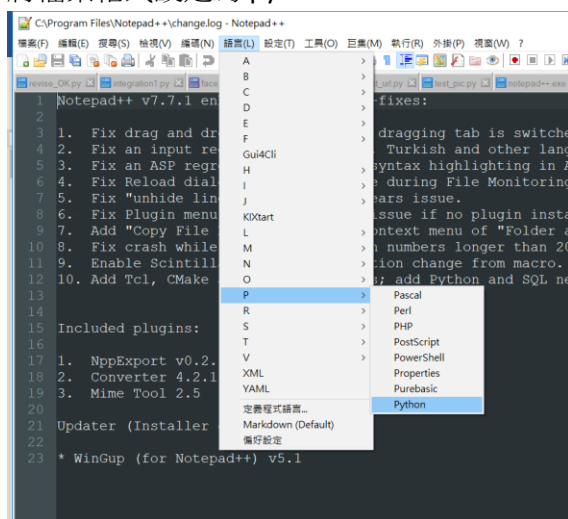




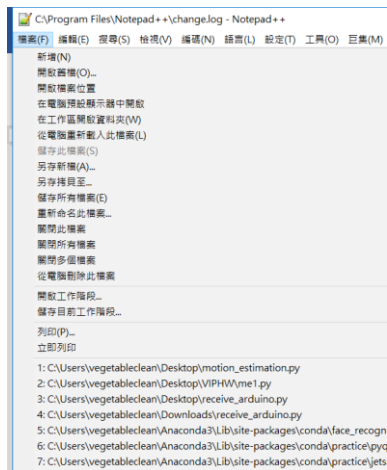


(4)Notepad++基本設定

將檔案格式設定為 python

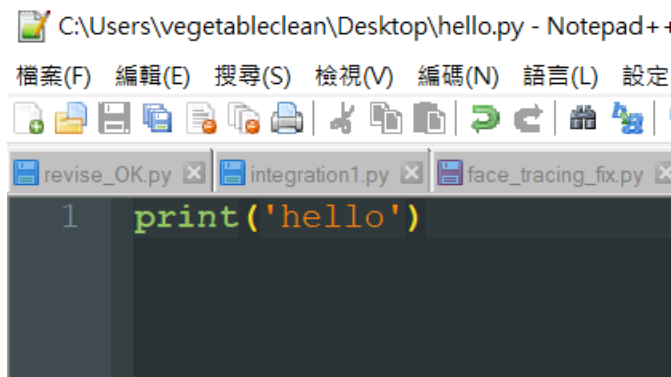


基本檔案存取

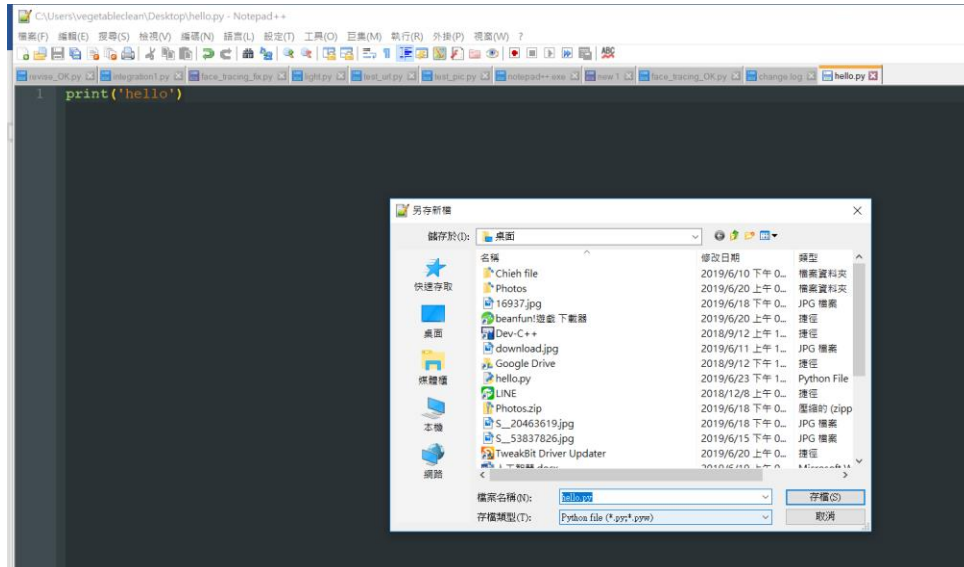


在 notepad++ 上寫程式並在命令提示字元輸出結果

1. 在 notepad++ 輸入程式



2. 將檔案存到桌面 (這裡命為 hello.py)



3. 開啟命令提示字元 切換到桌面(cd desktop)

```
C:\Users\vegetableclean>cd desktop  
C:\Users\vegetableclean\Desktop>
```

並執行程式 `python hello.py`

```
C:\Users\vegetableclean>cd desktop  
C:\Users\vegetableclean\Desktop>python hello.py  
hello
```

成功利用命令提示字元執行 notepad++檔案!!

(二)Anaconda 虛擬環境建立

(1) 開啟命令提示字元並使用虛擬環境

輸入 `conda create -n tensorflow` 建立虛擬環境

```
C:\Users\vegetableclean>conda create -n tensorflow
```

`activate tensorflow` 激活虛擬環境

```
(tensorflow) C:\Users\vegetableclean>
```

激活成功!

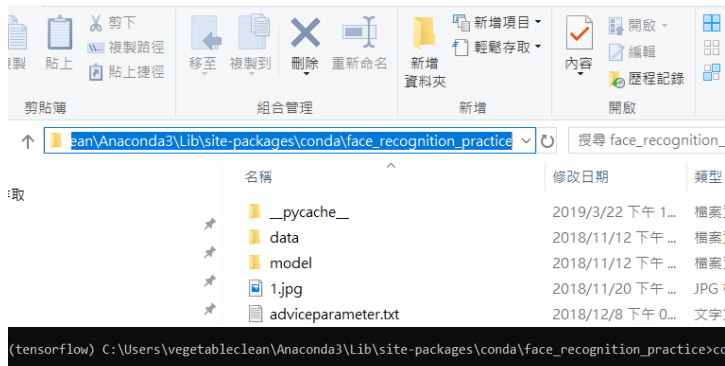
退出虛擬環境

```
(tensorflow) C:\Users\vegetableclean>deactivate
```

(2)在虛擬環境建立需要的 package

1. 測試 python 檔案

切換到檔案位置 (`cd` 檔案位置)



2. 安裝 pillow

執行 `pip install pillow`

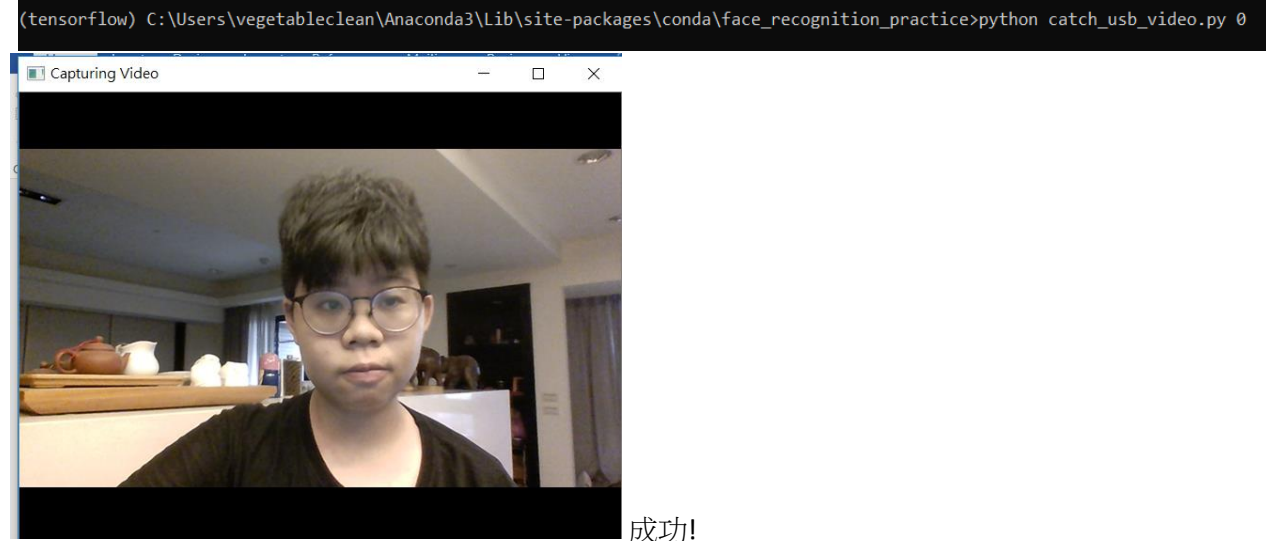
```
>pip install pillow
```

3. 安裝 opencv

```
pip install opencv-python
```

```
(tensorflow) C:\Users\vegetableclean\Anaconda3\Lib\site-packages\conda\face_recognition_practice>pip install opencv-python
Collecting opencv-python
  Downloading https://files.pythonhosted.org/packages/dc/54/a6b7727c67d4e14194549a9e1a1acd7902ebae2f4a688d84b658ae40b5fb/ope
    72% |#####| 27.1MB 3.8MB/s eta 0:00:03
```

測試是否安裝成功 執行檔案



按鍵盤 `q` 退出畫面

4. 安裝 keras 跟 sklearn

```
conda install keras
```

```
(tensorflow) C:\Users\vegetableclean\Anaconda3\Lib\site-packages\conda\face_recognition_practice>conda install keras
WARNING: The conda.compat module is deprecated and will be removed in a future release.
Collecting package metadata: done
Solving environment: done
```

vc	pkgs/main/win-64::vc-14.1-h0510ff6_4
vs2015_runtime	pkgs/main/win-64::vs2015_runtime-14.15.26706
werkzeug	pkgs/main/noarch::werkzeug-0.15.4-py_0
wheel	pkgs/main/win-64::wheel-0.33.4-py37_0
wincertstore	pkgs/main/win-64::wincertstore-0.2-py37_0
yaml	pkgs/main/win-64::yaml-0.1.7-hc54c509_2
zlib	pkgs/main/win-64::zlib-1.2.11-h62dcd97_3

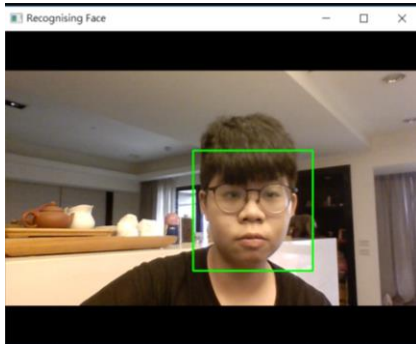
```
Proceed ([y]/n)? y
```

```
conda install scikit-learn
```

```
(tensorflow) C:\Users\vegetableclean\Anaconda3\Lib\site-packages\conda\face_recognition_practice>conda install scikit-learn
WARNING: The conda.compat module is deprecated and will be removed in a future release.
Collecting package metadata: done
Solving environment: done
```

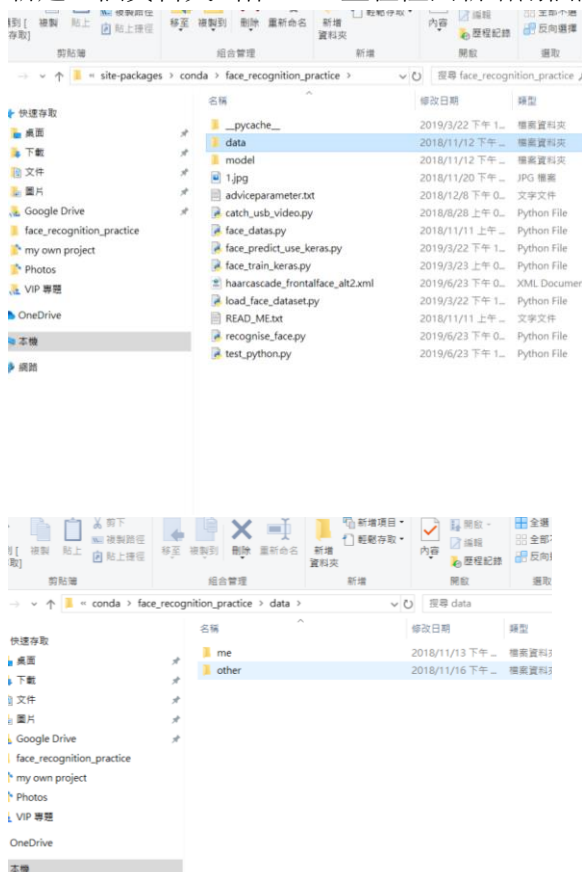
5. 執行人臉偵測程式

python recognise_face.py 0



6. 準備資料庫

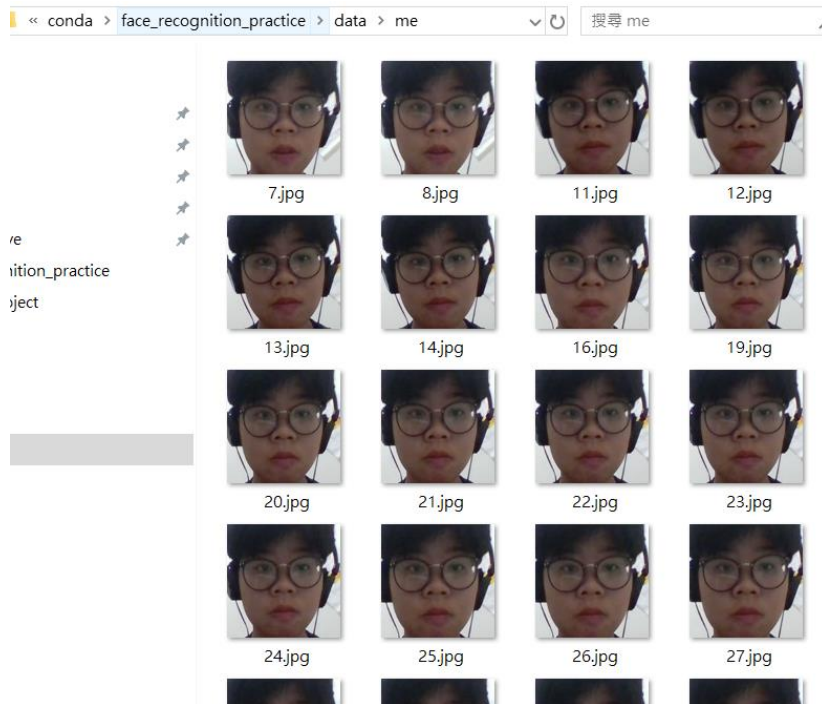
新建一個資料夾叫作 data 並在裡面新增兩個資料夾 並命名為 me 跟 other



執行蒐集資料庫的程式 (1000 代表要蒐集的照片數量 data/me 代表資料夾位置)
分別為

python face_data.py 0 1000 data/me

python face_data.py 0 1000 data/other



蒐集成功!!

7. 訓練人臉的資料

python face_train_keras.py

```
(tensorflow) C:\Users\vegetableclean\Anaconda3\Lib\site-packages\conda\face_recognition_practice>python face_train_keras.py
C:\Users\vegetableclean\Anaconda3\lib\site-packages\h5py\__init__.py:36: FutureWarning: Conversion of the second argument of 'issubdtype' from `float`
as `np.float64` to `np.dtype(float).type`.
  from ._conv import register_converters as _register_converters
Using TensorFlow backend.
```

8. 實際預測人臉

python face_predict_use_keras.py

```
(tensorflow) C:\Users\vegetableclean\Anaconda3\Lib\site-packages\conda\face_recognition_practice>python face_predict_use_keras.py 0
C:\Users\vegetableclean\Anaconda3\lib\site-packages\h5py\__init__.py:36: FutureWarning: Conversion of the second argument of 'issubdtype' from `
as `np.float64` to `np.dtype(float).type`.
  from ._conv import register_converters as _register_converters
Using TensorFlow backend.
```