

YOLOv9 環境的建置

1. 套件安裝

- i. anaconda 軟體的下載網址，然後安裝 anaconda 軟體。

<https://www.anaconda.com/download>

- ii. conda 環境建立，使用 python 3.7.13

conda create --name baiV9 python=3.7.13

- iii. 取得 nvidia 版本的指，cmd -> **nvidia-smi**

(感覺以下要去裝的 **pytorch** 版本跟下面框框這 **11.6** 沒有關係)

```
(baiV7) D:\PC_space\baiV7>nvidia-smi
Mon Jul 17 01:39:53 2023

+-----+
| NVIDIA-SMI 512.78      Driver Version: 512.78      CUDA Version: 11.6  |
+-----+-----+
| GPU   Name                TCC/WDDM  | Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|      Memory-Usage | GPU-Util  Compute M. |
|=====+=====+
| 0     NVIDIA RTX A4000    WDDM      | 00000000:01:00.0 On  |          9%      Default |
| 41%   42C   P8      10W / 140W | 362MiB / 16376MiB |              N/A      |
+-----+-----+
| 1     NVIDIA RTX A4000    WDDM      | 00000000:02:00.0 Off |          1%      Default |
| 41%   42C   P8       8W / 140W | 362MiB / 16376MiB |              N/A      |
+-----+-----+

Processes:
+-----+-----+
| GPU   GI    CI          PID  Type  Process name                        GPU Memory |
| ID    ID    ID                  |                 Usage              |
+-----+-----+
| 0     N/A   N/A       1020    C+G   ...bbwe\Microsoft.Photos.exe       N/A      |
| 0     N/A   N/A       2080    C+G   ...lPanel\SystemSettings.exe       N/A      |
| 0     N/A   N/A       2372    C+G   ...wekyb3d8bbwe\Video.UI.exe       N/A      |
| 0     N/A   N/A       8488    C+G   C:\Windows\explorer.exe            N/A      |
| 0     N/A   N/A       9468    C+G   ...artMenuExperienceHost.exe       N/A      |
| 0     N/A   N/A       9720    C+G   ...2txyewy\TextInputHost.exe       N/A      |
| 0     N/A   N/A      10060    C+G   ...5nlh2txyewy\SearchApp.exe       N/A      |
| 0     N/A   N/A      11400    C+G   ...oft\OneDrive\OneDrive.exe       N/A      |
| 0     N/A   N/A      11804    C+G   ...e\PhoneExperienceHost.exe       N/A      |
| 0     N/A   N/A      12356    C+G   ...8wekyb3d8bbwe\Cortana.exe       N/A      |
| 0     N/A   N/A      12636    C+G   ...me\Application\chrome.exe       N/A      |
| 1     N/A   N/A       1020    C+G   ...bbwe\Microsoft.Photos.exe       N/A      |
| 1     N/A   N/A       2080    C+G   ...lPanel\SystemSettings.exe       N/A      |
| 1     N/A   N/A       2372    C+G   ...wekyb3d8bbwe\Video.UI.exe       N/A      |
| 1     N/A   N/A       8488    C+G   C:\Windows\explorer.exe            N/A      |
| 1     N/A   N/A       9468    C+G   ...artMenuExperienceHost.exe       N/A      |
| 1     N/A   N/A       9720    C+G   ...2txyewy\TextInputHost.exe       N/A      |
| 1     N/A   N/A      10060    C+G   ...5nlh2txyewy\SearchApp.exe       N/A      |
| 1     N/A   N/A      11400    C+G   ...oft\OneDrive\OneDrive.exe       N/A      |
| 1     N/A   N/A      11804    C+G   ...e\PhoneExperienceHost.exe       N/A      |
| 1     N/A   N/A      12356    C+G   ...8wekyb3d8bbwe\Cortana.exe       N/A      |
| 1     N/A   N/A      12636    C+G   ...me\Application\chrome.exe       N/A      |
+-----+-----+
```

iv. 依序安裝以下的套件：

- **pip install opencv-python pandas ipython psutil**
- **pip install PyYAML PyQt5**
- **pip install tqdm matplotlib seaborn tensorboard**
- Torch 與 cuXXX: 進入此網站，找到對應的版本 ->
<https://pytorch.org/get-started/previous-versions/>

v1.12.0

Conda

OSX

```
# conda
conda install pytorch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0 -c pytorch
```

Linux and Windows

```
# CUDA 10.2
conda install pytorch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0 cudatoolkit=10.2 -c pytorch
# CUDA 11.3
conda install pytorch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0 cudatoolkit=11.3 -c pytorch
# CUDA 11.6
conda install pytorch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0 cudatoolkit=11.6 -c pytorch -c conda-forge
# CPU Only
conda install pytorch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0 cpuonly -c pytorch
```

Wheel

OSX

```
pip install torch==1.12.0 torchvision==0.13.0 torchaudio==0.12.0
```

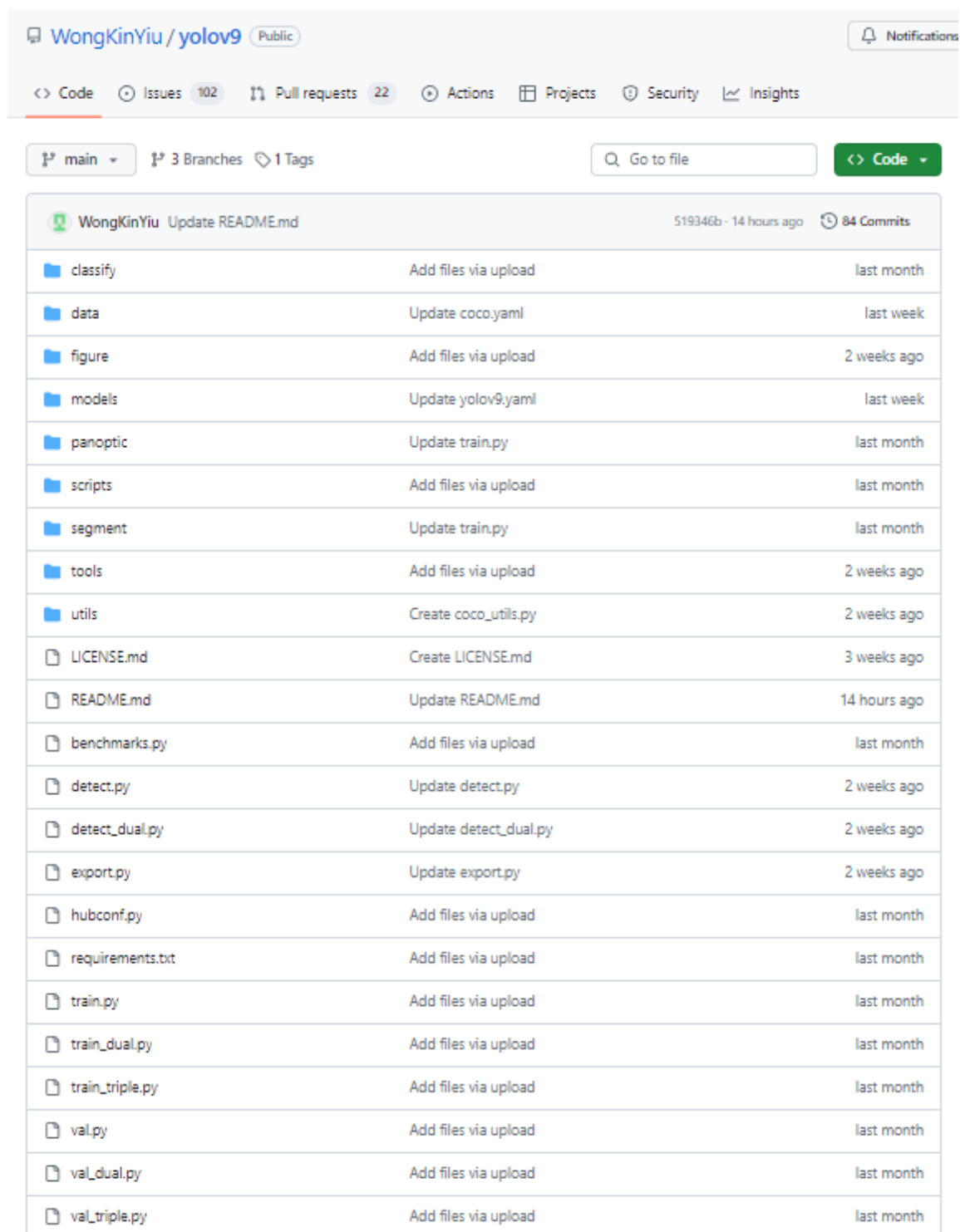
Linux and Windows

```
# ROCm 5.1.1 (Linux only)
pip install torch==1.12.0+rocm5.1.1 torchvision==0.13.0+rocm5.1.1 torchaudio==0.12.0 --extra-index-url https://download.pytorch.org/whl/rocm5.1.1
# CUDA 11.6
pip install torch==1.12.0+cu116 torchvision==0.13.0+cu116 torchaudio==0.12.0 --extra-index-url https://download.pytorch.org/whl/cu116
# CUDA 11.3
pip install torch==1.12.0+cu113 torchvision==0.13.0+cu113 torchaudio==0.12.0 --extra-index-url https://download.pytorch.org/whl/cu113
# CUDA 10.2
pip install torch==1.12.0+cu102 torchvision==0.13.0+cu102 torchaudio==0.12.0 --extra-index-url https://download.pytorch.org/whl/cu102
# CPU only
pip install torch==1.12.0+cpu torchvision==0.13.0+cpu torchaudio==0.12.0 --extra-index-url https://download.pytorch.org/whl/cpu
```

```
pip install torch==1.12.0+cu116 torchvision==0.13.0+cu116  
torchaudio==0.12.0 --extra-index-url  
https://download.pytorch.org/whl/cu116
```

2. YOLOv9 下載的地方

<https://github.com/WongKinYiu/yolov9>



WongKinYiu / yolov9 Public

Code Issues 102 Pull requests 22 Actions Projects Security Insights

main 3 Branches 1 Tags

Go to file

Code

WongKinYiu Update README.md 519346b · 14 hours ago 84 Commits

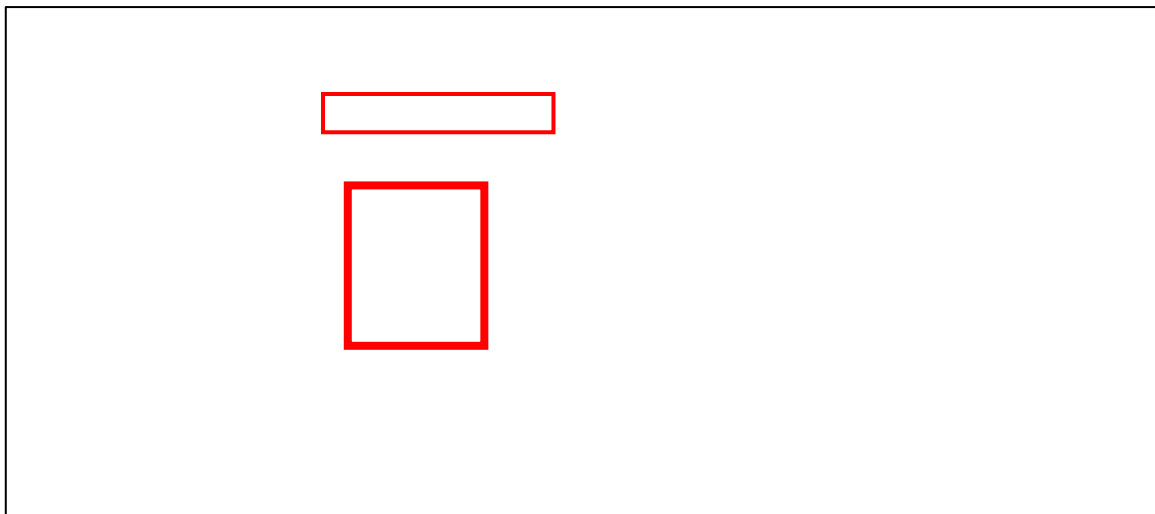
classify	Add files via upload	last month
data	Update coco.yaml	last week
figure	Add files via upload	2 weeks ago
models	Update yolov9.yaml	last week
panoptic	Update train.py	last month
scripts	Add files via upload	last month
segment	Update train.py	last month
tools	Add files via upload	2 weeks ago
utils	Create coco_utils.py	2 weeks ago
LICENSE.md	Create LICENSE.md	3 weeks ago
README.md	Update README.md	14 hours ago
benchmarks.py	Add files via upload	last month
detect.py	Update detect.py	2 weeks ago
detect_dual.py	Update detect_dual.py	2 weeks ago
export.py	Update export.py	2 weeks ago
hubconf.py	Add files via upload	last month
requirements.txt	Add files via upload	last month
train.py	Add files via upload	last month
train_dual.py	Add files via upload	last month
train_triple.py	Add files via upload	last month
val.py	Add files via upload	last month
val_dual.py	Add files via upload	last month
val_triple.py	Add files via upload	last month

3. YOLOv7 目錄結構 (這部分還未修改)

yolov7-main folder

```
-- cfg
| |-- baseline
| |-- deploy
| |-- training
| |   |-- fruits.yaml
|-- data
| |-- fruits.yaml
| |-- hyp.scratch.p5.paml
| |-- hyp.scratch.p6.paml
|-- datasets(EX: fruits)
| |-- images
| |   |-- train
| |       |-- *.jpg
| |       |-- *.jpg
| |       | ... ...
| |   |-- val
| |       |-- *.jpg
| |       |-- *.jpg
| |       | ... ...
| |-- labels
| |   |-- train
| |       |-- *.txt
| |       |-- *.txt
| |       | ... ...
| |   |-- val
| |       |-- *.txt
| |       |-- *.txt
| |       | ... ...
| |-- train.txt
| |-- val.txt
|-- runs
| |-- detect
| |-- train
|-- detect.py
|-- train.py
|-- test.py
```

4. 訓練前的準備步驟：(這部分還未修改)



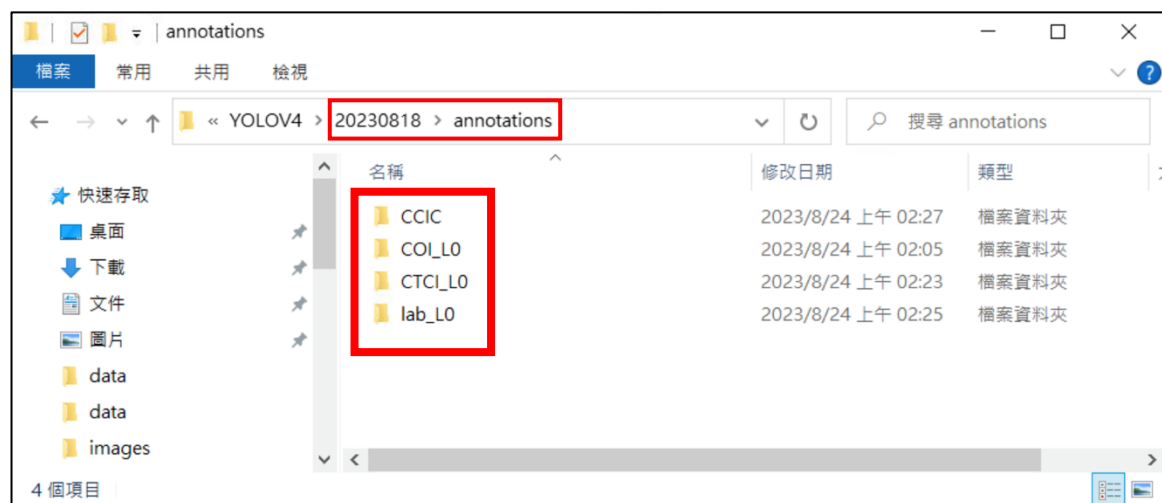
流程圖

i. 在 D 槽作業，標註完成的資料夾內容複製至新創的資料夾。

- 複製資料夾來源位置 ->

D:\PC_space\images_lab\YOLOV4\20220615\annotations

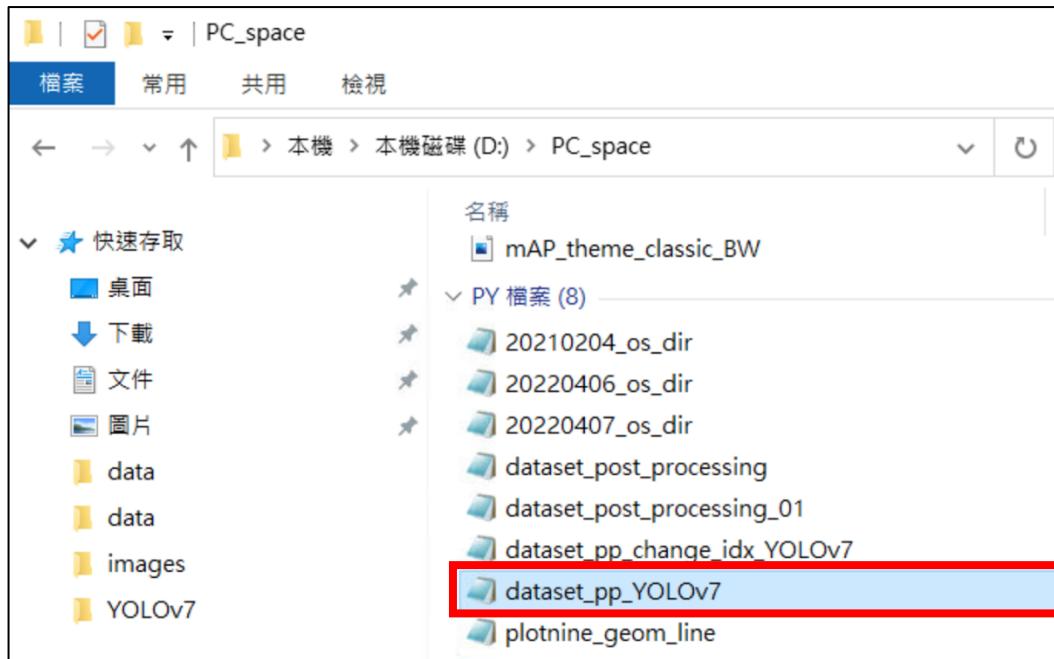
- 新創的資料夾範例 ->



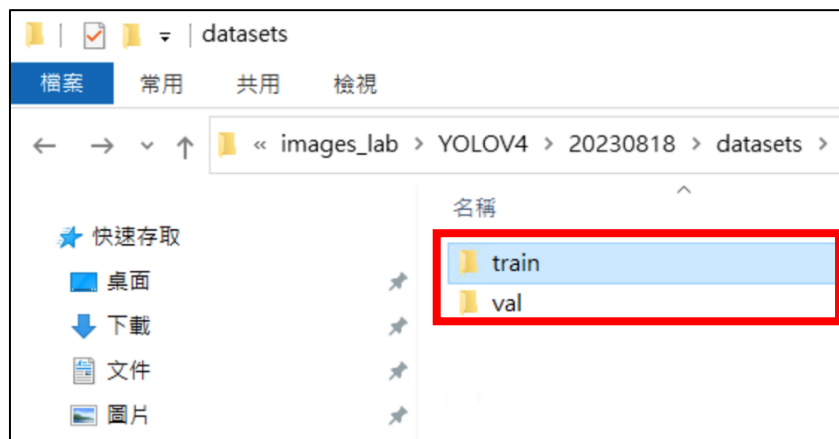
- continue

ii. 在 D 槽作業，建立 datasets 資料夾，包含 train 與 val 資料夾。

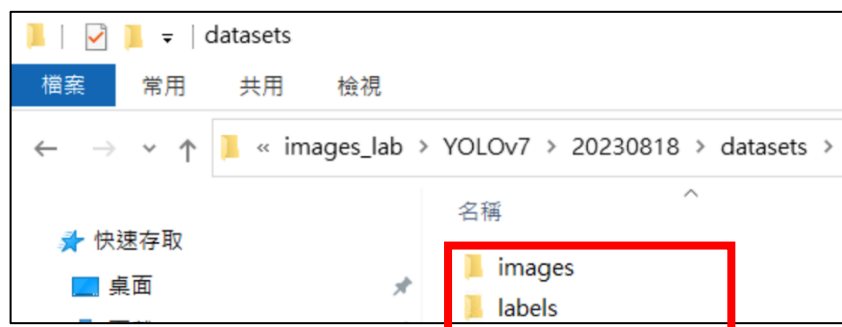
- datasets 資料夾需要手動先建立。
- 執行程式 -> dataset_pp_YOLOv7.py



- 在 D 槽作業，產生的結果範例：



- continue
- iii. 在 D 槽作業，複製產生的 **datasets** 資料夾內容至 YOLOv7 資料夾。
- 目標位置 -> D:\PC_space\images_lab\YOLOv7
 - 結果範例：

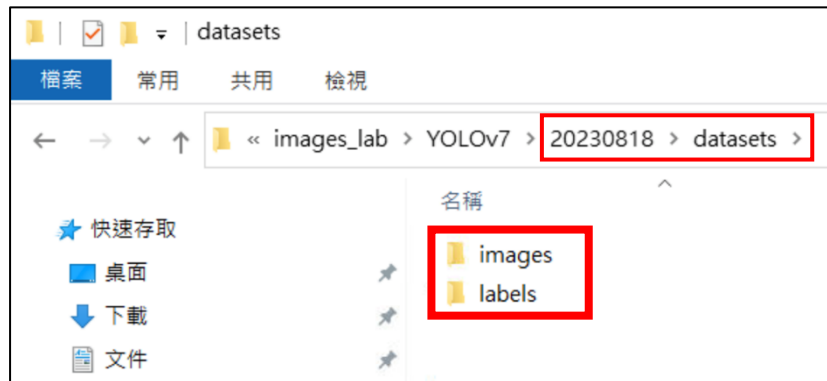


- continue
- iv. 在 D 槽作業，執行 dataset_pp_change_idx_YOLOv7 程式，將 class index 重新排列，並且產生程式的執行 log 檔案。

- 程式位置 -> D:\PC_space
- 執行結果：



- Log 檔案的產生位置在 D:\PC_space，名稱範例為 20230818_lable_new_log。
- v. 在 E 槽作業，將 images 與 label_new 資料夾內容複製到欲訓練的位置。
- 目標位置 -> E:\images_lab\YOLOv7
 - 複製的內容為 images 與 label_new，其中 label_new 複製完成後，將其改名為 label，結果範例：



- continue
- vi. 從 D 槽複製以下內容至 E 槽。
- cfg，來源位置 -> D:\PC_space\baiV7\yolov7\cfg\training，內容範例為 20230818_cfg_dd_0.yaml。
 - cfg，目標位置 -> E:\baiV7\yolov7\cfg\training
 - data，來源位置 -> D:\PC_space\baiV7\yolov7\data，內容範例為 20230818_data_dd_0.yaml。

- data，目標位置 -> E:\baiV7\yolov7\data
- 訓練圖片的 txt 紀錄檔案，來源位置，範例為 20230818_train.txt 與 20230818_val.txt -> D:\PC_space\baiV7\yolov7\deterioration_detection
- 訓練圖片的 txt 紀錄檔案，目標位置 -> E:\baiV7\yolov7\deterioration_detection

vii. 刪除既有的*.cache 檔案，範例為 20230818_train.cache 與 20230818_val.cache，這樣才不會接續上次的訓練。

viii. 以上為訓練前的準備步驟。

5. Command for detect

6. Command for training

For batch size 2

7. 訓練時用 tensorboard 看狀態，指令以及輸入到瀏覽器的網址：(這部分還未修改)

tensorboard --logdir runs/train -> dos cmd，要到 YOLOv7 的資料夾位置。

http://localhost:6006 -> chrome

8. Continue

9. Continue