OpenCV Installation

【110上】嵌入式系統技術實驗課程
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Anaconda / Miniconda

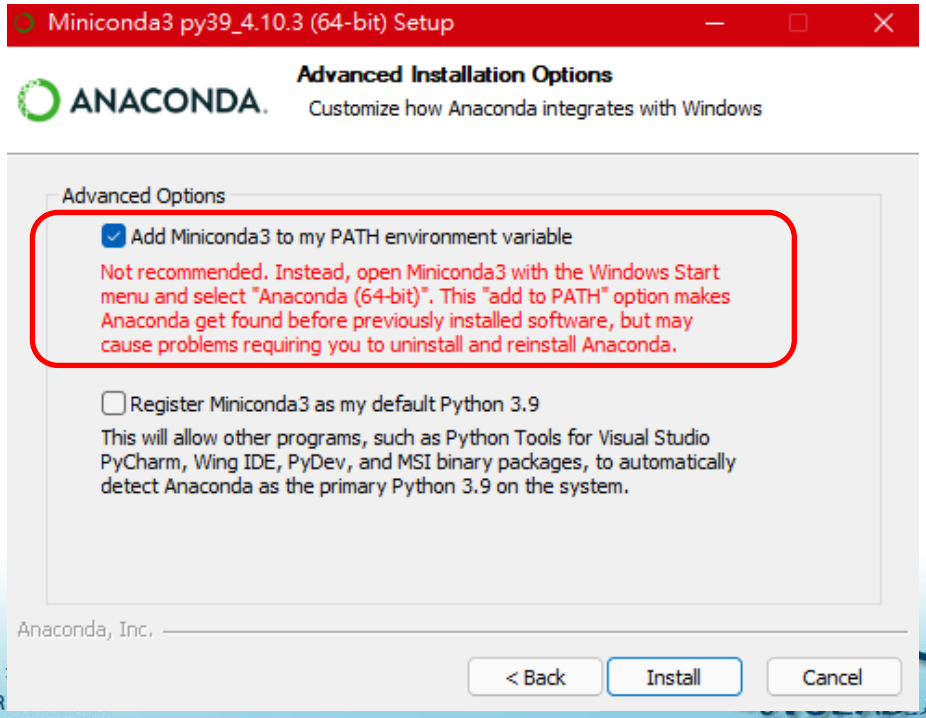
- A Python environment manager focused on machine learning and data science, just like venv but with dependency checking.
- Using conda is optional, you can still use traditional venv.
- Anaconda
  - https://www.anaconda.com/products/individual
- Miniconda: Anaconda but much light weight
  - https://docs.conda.io/en/latest/miniconda.html
- Decide which you should use in the next page…

Anaconda or Miniconda?

- Choose Anaconda if you:
  - Are new to conda or Python.
  - Like the convenience of having Python and over 1,500 scientific packages automatically installed at once.
  - Have the time and disk space---a few minutes and 3 GB.
  - Do not want to individually install each of the packages you want to use.
  - Wish to use a curated and vetted set of packages.
- Choose Miniconda if you:
  - Do not mind installing each of the packages you want to use individually.
  - Do not have time or disk space to install over 1,500 packages at once.
  - Want fast access to Python and the conda commands and you wish to sort out the other programs later.
- TA will be using Miniconda and install packages when needed

Miniconda Installation

- If you already have anaconda on your machine, skip to OpenCV installation.
- You can follow official doc, choose your operating system:
  - https://docs.conda.io/projects/conda/en/latest/user-guide/install/index.html#regular-installation
- Important: Check the ‘Add Miniconda 3 to my PATH…’ during installation, this can save lots of problem later



Miniconda Installation

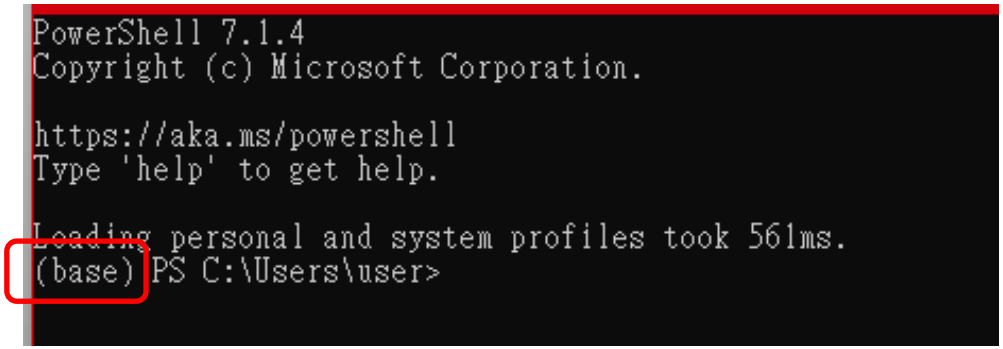
- Verify your installation in terminal by typing

```
conda --version
```

- Manual activate conda venv by

```
conda activate base
```

  - You shall see (base) in front, just like venv
  - Restart terminal if you did not see (base)



Create Conda Environment

- Create a conda venv for opencv, enter ‘y’ if asked, you can decide the name, just make it clear, I’m using ‘py38cv4’

```
conda create --name py38cv4 python=3.8
```

- Activate conda venv by

```
conda activate py38cv4
```

  - You can check all conda venv in your system with

```
conda env list
```

```
(base) PS C:\Users\user> conda env list
# conda environments:
#
base                  *  C:\Users\user\miniconda3
py38cv4                  C:\Users\user\miniconda3\envs\py38cv4
```

  - Other useful conda commands are listed in conda cheet sheet
    - https://docs.conda.io/projects/conda/en/4.6.0/_downloads/52a95608c49671267e40c689e0bc00ca/conda-cheatsheet.pdf

OpenCV Installation

- When inside your conda venv, install OpenCV by

```
conda install -c conda-forge opencv
```

  - Again, when ask y/n, type y to install all required packages
- Verify OpenCV installation with

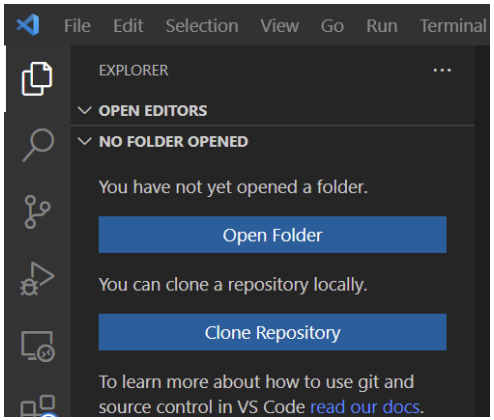
```
python -c "import cv2; print(cv2.__version__)"
```

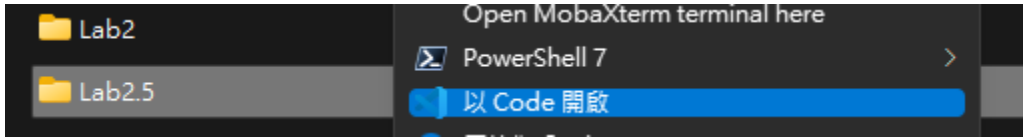
  - You should see 4.x.x

```
(py38cv4) PS C:\Users\user> python -c "import cv2; print(cv2.__version__)"
4.5.3
```

Using Conda in VSCode

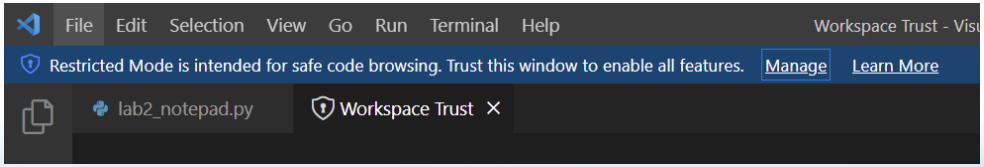
- For PyCharm user, jump to page 12
- Click ‘Open Folder’ to open your workspace, i.e. the extracted Lab2.5 folder TA provide.
  - You must open a folder in VSCode, not just a file to get all IDE features





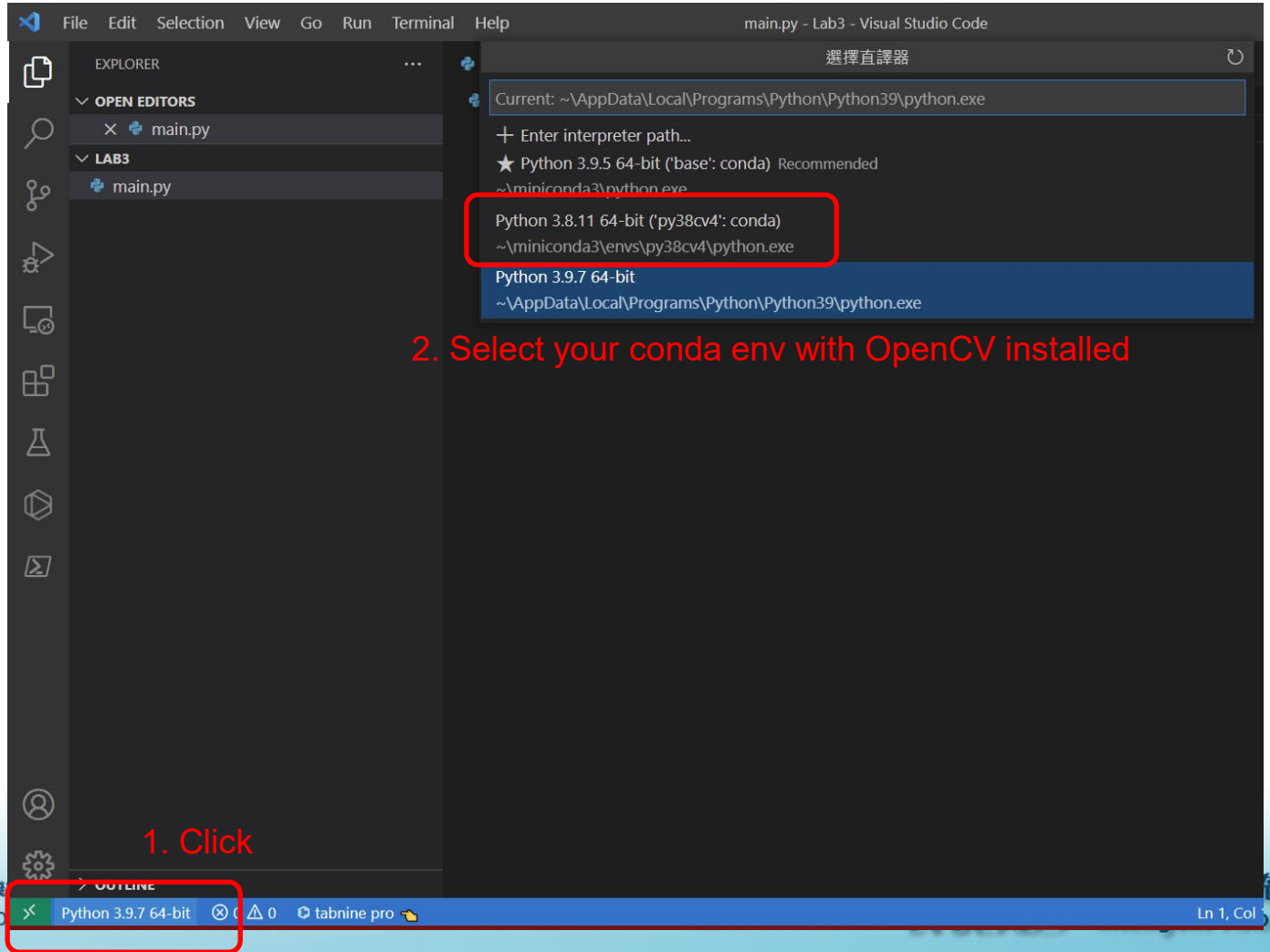
If you find ‘open with code’ in right click menu, that will do the same

  - If restricted mode appear on top, click ‘Manage’ and trust this workspace



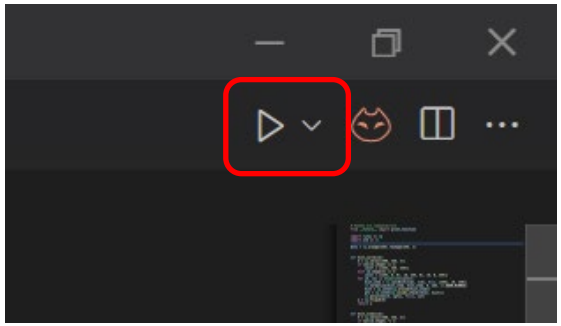
Using Conda in VSCode

- Interpreter setting should appear when you open a .py file



Using Conda in VSCode

- Interpreter setting should appear when you open a .py file
- Open hist.py and run it by clicking top right button



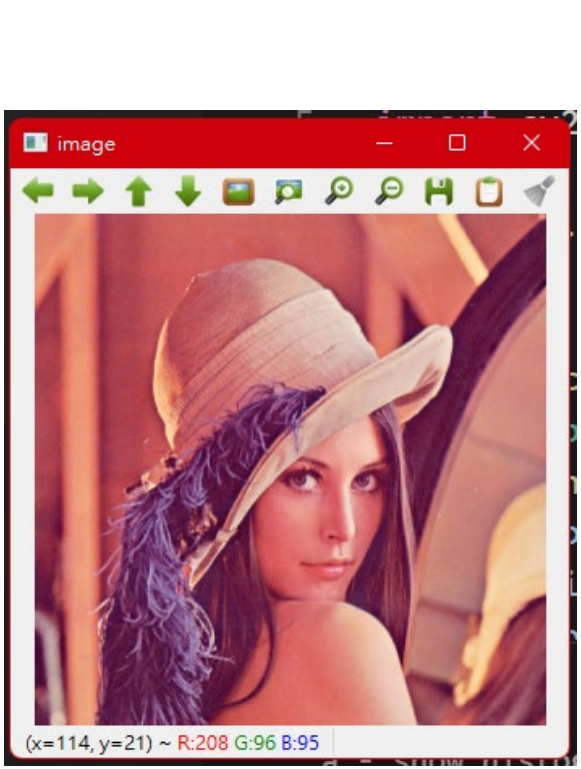
- Double check the interpreter setting if you see problem at import statements

```
4   import numpy as np
5   import cv2 as cv
6
```

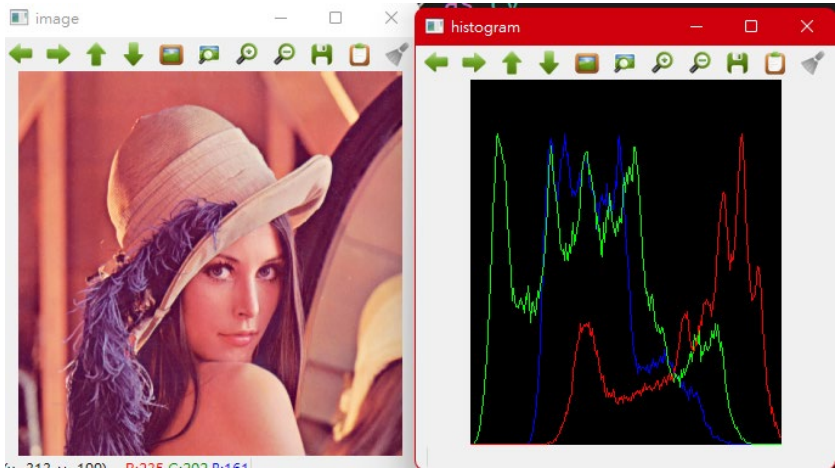
```
4   import numpy as np
5   import cv2 as cv
```

Using Conda in VSCode

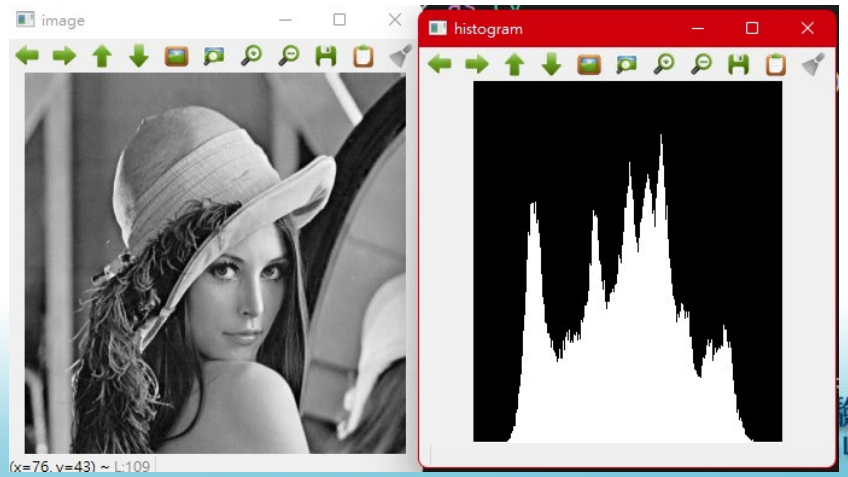
- hist.py will show ‘Lenna.jpg’ in a window, when focused on the window, type a~e on your keyboard will display 5 different histogram of the image.



type ‘a’

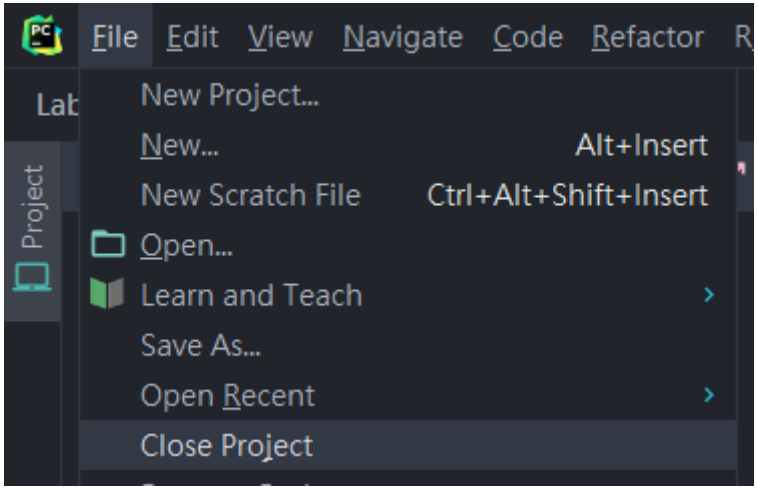


type ‘b’

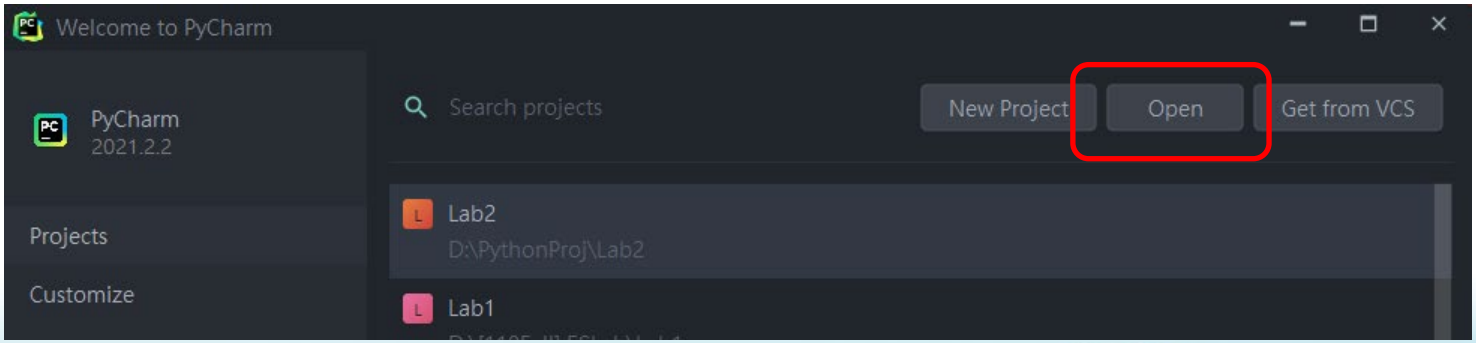


Using Conda in PyCharm

- If the previous project is on, “File | Close Project” to show the welcome screen

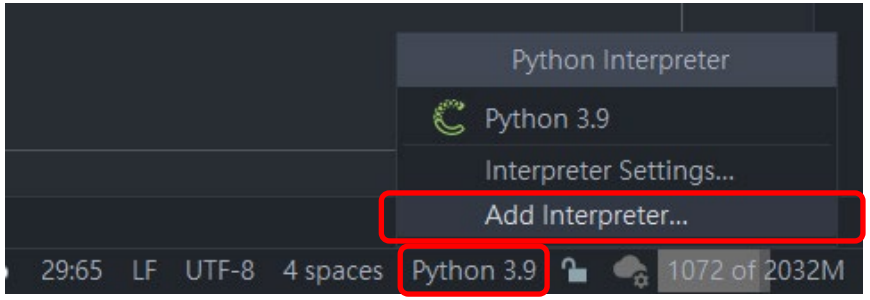


- Open a folder Lab2.5 here, this will make PyCharm configure that folder as a project

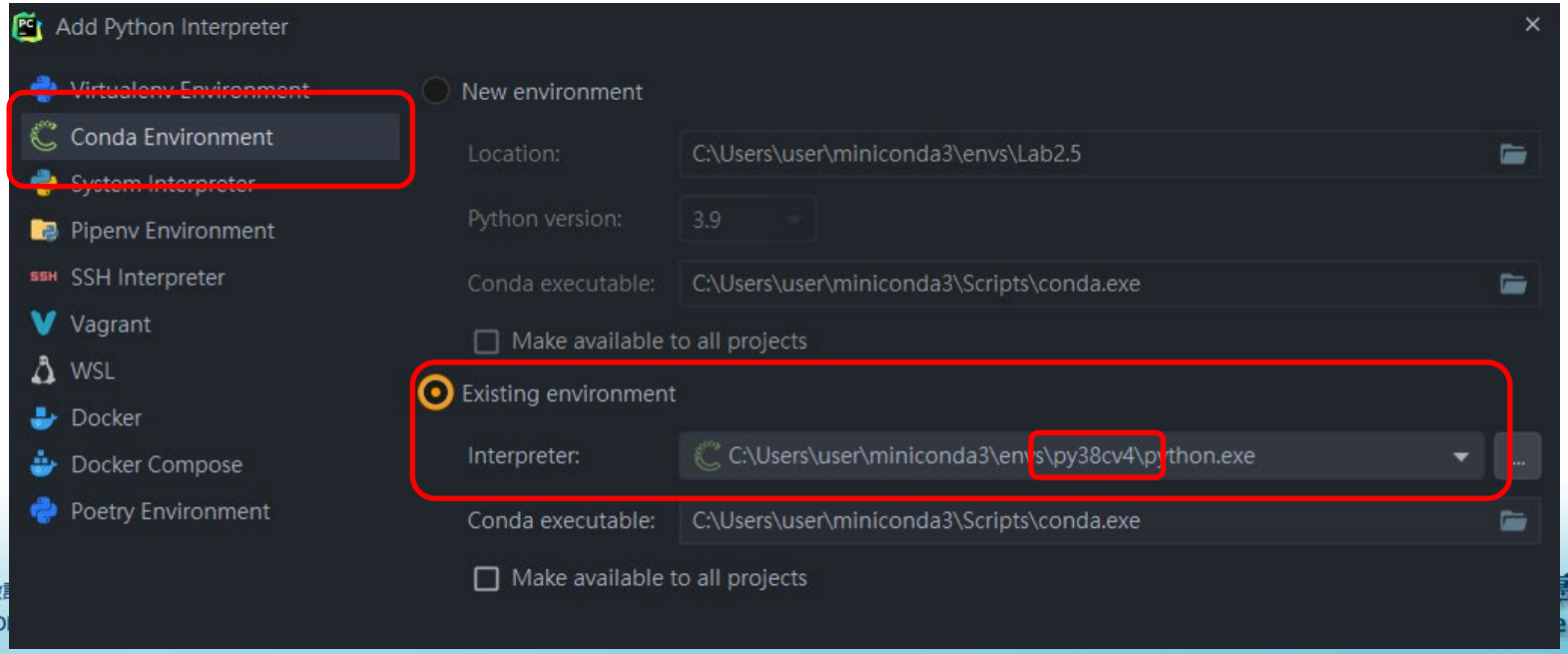


Using Conda in PyCharm

- Click ‘Add Interpreter’ at bottom right



- Select “Conda Environment” / “Existing environment”, pick the interpreter you want



Using Conda in PyCharm

- Right click in hits.py, “Run ‘hist’”, everything should work perfectly