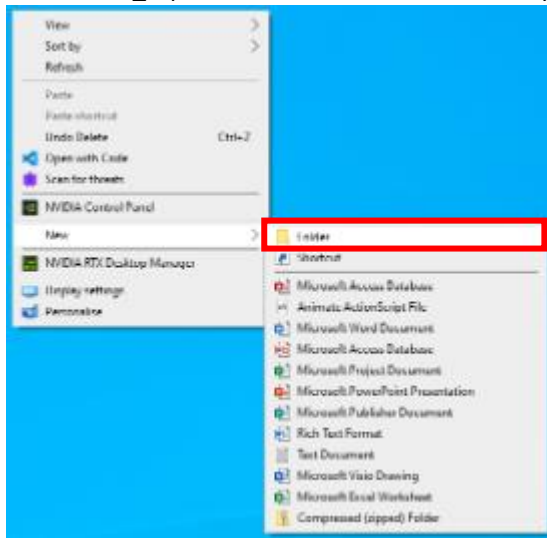


Work Experience setup on Lab Computers

You will need to install and setup the software to run the code and the Neural Network (NN) model you will be using. Please follow these steps:

1. On your computer's Desktop, right-click with the mouse and create a new folder. Give the folder the name "work_experience". This will be the directory in which you keep all of your project's files.



2. You will need to download the digital notebooks that you will be using throughout the next two days. Open a web browser and go to:

https://github.com/jembennettuk/work_experience/tree/main/WorkSheets

Here, you can download the Jupyter Notebook called `cnn_digit_classification.ipynb`:

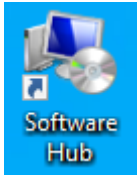
work_experience / WorkSheets /

jembennettuk Add files via upload b6ae606 · 6 minutes ago History

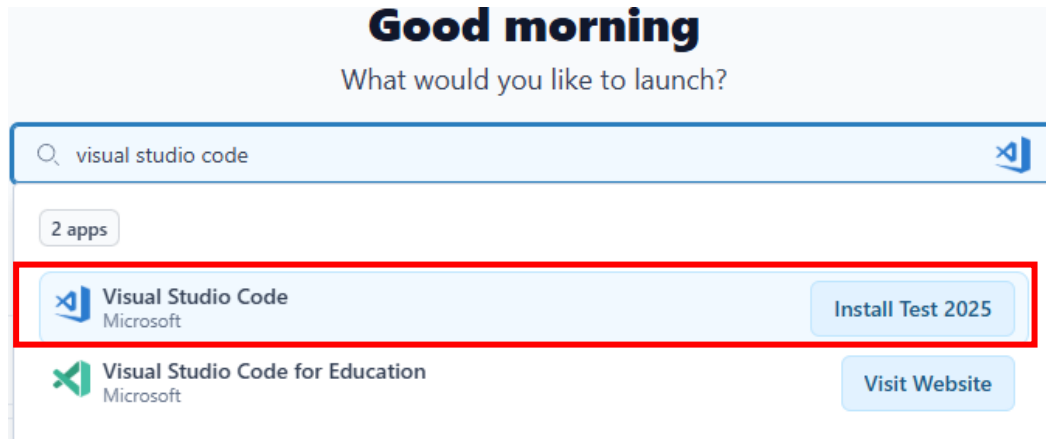
This branch is 13 commits ahead of shepai/SussexMLOutreach:main . Contribute Sync fork

Name	Last commit message	Last commit date
..		
cnn.ipynb	Added save figure command	last year
cnn_digit_classification.ipynb	Add files via upload	6 minutes ago
cnn_resnet.ipynb	Create resnet model for transfer learning. Update some hyper...	last year
cnn_tr.ipynb	cnn.ipynb - video feed now working; cnn_tr.ipynb - updated t...	last year
liveConnect.py	code tasks	last year
task.ipynb	Update task.ipynb	last year
work_experience_setup.docx	cnn.ipynb - video feed now working; cnn_tr.ipynb - updated t...	last year

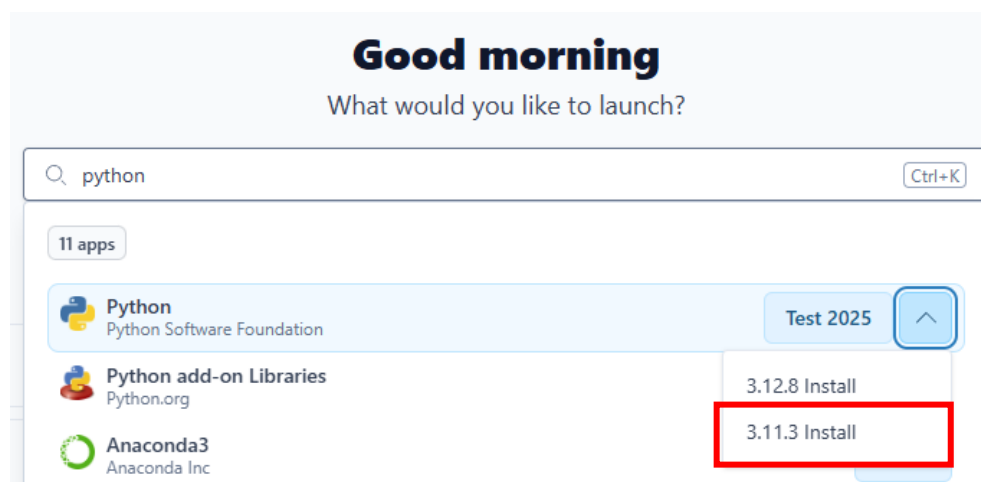
2. On the Desktop, open the Software Hub link:



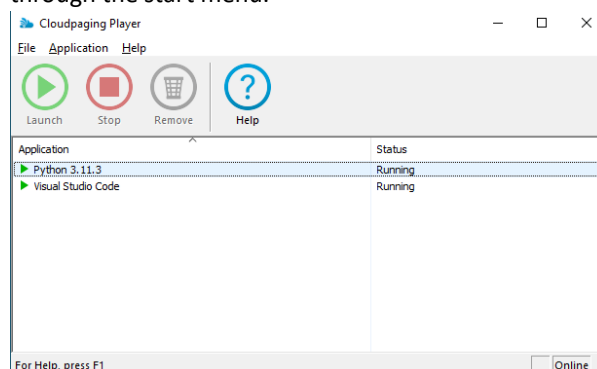
3. Install Visual Studio Code: In the search bar, write Visual Studio Code. Click “Install” for the first option that appears.



4. Install Python 3:
 - a. In Software Hub, search for Python, and install Python 3.11.3.

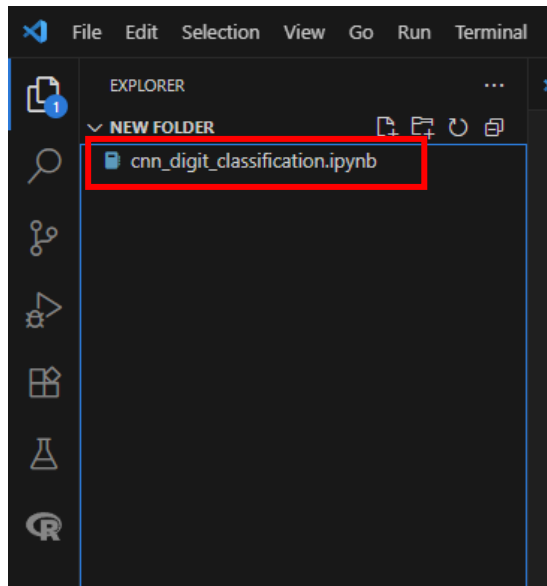


- b. A new window should pop up, and a message to confirm that that Python can be launched through the start menu.




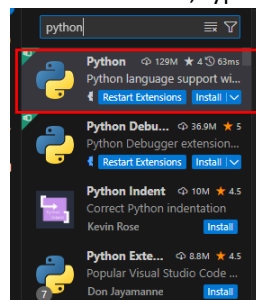
5. Open Visual Studio Code (VSCode). Select “File > Open Folder”, and open the folder you created earlier for Lab files.

6. On the left hand side of the window, you will see a list of the files in your folder. Click on the `cnn_digit_classification.ipynb` file to open it:

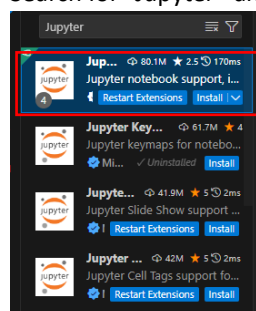


7. In VSCode, you will need to install some extensions and other packages.

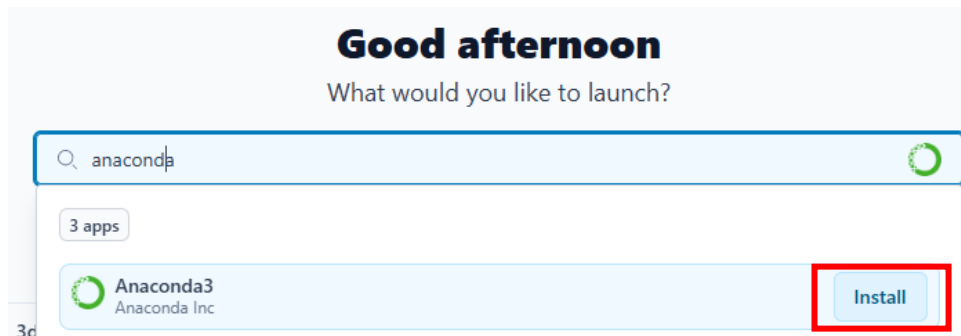
- a. Click on this icon in the top left of the window: 
- b. In the search bar, type “Python” and for the top option, click install:



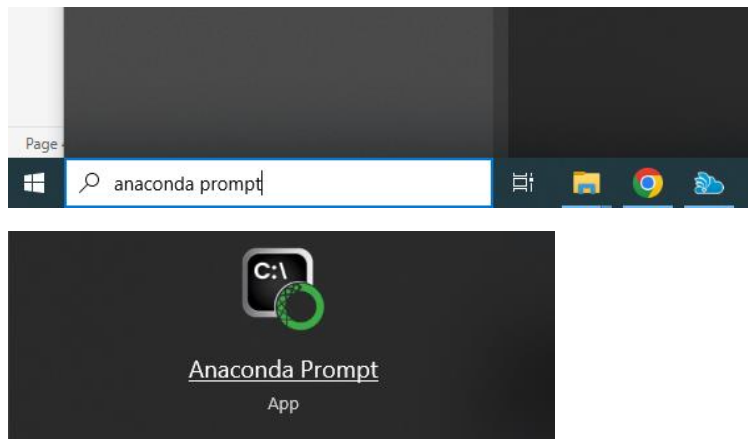
- c. Search for “Jupyter” and install the top option:



8. We now need to install anaconda, which we use to create a virtual environment for python. This is standard practice in AI, as it allows us to install lots of packages and code libraries without interfering with (or being interfered by) similar versions of the same software installed elsewhere on the computer.
 - a. In Software Hub, search for anaconda, and install.



- b. Once installed, use the Windows App Search to find Anaconda Prompt, and open it.



- c. This provides a command line interface (CLI), i.e. an interface with which you can type and execute simple commands without the need of a graphical user interface (GUI). Enter and then execute the following command:

```
conda create -n wexenv python=3.11.3 numpy pytorch-gpu
torchvision natsort tqdm opencv pillow scikit-learn faiss
matplotlib-base pandas -c conda-forge
```

This installs several helpful Python packages that we will use:

- i. PyTorch – a library of very useful tools for building NNs and for deep learning
 - ii. Pandas – a library for handling tabulated data.
 - iii. Scikit-learn – a library with a wide variety of useful machine learning tools
 - iv. Matplotlib – a library of plotting tools so that you can visualise the data and results of your experiments.
 - v. OpenCV – a library for very efficient processing of images and video.
- d. Activate the virtual environment you created:

```
conda activate wexenv
```

```
(base) C:\Users\jb739>conda activate wexenv
(wexenv) C:\Users\jb739>_
```

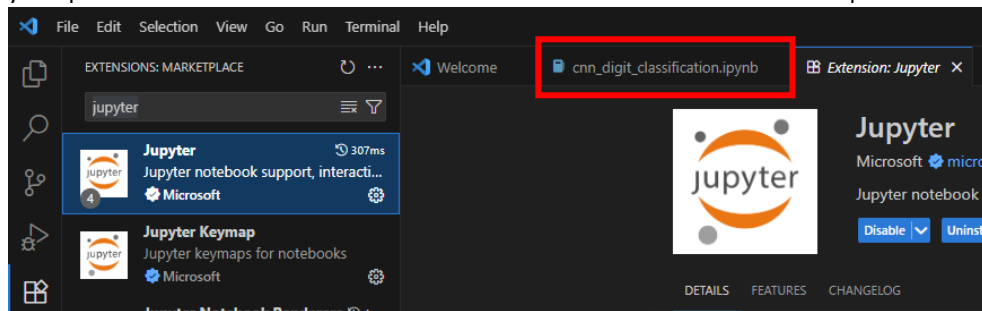
- e. Install one last package:


```
conda install ipykernel
and type 'y', then hit enter
```

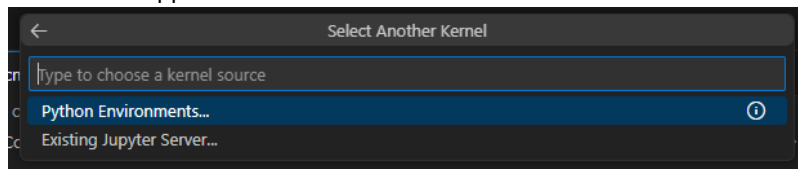
```
Proceed ([y]/n)? y

Downloading and Extracting Packages:
```

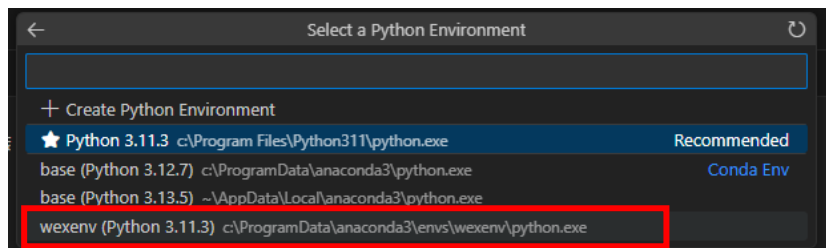
- f. You can now close Anaconda Prompt, and go back to the “cnn_digit_classification.ipynb” file you opened earlier in Visual Studio Code. You can select it from a tab at the top of the screen:



- g. You now need to start up a Python kernel so that you can execute code in the notebook. You will be able to select this kernel for any ipynb file you want to work with in the future. In the top right of the window, click on the tab with this icon . A popup in the centre of the window will appear:



Select “Python Environments...” and then select “wexenv (Python 3.11.3)”



- h. That’s it! You’re now ready to work through the Notebook and start training your Convolutional Neural Network!