**Work Experience – Computer Science and AI setup**

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.

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1. 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.ipynb:

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Move the file to the folder you just created.

1. You will also need to download the data that you will be using to train your Neural Network model. Go to this website:

<https://www.kaggle.com/datasets/drgilermo/face-images-with-marked-landmark-points>

Scroll down to find the data. It comes in two files, one called “face\_images.npz”, and another called “facial\_keypoints.csv”: A screenshot of a computer

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* 1. facial\_images.npz contains a set of over 4000 greyscale images of peoples’ faces.
  2. facial\_keypoints.csv contains tabulated data, specifically the locations of key facial features within each of the images. Important features include eye locations, lip locations, plus several others.

To download these data, you will need to have an account with Kaggle. If you already have one, login. Otherwise, you will have to create an account. You can use the IT account that you have been given. Your email will be [guest-XX@sussex.ac.uk](mailto:guest-XX@sussex.ac.uk), where you need to replace XX with the correct number. Download these files by clicking on the small  button.

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



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   Description automatically generatedInstall Visual Studio Code: In the search bar, write Visual Studio Code. Click “Install” for the first option that appears.
2. Launch Python 3:
   1. In Software Hub, search for Python 3.11.3, and click launch.

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

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1. Open Visual Studio Code (VSCode). Seelect “Open Folder”
2. In VSCode, you will need to install some extensions and other packages.
   1. Click on this icon in the top left of the window: 
   2. In the search bar, type “Python” and for the top option, click install:

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* 1. Search for “Jupyter” and install the top option:

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* 1. In the toolbar at the top of the window, Click on “View” then “Terminal”:

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* 1. This will open a small sub-window at the bottom. This provides a command line interface (CLI), i.e. an interface with which you can type and execute simple commands without the need of graphical user interface (GUI). Type the following command, and execute it by hitting Enter on the keyboard:

python.exe -m pip install ipykernel

* 1. You now need to start up a Python kernel so that you can execute code in the notebook. In the top right of the window, click on the tab with this icon . A popup in the centre of the window will appear: A screenshot of a computer

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Select “Python Environments…” and then select “Python 3.11.3”.

* 1. You should now be able to run the first cell of the notebook, which will install several more packages. To tun this code cell, bring it into focus (you can click to the left of this cell, where a blue bar will appear, or you can click inside the cell. When focus has been achieved, press “ctrl+Enter” on your keyboard to run the cell. The packages being installed are:
     1. PyTorch – a library of very useful tools for building NNs and for deep learning
     2. Pandas – a library for handling tabulated data.
     3. Scikit-learn – a library with a wide variety of useful machine learning tools
     4. Matplotlib – a library of plotting tools so that you can visualise the data and results of your experiments.
  2. The data files you downloaded are compressed as a zip file. Run the second code cell in the notebook to unzip these files so that the data can be imported later. A black background with white text

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