

Configuration Manual

MSc Research Project
Programme Name

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Project Submission Sheet
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Student Name:	Sanjay Girish Dialani
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Configuration Manual

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1 Dataset and Code Folder Information

There are 2 image-related datasets involved in this research work. For the convenience of running the project, the dataset folders are named 'Soil Type Dataset 1' and 'Soil Type Dataset 2'.

The research work involves the development of 3 deep-learning models. Code related to the first and second models is written in Jupiter Notebook 'Soil Image Classification Model 1 and 2.ipynb'. The third (proposed) model code is present in file 'Soil Image Classification Model 3.ipynb'

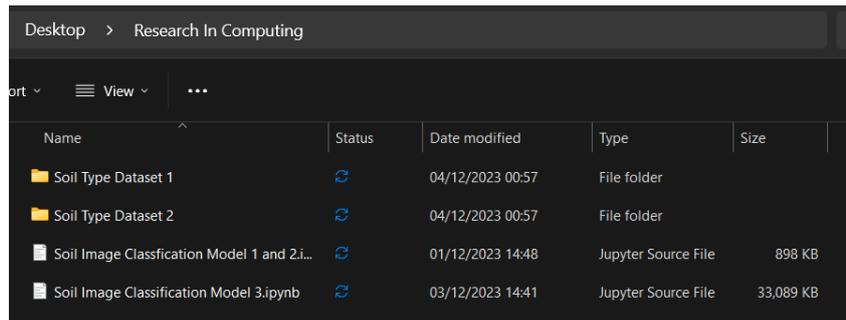


Figure 1: Data files and Code Files Under Same Folder

Folder Structure:

- For the convenience of running the project, organize your files in the following structure:
 - Project Folder
 - Soil Type Dataset 1
 - [Contents of Dataset 1]
 - Soil Type Dataset 2
 - [Contents of Dataset 2]
 - Soil Image Classification Model 1 and 2.ipynb
 - Soil Image Classification Model 3.ipynb

2 Software Requirement

1. **Python:** Install the latest version of Python from the official website: <https://www.python.org/downloads/>.

2. **TensorFlow:** Install TensorFlow using the following command:

```
pip install tensorflow
```

3. **OpenCV:** Install OpenCV using the following command:

```
pip install opencv-python
```

4. **Matplotlib:** Install Matplotlib using the following command:

```
pip install matplotlib
```

5. **Pandas:** Install Pandas using the following command:

```
pip install pandas
```

6. **Seaborn:** Install Seaborn using the following command:

```
pip install seaborn
```

Python Packages:

1. **NumPy:** Install NumPy using the following command:

```
pip install numpy
```

2. **Scikit-Learn:** Install Scikit-Learn using the following command:

```
pip install scikit-learn
```

Additional Notes:

- The code utilizes TensorFlow and Keras for deep learning tasks. Ensure that the system meets the hardware requirements for running TensorFlow with GPU support if available.
- It is recommended to run the code in a virtual environment to manage dependencies and avoid conflicts with existing packages in the system.

3 Running the Jupyter Notebook Code

Running the Code:

1. Open a terminal or command prompt.
2. Navigate to the folder containing your project files using the 'cd' command:

```
cd /path/to/project/folder
```

3. Launch Jupyter Notebook by running the following command:

```
jupyter notebook
```

This will open Jupyter Notebook in the default web browser.

4. In the Jupyter Notebook interface, you will see the list of files. Click on the notebook file names: - 'Soil Image Classification Model 1 and 2.ipynb' - 'Soil Image Classification Model 3.ipynb'
5. Execute the cells in the notebook one by one or use restart and run all to run the code.
6. Make sure the necessary Python packages and libraries mentioned in the code are installed. You can install them using the following command:

```
pip install package_name
```

7. The code assumes that the datasets are in the provided folder structure. If your datasets are located elsewhere, update the file paths in the code accordingly.