National College of Ireland

Configuration Manual

MSc Research Project
MSc in Artificial Intelligence for Business

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Project Submission Sheet
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Configuration Manual

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1 System Configuration

A 12th Gen Intel Core i7-12700H CPU operating at 2.30 GHz and 16 GB of RAM—of which 15.7 GB are usable—are included in the system setup. The device runs Windows 11 Home Single Language, version 23H2, 64-bit, OS build 22631.3958.

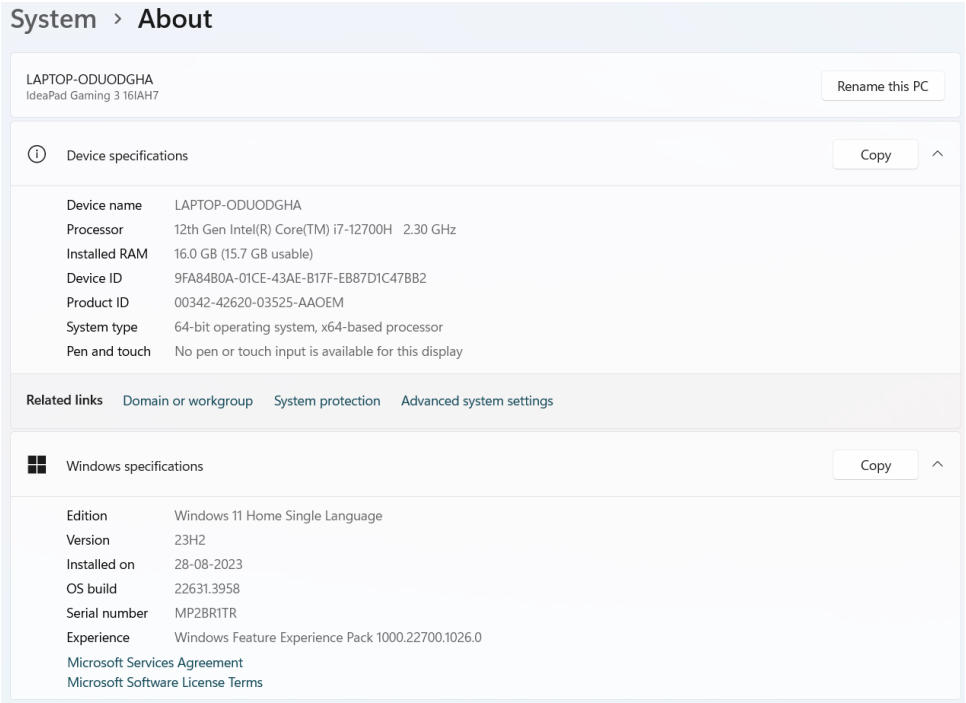


Figure 1: System Configuration

2 Software Requirement

For the project, we have used the following software:

1. Anaconda 2.4.3
2. Python 3.11.4
3. Jupyter Notebook

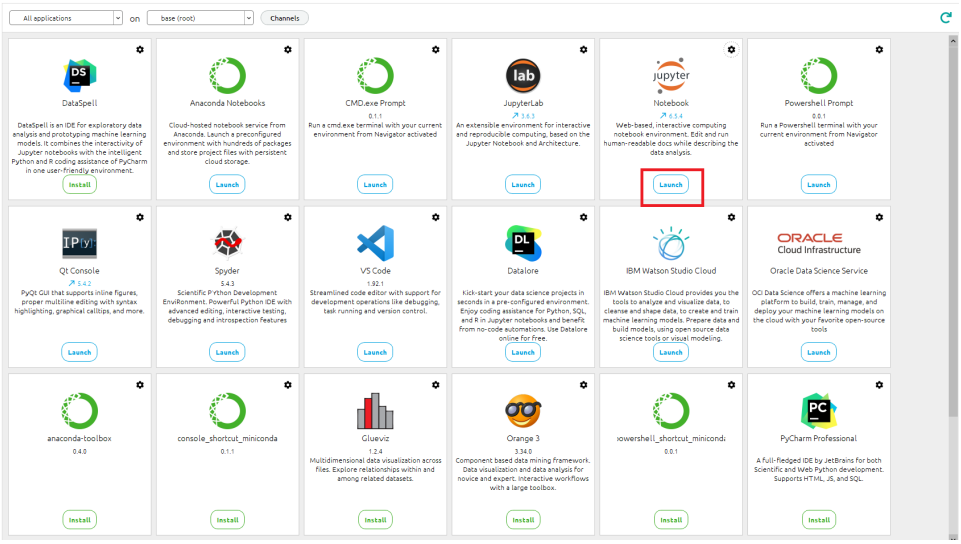


Figure 2: Software Requirement

3 Python Libraries

The following Python libraries are used by the project:

1. sklearn
2. tqdm
3. os
4. tensorflow
5. seaborn
6. pandas
7. codecarbon
8. matplotlib
9. numpy
10. keras
11. cv2

4 Steps to Run Code in Jupyter Notebook

1. **Install Jupyter Notebook**
   - Download and install Anaconda from the Anaconda website.
   - Open your terminal.
   - Run 'pip install notebook'.

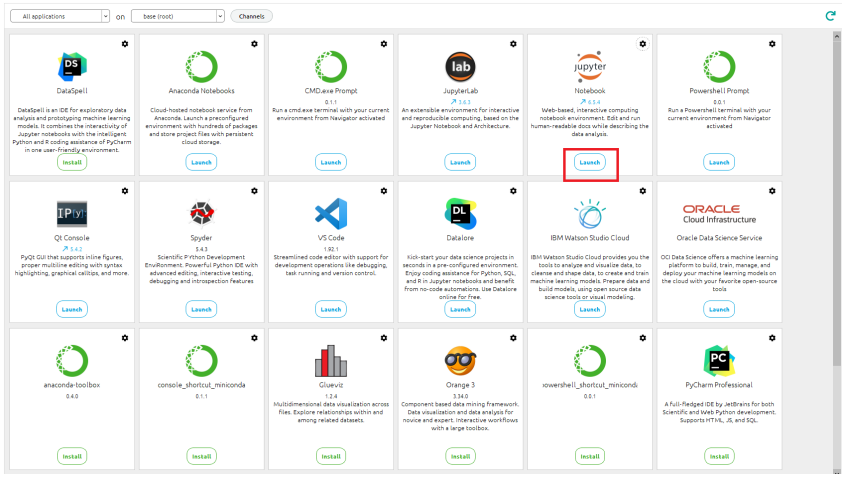
2. **Launch Jupyter Notebook**

   Option 1

   - Open Anaconda Navigator
   - Click “Launch” under Jupyter Notebook.

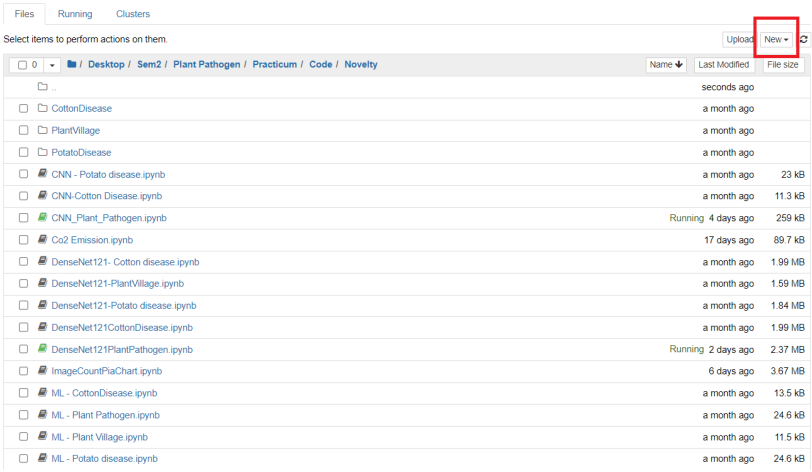
   Option 2

   - Open your terminal.
   - Run ’jupyter notebook’.
   - Jupyter Notebook will open in your web browser.

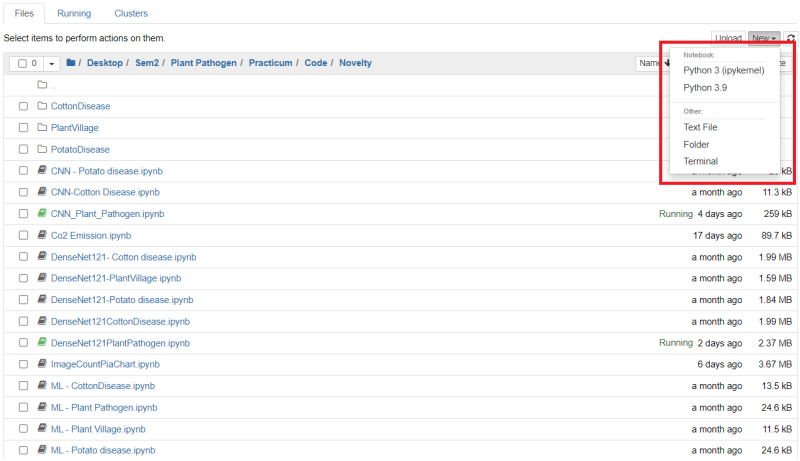


3. **Create a New Notebook**

   - In the Jupyter interface, click “New” on the right side.

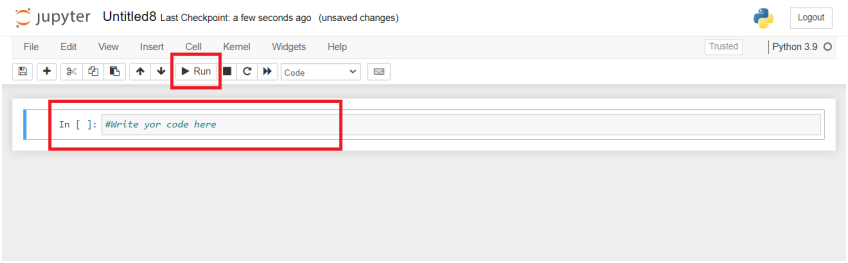


   - Select “Python 3” or your preferred kernel.



4. **Write and Run Code**

   - Type your code in the cell.
   - Run the cell by
     -Clicking the "Run" button.
     -Pressing 'Shift + Enter'.



5. **Save Your Notebook**

   - Click "File" – "Save and Checkpoint" or press 'Ctrl + S' (Cmd + S on Mac).

6. **Shut Down the Notebook**

   - Close the browser tab.
   - Stop the server in the terminal by pressing 'Ctrl + C', then y.

7. **Access Notebook Later**

   - Run 'jupyter notebook' in the terminal.
   - Navigate to your notebook file and click to open.

5 Dataset

The gathering of data is the first stage. The data used in this study was gathered from the APTOS 2019 public dataset for the identification of diabetic retinopathy (blindness),

which is available on the Kaggle website. High-quality retinal pictures are included in this dataset, which is further categorised into 5 sections according to the various stages of diabetic retinopathy (DR), including none, mild, moderate, severe, and extremely severe. It also includes two distinct image sets that are mostly utilised for testing and training. While the testing data is unlabelled and will be used for assessment, the training set's data is labelled, and its class is contained in a different CSV file. 3662 high-resolution photos altogether, divided into 5 categories, are present. The distribution of the various classes in the dataset is depicted in the following diagram.

Kaggle Dataset Link:
'https://www.kaggle.com/c/aptos2019-blindness-detection/data'

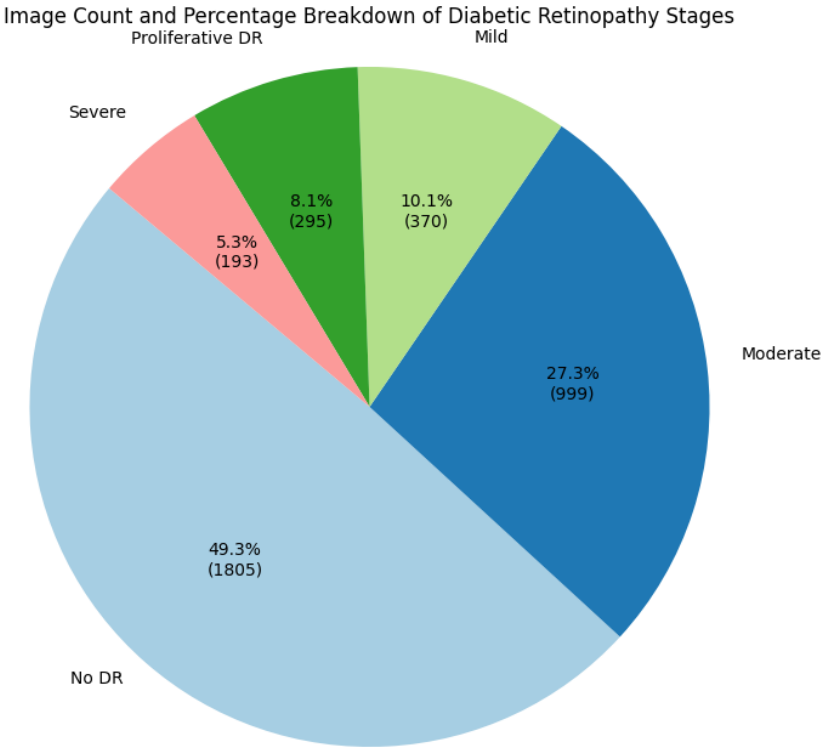


Figure 3: Image Distribution for Diabetic Retinopathy Detection