

## Configuration Manual

MSc Research Project MSc in Artificial Intelligence

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#### National College of Ireland Project Submission Sheet School of Computing



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Programme:	MSc in Artificial Intelligence
Year:	2023-24
Module:	MSc Research Project
Supervisor:	Dr. Mayank Jain
Submission Due Date:	12/08/2024
Project Title:	Configuration Manual
Word Count:	370
Page Count:	5

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## Configuration Manual

# Aishwarya Bediskar x23144441

## **1** System Configuration

The system configuration includes a 12th Gen Intel Core i7-12700H processor running at 2.30 GHz, with 16 GB of RAM (15.7 GB usable). The device operates on a 64-bit version of Windows 11 Home Single Language, version 23H2, with OS build 22631.3958.

Sys	stem > A	bout	
LA Ide	PTOP-ODUODGHA aPad Gaming 3 16IAH7		Rename this PC
(i	) Device specifica	tions	Сору
	Device name	LAPTOP-ODUODGHA	
	Processor	12th Gen Intel(R) Core(TM) i7-12700H 2.30 GHz	
	Installed RAM	16.0 GB (15.7 GB usable)	
	Device ID	9FA84B0A-01CE-43AE-B17F-EB87D1C47BB2	
	Product ID	00342-42620-03525-AAOEM	
	System type	64-bit operating system, x64-based processor	
	Pen and touch	No pen or touch input is available for this display	
Re	lated links Doma	in or workgroup System protection Advanced system settings	
	Windows specif	ïcations	Сору
	Edition	Windows 11 Home Single Language	
	Version	23H2	
	Installed on	28-08-2023	
	OS build	22631.3958	
	Serial number	MP2BR1TR	
	Experience	Windows Feature Experience Pack 1000.22700.1026.0	
	Microsoft Servio Microsoft Softw	zes Agreement vare License Terms	

Figure 1: System Configuration

## 2 Software Requirement

We have utilised the following software for the project:

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

All applications on (	base (root) v Channels				
*	° °	° °	(ab)	Jupyter	° °
DataSpell	Anaconda Notebooks	CMD.exe Prompt	JupyterLab	Notebook	Powershell Prompt
DataSpell is an IDE for exploratory data analysis and prototyping machine learning models. It combines the interactivity of Jupyter notebooks with the intelligent Python and R coding assistance of Pycharm	Cloud-hosted notebook service from Aneconds, Launch a preconfigured environment with hundreds of packages and store project files with persistent cloud storage.	0.1.1 Run a cmd.exe terminal with your current environment from Navigstor activated	An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.	A 654 Web-based, hiteractive computing notebook environment. Edit and run human-readable docs while describing the data analysis.	0.0.1 Run a Powershell terminal with your current environment from Navigator activated
Install	Launch	Launch	Launch	Launch	Launch
¢ IP[y]:	*	× .	•	* ```@`	CRACLE Cloud Infrastructure
Qt Console	Spyder	VS Code	Datalore	IBM Watson Studio Cloud	Oracle Data Science Service
5.4.2 PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.	5.43 Scientific Prthon Development EnviRonment: Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features	1921 Streamlined code editor with support for development operations like debugging, bask running and version control.	Kick-start your data science projects in seconds in a pre-configured environment. Enjoy coding assistance for Python, SQL, and R in Jupyter notebooks and benefit from no-code eutomations. Use Datalore online for free.	IBM Watson Studio Cloud provides you the tools to analyze and visualize data, to cleanse and shape data, to create and train machine learning models. Prepare data and build models, using open source data science tools or visual modeling.	OCI Data Science offers a machine learning platform to build, train, manage, and deploy your machine learning models on the cloud with your favorite open-source tools
Launch	Launch	Launch	Launch	Launch	Launch
Ô	° °	ı î	*	° °	•
anaconda-toolbox	console_shortcut_miniconda	Glueviz	Orange 3	:owershell_shortcut_minicond;	PyCharm Professional
0.4.0	0.1.1	1.2.4 Multidimensional data visualization across files. Explore relationships within and among related datasets.	3.34.0 Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.	0.0.1	A full-fledged IDE by JetBrains for both Scientific and Web Python development. Supports HTML, JS, and SQL
Install	Install	Install	Install	Install	Install

Figure 2: Software Requirement

## 3 Python Libraries

The following Python libraries are used by the project:

- $1. \ sklearn$
- 2. tensorflow
- 3. matplotlib
- 4. seaborn
- 5. tqdm
- 6. codecarbon
- $7. \ {\rm keras}$
- 8. numpy
- 9. pandas
- $10.~{\rm cv}2$
- 11. os

## 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.

Files Running Clusters		_	
Select items to perform actions on them. Upload			
🖸 0 💌 🖿 / Desktop / Sem2 / Plant Pathogen / Practicum / Code / Novelty	Name 🕹 Last Modified	File size	
	seconds ago		
CottonDisease	a month ago		
PlantVillage	a month ago		
Comparison PotatoDisease	a month ago		
CNN - Potato disease.ipynb	a month ago	23 kB	
CNN-Cotton Disease.ipynb	a month ago	11.3 kB	
CNN_Plant_Pathogen.ipynb	Running 4 days ago	259 kB	
Co2 Emission.ipynb	17 days ago	89.7 kB	
DenseNet121- Cotton disease.ipynb	a month ago	1.99 MB	
DenseNet121-PlantVillage.ipynb	a month ago	1.59 MB	
DenseNet121-Potato disease.ipynb	a month ago	1.84 MB	
DenseNet121CottonDisease.ipynb	a month ago	1.99 MB	
DenseNet121PlantPathogen.ipynb	Running 2 days ago	2.37 MB	
ImageCountPiaChart.ipynb	6 days ago	3.67 MB	
ML - CottonDisease.ipynb	a month ago	13.5 kB	
🗌 🥔 ML - Plant Pathogen.ipynb	a month ago	24.6 kB	
B ML - Plant Village ipynb	a month ago	11.5 kB	
ML - Potato disease.ipynb	a month ago	24.6 kB	

• Select "Python 3" or your preferred kernel.

Files Running Clusters		
Select items to perform actions on them.	Upload	New 🔹 🧯
0 • I Desktop / Sem2 / Plant Pathogen / Practicum / Code / Novelty	Name 4 Notebook: Python 3 (joykern	nel) se
<b>D</b>	Python 3.9	
C CottonDisease	Other:	
PlantVillage	Text File	
Ci PotatoDisease	Folder	
CNN - Potato disease.ipynb	Terminal	kE
CNN-Cotton Disease ipynb	a month ago	11.3 kE
CNN_Plant_Pathogen.ipynb	Running 4 days ago	259 kE
🗋 🥔 Co2 Emission.ipynb	17 days ago	89.7 ki
DenseNet121- Cotton disease.ipynb	a month ago	1.99 ME
B DenseNet121-PlantVillage.ipynb	a month ago	1.59 M
DenseNet121-Potato disease.ipynb	a month ago	1.84 ME
DenseNet121CottonDisease.ipynb	a month ago	1.99 ME
PonseNet121PlantPathogen.ipynb	Running 2 days ago	2.37 ME
PinageCountPiaChart.ipynb	6 days ago	3.67 ME
🔲 🥔 ML - CottonDisease.ipynb	a month ago	13.5 kE
B ML - Plant Pathogen.ipynb	a month ago	24.6 kB
ML - Plant Village.ipynb	a month ago	11.5 kE
B ML - Potato disease.ipynb	a month ago	24.6 kE

#### 4. Write and Run Code

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

Cjupyter Untitled8 Last Checkpoint: a few seconds ago (unsaved changes)	e Logout
File Edit View Insert Cell Kernel Widgets Help	Trusted Python 3.9 O
In []: #Write yor code here	

#### 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 dataset used in this project is publicly available to all users and was obtained from the Kaggle website. A total of 2,025 images were selected for plant pathogen classification from this collection. The plant pathogen dataset is divided into five categories: bacteria, viruses, fungi, healthy organisms, and pests. Images of plant leaves affected by a range of illnesses are included in the collection. Each image in the collection depicts a plant leaf, whether it is healthy or ill.



#### Kaggle Dataset Link:

'https://www.kaggle.com/datasets/kanishk3813/pathogen-dataset'

Figure 3: Image Distribution for Plant Pathogen Detection