

Configuration Manual

MSc Research Project
Artificial Intelligence

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National College of Ireland

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National College of Ireland
MSc Project Submission Sheet
School of Computing



Student Name: Sonali Subhash Jadhav
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Student ID:

Programme: MSc. Artificial Intelligence **Year:** 2023-24
.....
MSc. Research Project

Module:

Lecturer: Prof. Rejwanul Haque
.....

Submission Due Date: 31/01/2024
.....

Project Title: Advancing Safety in vehicles with AI-Driven Emotion recognition
.....
561 6

Word Count: **Page Count:**

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

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Signature: Sonali Subhash Jadhav
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Configuration Manual

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1 Introduction

This configuration manual guides users through setting up a reliable system for an innovative project name Advancing safety in vehicles with AI-Driven Emotion recognition. It provides detailed information on specifications, software tools, and package specifics, offering guidance on software setup. The configuration guide covers environment configuration, dataset sources, result and references, ensures users have a complete understanding of the project's extensive technical features.

2 System specifications

The system requires a Windows-based operating system (windows 10/11) with a minimum of 16GB RAM and i7processor or Ryzen 5/7 for optimal performance. Users should have a stable internet connection for seamless updates. The software is designed to run efficiently on standard personal computers, ensuring accessibility and ease of integration into diverse computing environments.

The project completed successfully on my system, meeting the specified specifications as follows.

Processor - AMD Ryzen 5 7530U with Radeon Graphics 2.00 GHz
Installed RAM - 16 GB
System Type - 64-bit operating system
Edition - Windows 11

3 Software Tools

This project makes use of essential software tools for seamless development and execution.

Python (version 3.8.10 or higher)
TensorFlow (version 2.5 or higher)
scikit-learn (version 0.24 or higher)
Anaconda
Jupyter Notebook or Kaggle (for development)
Any web browser (for accessing online resources)

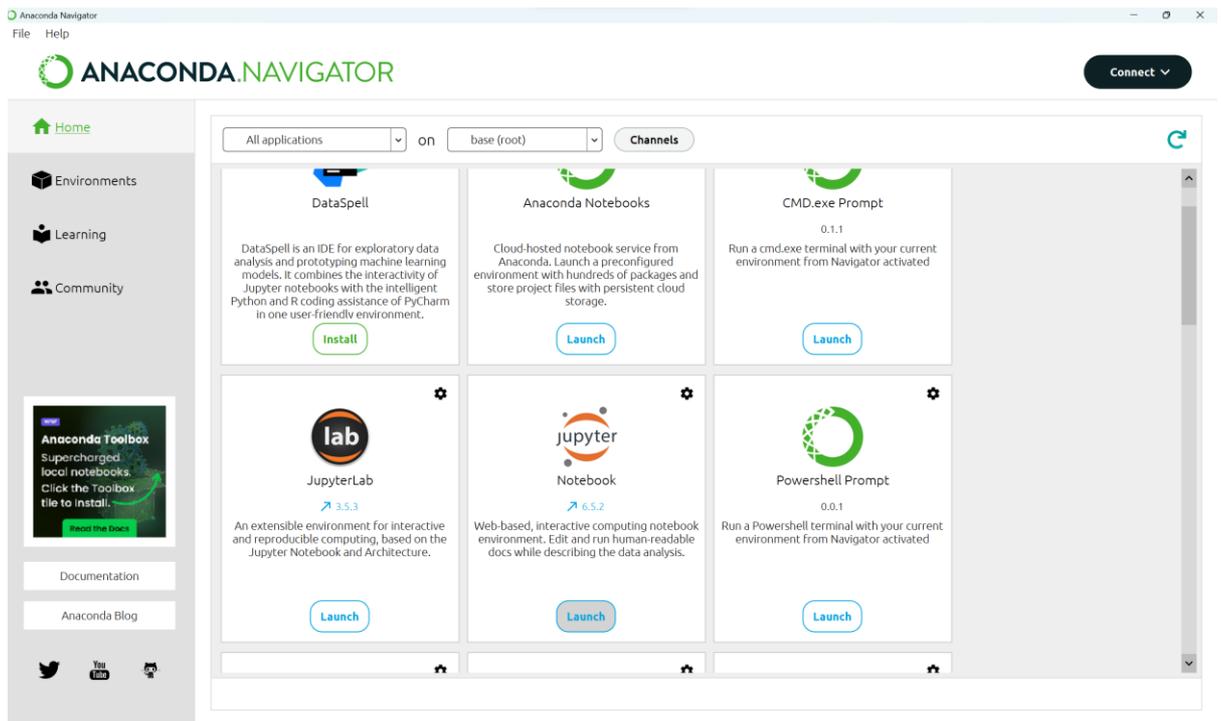
4 Software Setup

The software setup involves a systematic installation process to ensure a smooth workflow.

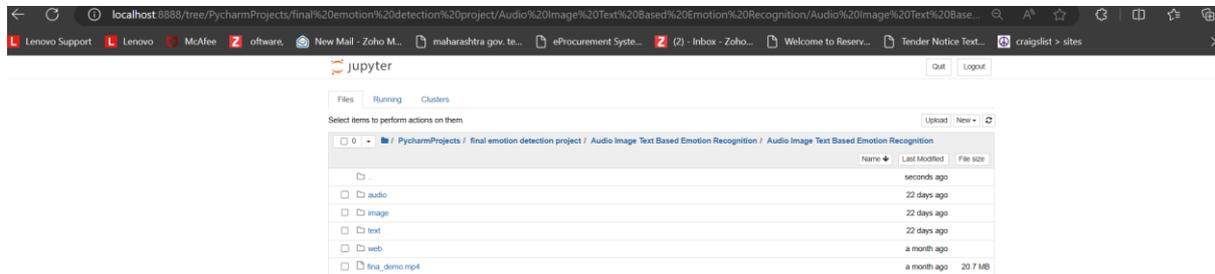
- Users should start by installing Python with the specified version (3.8 or higher).

The screenshot displays a list of download links for Python versions 3.6.14, 3.9.5, 3.8.10, and 3.9.4. For each version, there are links for Windows x86-b4 web-based installers, x86 embeddable zip files, x86 executable installers, and x86 web-based installers. Additionally, there are links for Windows help files, x86-64 embeddable zip files, x86-64 executable installers, and x86-64 web-based installers. Notes indicate that Python 3.6.14 cannot be used on Windows XP or earlier, Python 3.9.5 cannot be used on Windows 7 or earlier, and Python 3.9.4 cannot be used on Windows 7 or earlier.

- Download Anaconda from the official website. Run the installer and follow the installation instructions. After installation, open the Anaconda Navigator. Launch Jupyter Notebook from the Navigator.



- A new browser window will open, displaying the Jupyter Notebook dashboard.
Note: Ensure that you have a working internet connection during the installation process.



- Because of extended runtimes when attempting to execute the model on Jupyter notebook, prompting a transition to Kaggle, where the availability of a GPU significantly reduced the training time from 8 hours on a CPU to a swift 5.5 hours. so whichever you are comfortable you can use that, I ran whole project on kaggle using GPU.

5 Code execution:

- In code execution you can run Audio, Image, and Text data. After all models run then save the model in Json and pickle file for front end development.

For Audio dataset:

```
[INFO] Calculating model accuracy
5/5 [=====] - 0s 5ms/step - loss: 1.2292 - accuracy: 0.0.8511
Test Accuracy: 85.11
```

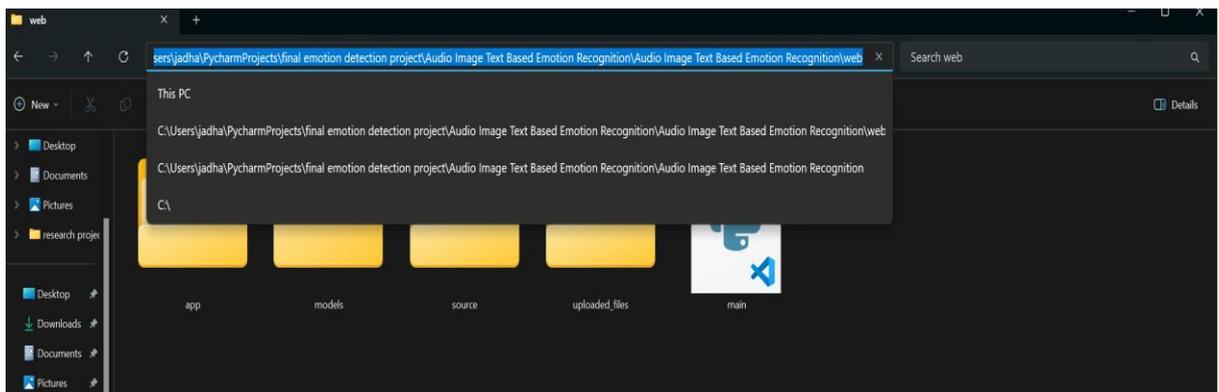
For Image dataset:

```
225/225 [=====] - 1s 3ms/step
Accuracy with test data: 89.99721370855391 %
```

For Text dataset:

```
318/318 [=====] - 2s 3ms/step
Accuracy with test data: 96.88360204482895 %
```

- Create front end using HTML, CSS, JavaScript, and flask as a backend. That you can run on PyCharm or visual studio. All project files saved in web folder.
- Navigate to the directory containing all project files. Locate the web file, right-click, and choose "Open command window here." Enter the desired command or path, then press Enter. This action initiates the specified operation within the command prompt, organizing the workflow for enhanced efficiency.



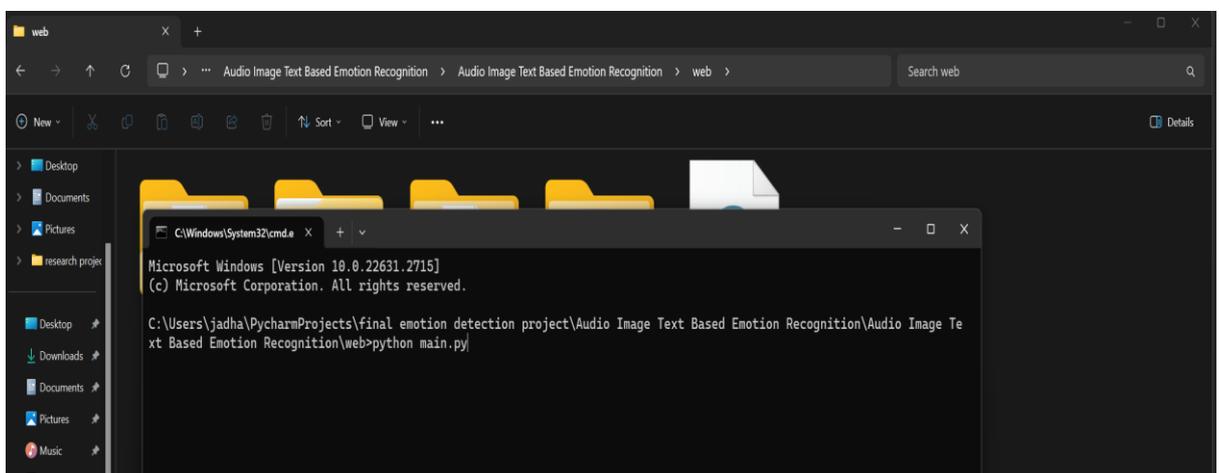
- If Flask and other dependencies are not installed, use the following commands to execute in cmd:

```

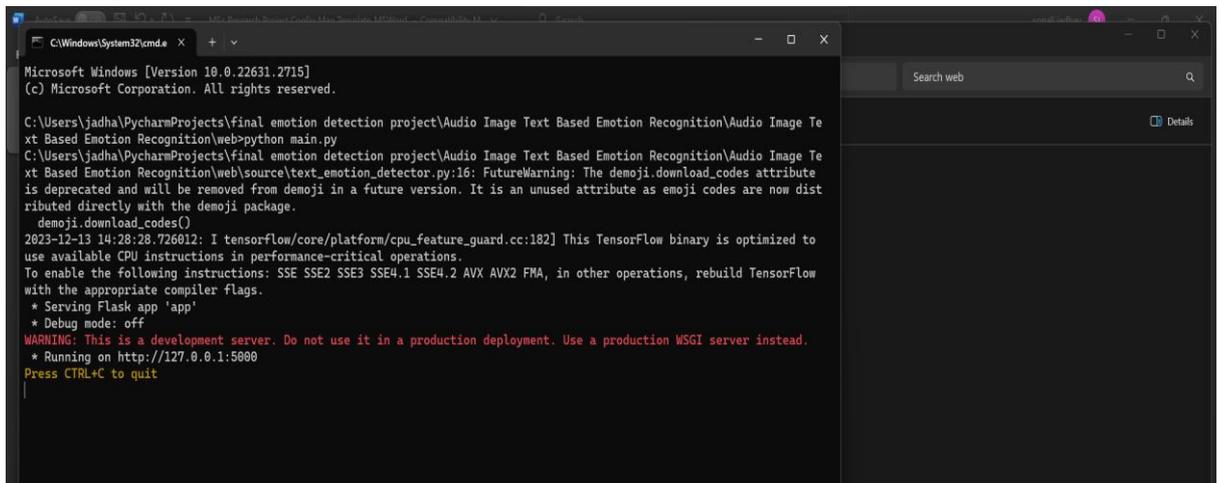
pip install flask
pip install opencv-python
pip install demoji
pip install tensorflow
pip install numpy

```

- Once installed, in the command prompt, execute main file:



Press Enter to initiate the program, incorporating the necessary libraries for seamless execution.

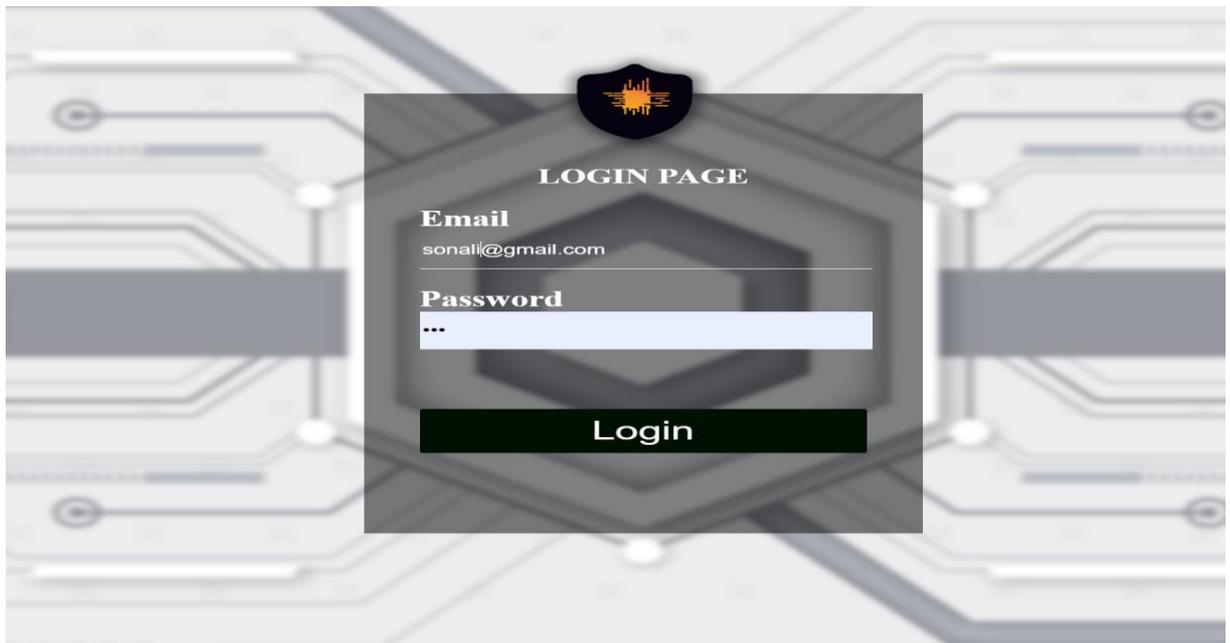


```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22631.2715]
(c) Microsoft Corporation. All rights reserved.

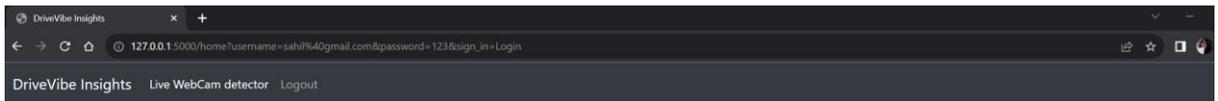
C:\Users\jadha\PycharmProjects\final emotion detection project\Audio Image Text Based Emotion Recognition\Audio Image Text Based Emotion Recognition\web>python main.py
C:\Users\jadha\PycharmProjects\final emotion detection project\Audio Image Text Based Emotion Recognition\Audio Image Text Based Emotion Recognition\web\source\text_emotion_detector.py:16: FutureWarning: The demoji.download_codes attribute is deprecated and will be removed from demoji in a future version. It is an unused attribute as emoji codes are now distributed directly with the demoji package.
  demoji.download_codes()
2023-12-13 14:28:28.726012: I tensorflow/core/platform/cpu_feature_guard.cc:182] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.
To enable the following instructions: SSE SSE3 SSE4.1 SSE4.2 AVX AVX2 FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.
* Serving Flask app 'app'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
```

Copy the URL and paste in browser then enter it will open login window.

6 Results:



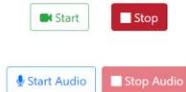
Enter Id and password click on "Login,". After clicking on login, the system will display the home window.



Fusing Roads with Emotions, Every Mile a Melody.

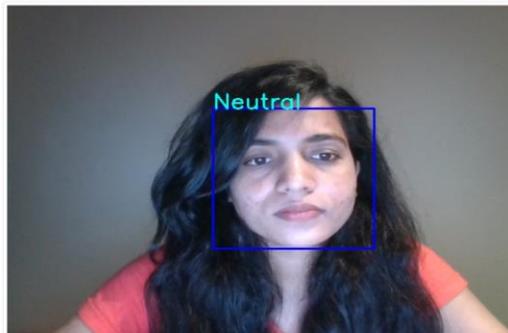


Category	Emotion
Face Emotion	
Audio Emotion	
Text Emotion	
Final Result	
Recommended Quote	
Recommended Song	<input type="button" value="Play"/>



Then start your camera or start audio that will show all result with recommendation.

Fusing Roads with Emotions, Every Mile a Melody.



Category	Emotion
Face Emotion	Neutral
Audio Emotion	Neutral
Text Emotion	Neutral
Final Result	Positive
Recommended Quote	A positive mindset opens the door to adventure, but careful driving ensures you embrace it fully.
Recommended Song	Chak De India <input type="button" value="Play"/>



References

Anaconda Distribution. Available at: <https://www.anaconda.com/products/distribution>

PyCharm: Python IDE for Professional Developers. Available at: <https://www.jetbrains.com/pycharm/>