**INSTALLATION GUIDE FOR**

**Weather-Augmented Traffic Sign Recognition Notebook**

**1. Install Python**

Download and install Python 3.8 or higher from python.org.

**2. Install Jupyter Notebook**

Open the command prompt

Install Jupyter Notebook

After installation, open jupyter it opens browser window with the Jupyter interface.

**3. Install Required Libraries**

The required libraries for data processing, model building, weather data fetching, and evaluation. Install them using pip:

TensorFlow: For building and training the model.

NumPy: For numerical operations.

Pandas: For reading dataset files.

Requests: For fetching weather data via the OpenWeatherMap API.

scikit-learn: For evaluation metrics.

Matplotlib: For visualizing results (e.g., plots).

pip install tensorflow numpy pandas requests scikit-learn matplotlib

**4. Get an OpenWeatherMap API Key**

Sign up at openweathermap.org.

Generate a free API key and save it. You’ll need to add this key to the notebook (there will likely be a cell where you input the API key).

**5. Download the GTSRB Dataset**

Download the GTSRB Final Training Images dataset which is attached to this Zip file.

Extract the dataset zip file provided to a folder named GTSRB.

Place the GTSRB folder in the same directory as yours .ipynb file.

**6. Set Up the Notebook Environment**

Place the .ipynb file in a project folder

Ensure the GTSRB folder is in the same directory as the .ipynb file.

Open a terminal in the project folder and start Jupyter Notebook:

In the Jupyter interface, locate and open the .ipynb file.

**7. Run the Notebook**

Run each cell in the notebook sequentially by clicking the "Run" button or pressing Shift + Enter.

The notebook will process the data, train the model, evaluate it, and output results and performance metrics.

**8. Troubleshooting**

Jupyter Notebook won’t open: Ensure you’re in the correct directory and run jupyter notebook again.

Module not found: If a library is missing, install it using pip (e.g., pip install missing\_library).

API key error: Double-check your OpenWeatherMap API key and ensure it’s active.

Dataset not found: Verify the GTSRB folder is in the same directory as the .ipynb file.

**Notes**

If the notebook requires additional libraries, they will need to be installed similarly using pip.

Ensure your system has enough memory (at least 4GB RAM) and storage (10GB free) to handle the dataset and model training.