User Guides

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Project Title: Information-based associative analysis and deep learning for classifying time-series data

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1. Introduction

Welcome to the Time Series Prediction Application! This application enables you to predict electricity load using historical data. This guide will walk you through accessing the application, uploading datasets, running forecasts, and interpreting results.

2. End User Guide

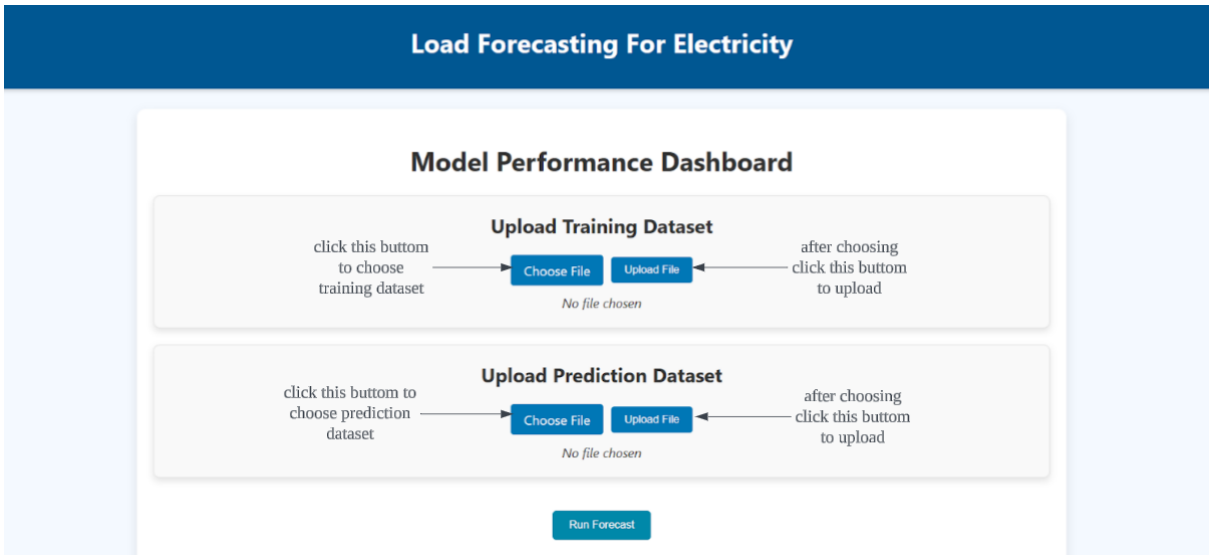
2.1 Accessing the Application

1. **Open the Application**
    - Ensure you have an internet connection and a web browser installed.
    - Launch your preferred web browser.
    - Navigate to `http://127.0.0.1:5000`. This is the local server address where the application is hosted.

2.2 Interface Overview

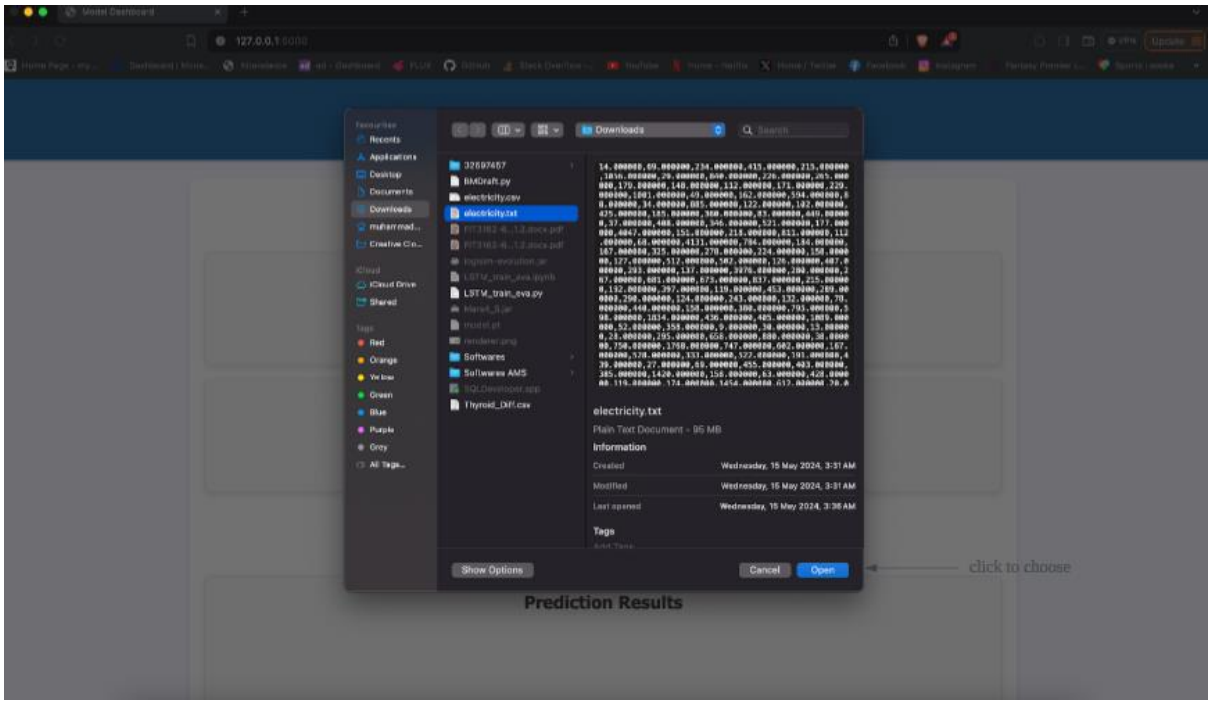
The main dashboard is organised into user-friendly sections:

1. **Upload Training Dataset**: For submitting the dataset used to train the prediction model.
2. **Upload Prediction Dataset**: For submitting the dataset based on which predictions will be made.
3. **Run Forecast**: A button to initiate the load prediction process.
4. **Prediction Results**: Displays the graphical representation of the forecast results.

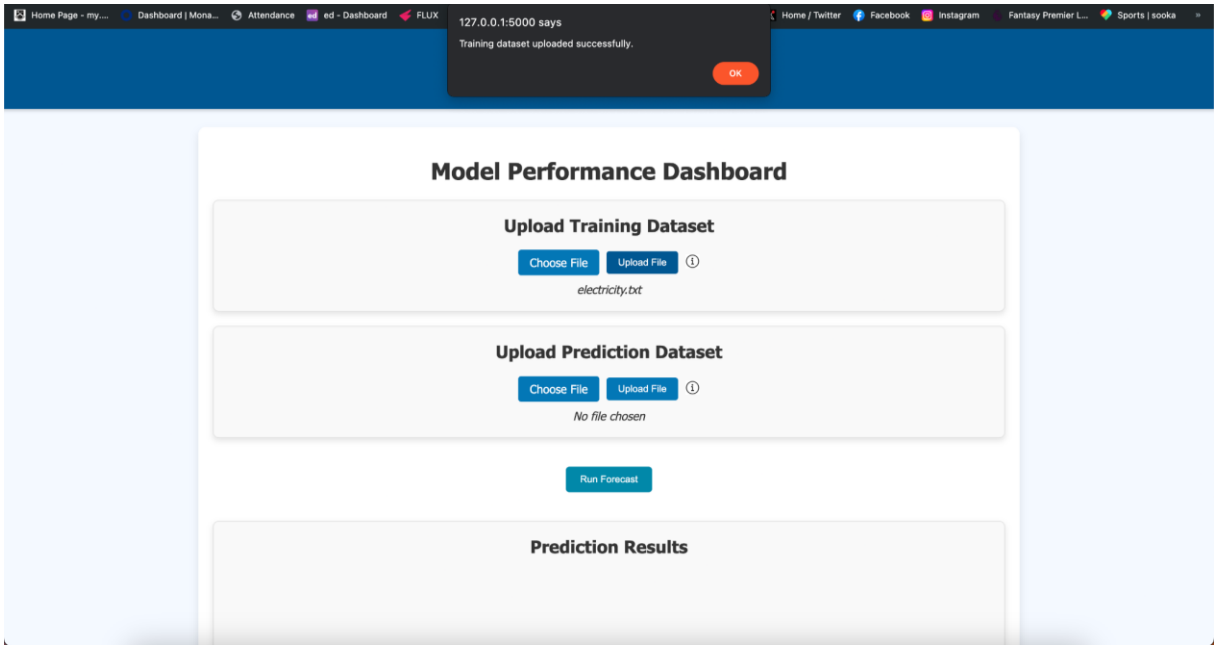


2.3 Step-by-Step Guide

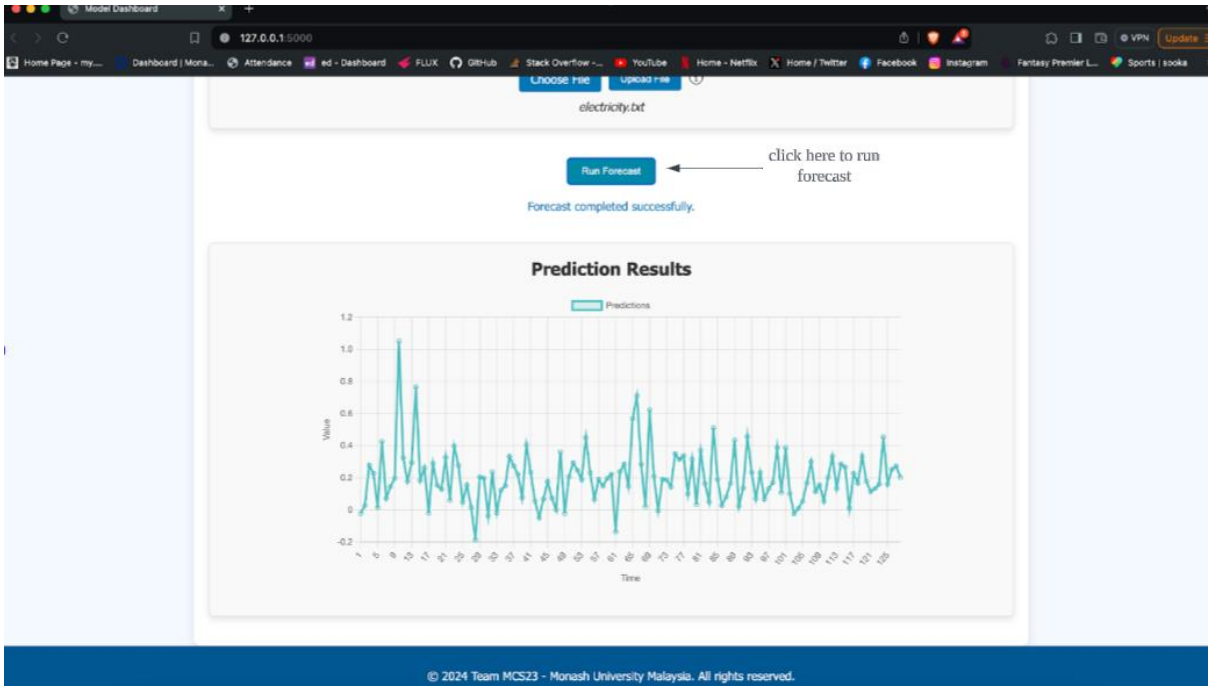
1. **Uploading Training Dataset**
    - Choose File:
        - Click "Choose File" and locate the .txt dataset on your computer.
        - Confirm the dataset adheres to the following:
            - Is a plain text .txt file.
            - Uses commas as delimiters.
            - Contains no missing or null values.
            - Includes only numerical data.
            - Has a structure where each column is a feature and each row a timestamp.
        - The filename will be displayed next to the button upon selection.



    - Upload File:
        - Click "Upload File" to submit your dataset.
        - A success message will notify you of a successful upload.



2. **Uploading Prediction Dataset**
    - Follow the same steps as for the training dataset, ensuring it contains the selected features after ARM technique application.
3. **Running Forecast**
    - With both datasets uploaded, click "Run Forecast".
    - A notification will indicate the process is running.
    - Upon completion, a success message will confirm the forecast is ready.



4. **Viewing Prediction Results**
    - The results will be presented in a graph, visualising the predicted electricity load over time.

2.4 Tips for Best Results

- Ensure your datasets are error-free and conform to the required format.
- For optimal performance, use a dataset that has been preprocessed to enhance prediction accuracy.
- Be patient during the forecast process, especially with large datasets.
- Regularly check the Flask server logs for any warnings or errors.

3. Technical Guide

(for users with technical background or system administrators)

3.1 Prerequisites

1. Python 3.7+: Verify that Python version 3.7 or above is installed on your system.
2. Virtual Environment: It is advisable to use a virtual environment for dependency management.

3.2 Installation Steps

1. **Clone the Repository**
    - Use `git clone <repository-url>` to clone the project repository.
    - Navigate into the project directory with `cd Electricity-Load-Prediction`.
2. **Set Up the Virtual Environment**
    - Create a virtual environment using `python3 -m venv venv`.
    - Activate the environment with `source venv/bin/activate` (on Windows, use `venv\Scripts\activate`).
3. **Install Dependencies**
    - Install all necessary dependencies by running `pip install -r requirements.txt`.

3.3 Running the Application

1. **Start the Flask Server**
    - Set the `FLASK_APP` environment variable to `app.py`.
    - Execute `flask run` to start the server.
    - Access the application through your web browser at `http://127.0.0.1:5000`.

3.4 Using the Application

1. **Open the Application in a Browser**
    - Visit `http://127.0.0.1:5000` to open the application.
2. **Upload Datasets**
    - Follow the step-by-step guide to upload both training and prediction datasets.
3. **Run and View Forecast**

    - Execute the forecast and view the results as described.

Example Screenshots

- View screenshots of each step for visual guidance (refer to the provided image paths).

3.5 Troubleshooting

1. **Common Issues**
    - Verify all dependencies are correctly installed.
    - Ensure dataset formatting is accurate.
    - Monitor the Flask server console for error messages.
2. **Logs**
    - Regularly inspect the server logs for debugging information.

By adhering to these detailed guidelines, you should successfully operate the Electricity Load Prediction application. If you encounter any issues not covered here, consider reaching out to the support team or checking the FAQ section for additional assistance