GridGuardian: Blackout Risk Alert System

# 1. Project Overview

GridGuardian is a Streamlit-based web application designed to predict and visualize blackout risks based on real-time public grid load and weather data. It combines rule-based logic and simple machine learning models to assess the likelihood of blackouts and alert users accordingly.

# 2. Features

• Live blackout risk alert based on current data.

• Interactive data visualization using Plotly and Matplotlib.

• Lightweight ML model integration for dynamic risk prediction.

• Time-series charts and a color-coded risk gauge.

# 3. Technologies Used

• Streamlit – Web app framework for Python.

• Pandas, NumPy – Data manipulation and processing.

• Scikit-learn – Machine Learning model integration.

• Requests – Fetching live weather and grid data.

• Plotly, Matplotlib – Data visualization.

# 4. Requirements

Below are the Python dependencies needed to run the GridGuardian project. These should be listed in a file named requirements.txt:

streamlit  
pandas  
numpy  
scikit-learn  
matplotlib  
requests, ploty