Weather Forecasting Project

This project leverages data science and visualization techniques to forecast weather conditions and present them in an interactive dashboard format using Power BI.

📁 Project Files

- `WeatherForcastingProject.ipynb`: Jupyter Notebook containing the data preprocessing, analysis, and machine learning model for weather prediction.
- `Wheather_Prediction_V4.pbix`: Power BI report file with visualizations for weather data and prediction outputs.

🔍 Objectives

- Build a model to predict future weather conditions based on historical weather data.
- Clean and preprocess raw weather data to ensure accuracy.
- Train and evaluate machine learning models for forecasting.
- Visualize trends, predictions, and insights in a user-friendly Power BI dashboard.

🧪 Technologies Used

- **Python** (NumPy, Pandas, Matplotlib, Scikit-learn, etc.)
- **Jupyter Notebook**
- **Power BI** for reporting and dashboarding

⚙️ Features

- Data cleaning and preprocessing
- Exploratory Data Analysis (EDA)
- Model building and accuracy evaluation
- Interactive Power BI dashboard for:
    - Temperature and humidity trends
    - Weather condition breakdown
    - Predictive insights

📊 Insights

Some key visual insights from the Power BI dashboard include:

- Seasonal temperature and rainfall patterns
- Most frequent weather conditions
- Forecast trends and confidence scores

📌 How to Run

1. Notebook

1. Install required Python packages.
2. Run `WeatherForcastingProject.ipynb` cell by cell.
3. View predictions and accuracy metrics.

2. Power BI Dashboard

1. Open `Wheather_Prediction_V4.pbix` in Power BI Desktop.
2. Refresh data source (if connected live).
3. Interact with the dashboard to explore trends and insights.

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