Day - 11

AI & ML HACKATHON

Date : 11/07/2025

Duration : 24 Hours

Challenge Brief

With rising electricity consumption in modern households and facilities, understanding how appliances, tariffs, and usage hours contribute to overall energy bills is increasingly important. In this challenge, you'll build an AI/ML model that predicts the monthly electricity bill based on a combination of appliance usage, geographic location, energy provider, and tariff details.

This problem simulates a real-world scenario where energy companies or campus utilities need accurate bill forecasting models to optimize planning and detect inconsistencies.

Objective

Your task is to develop a **supervised regression model** that takes in features such as:

- Appliance counts (Fan, Refrigerator, AC, etc.)
- Monthly usage hours
- Tariff rate
- City and Company

…and predicts the **ElectricityBill** for each record.

You must train your model, evaluate its accuracy, and present your solution with visual insights and a video explanation.

General Guidelines

You must use **Python** and a **Jupyter Notebook** (`.ipynb`) or **Google Colab**.

Use only traditional ML models (no deep learning or GenAI).

Categorical data must be preprocessed (e.g., label encoding).

Clearly mention any assumptions or data cleaning steps.

All code should be properly commented and modular.

Do not just submit the given starter notebook as for doing that no certificate will be awarded.

Deliverables

Submit the link to your GitHub repository, structured as per the format provided below.

```
TeamName_ProjectName/
│
├── notebook/
│   └── final_solution.ipynb
│
├── report/
│   ├── README.md                          ← Project overview
│   └── model_summary.txt                  ← Brief model details and results
│
├── video/
│   └── demo_video.mp4    ← 2–3 min explanation video (can be a link.txt file instead)
│
├── data/
│   └── electricity_bill_dataset.csv (optional if unchanged)
│
└── requirements.txt                       ← List any Python libraries used
```

Evaluation Criteria

Criteria	Weight
Model Performance (RMSE, R^2)	30%
Data Preprocessing & Feature Handling	20%
Visualizations and Interpretability	20%
Code Quality and Modularity	10%
Explanation and Video Clarity	20%

Addition resources and dataset

All required files including the dataset and a sample starter notebook are available in the GitHub repo linked below. Please refer to it before you begin working on your solution.

https://github.com/sharad00004/AI-ML-HACKATHON-Datasets

Support

For any queries, reach out to:

Email: cs23i1052@iiitdm.ac.in

Name & contact: Sharad Kumar Dubey , 8960064987

WhatsApp Community: https://chat.whatsapp.com/CEjhrp1QolYLs1m4OgslMT

Submission

Please Submit here - https://forms.gle/uV7ZXBaHxTNSGAU17

Provide Your valuable Feedback Here
https://forms.gle/UC3RbHfAPRZMuAyZ6

Connect Us On Various Platforms
https://linktr.ee/iiitdm.technical