Sustainable Smart City Assistant using IBM Granite LLM

Objective

To develop a conversational AI assistant powered by IBM Granite LLM that helps urban households monitor and reduce electricity and water consumption by giving personalized, sustainable recommendations.

Problem Statement

Urban households often overconsume electricity and water due to lack of real-time feedback or awareness. This project builds a smart assistant that uses AI to analyze usage data and suggest eco-friendly actions.

Input Data

- Electricity Usage: 230 units/month
- Water Usage: 300 liters/day
- Fridge Usage: 15 hours/day
- AC Usage: 5-8 hours/day

Project Scope

- Input: Monthly usage data for electricity, water, appliances
- Output: Personalized sustainability tips
- Bonus: Monthly comparison and estimated carbon footprint

Tools & Technologies

- IBM Granite LLM
- Python (Flask) / Node.js
- HTML/CSS/JavaScript
- JSON/Firebase
- Render (for deployment)

Sample Prompt for LLM

"A household consumes 230 units of electricity, uses 300 liters of water per day, fridge runs 15 hours/day, AC runs 5-8 hours/day. Suggest sustainability improvements and energy-saving tips."

Expected Outcome

- A working smart assistant prototype
- Personalized recommendations
- Encourages sustainable living
- Demonstrates LLM usage in a real-world scenario

Deliverables

- Source code (GitHub)
- Demo video (2-3 minutes)
- Project report
- UI screenshots and prompt samples