Back to Documents

Hello, Welcome to POC Architect.

Overview

The **Carbon Footprint Analyzer and Energy Saving Assistant** PoC aims to develop an AI-driven platform that calculates users' carbon emissions based on their daily activities and provides personalized energy-saving recommendations to reduce emissions and optimize energy consumption. The primary objectives are to enhance environmental awareness, promote sustainable practices, and deliver actionable insights through real-time analysis.

Must Have Features

LLM Integration: Utilize a large language model (e.g., GPT-based) to facilitate natural language interactions, allowing users to ask

questions about their carbon footprint and receive personalized energy-saving recommendations.

Decent-Sized Data Model: Develop a structured database to store user data including travel behavior, energy consumption, and utility usage. This data will serve as the foundation for calculating carbon emissions and generating personalized recommendations.

Semi-Complex APIs & Business Logic:

- **User Management API**: Securely handle user registration, login, and profile management.
- **User Data Input API**: Allow users to input or upload their travel and energy consumption data, enabling the platform to perform carbon footprint analysis.
- **Carbon Calculation & Recommendation API**: Process user data to calculate carbon emissions and generate personalized energy-saving recommendations.
- **Reporting API**: Generate comprehensive reports summarizing users' carbon footprint, energy consumption trends, and potential savings.

Interactive UI: Create an engaging front-end interface that allows users to register, input their travel and energy data, and view detailed carbon footprint analysis and energy-saving recommendations.

Nice to Have Features

Synthetic Data Generation: Implement tools to create realistic test data simulating user energy consumption and carbon calculations, ensuring robustness without compromising privacy.

Anomaly Detection Algorithms: Integrate AI-driven algorithms to identify unusual patterns in energy usage that may indicate inefficiencies, providing alerts and recommendations.

Admin Analytics Dashboard: Develop a visual dashboard for administrators to monitor platform performance, user engagement, and overall environmental impact metrics.

Automated Reporting: Enable the generation of periodic reports highlighting users' carbon footprint, energy usage trends, and achieved energy savings over time.

User Flow

User Onboarding: Users register or log in to the platform and set up their profiles by inputting initial travel and energy consumption data.

Core Interaction: Users submit their travel and energy consumption data, which is then used to calculate their current carbon footprint and generate personalized energy-saving recommendations.

Feedback Loop: The AI processes the input data to provide tailored energy-saving recommendations. Users can validate,

review, or modify these suggestions to better reflect their real-world scenarios.

Outcome & Insights: Users receive detailed insights including their calculated carbon footprint, energy savings recommendations, and trends in energy consumption, all presented through interactive dashboards and reports.

Continuous Engagement: Users can regularly update their travel and energy usage data, seek additional recommendations, and monitor their progress in reducing their carbon footprint.

Conclusion

The **Carbon Footprint Analyzer and Energy Saving Assistant** PoC has the potential to empower users to reduce their carbon emissions by providing personalized insights and actionable energy-saving recommendations. By integrating advanced AI capabilities with a robust web development framework, the platform offers an engaging and intuitive user experience focused on promoting environmental sustainability. The next steps include finalizing the development framework, integrating the AI components, conducting user testing, and iterating based on feedback to ensure the platform meets user needs effectively.