Restaurant Review Analyzer with AI

Approach:

The project was aimed at enabling restaurant owners to decipher their customers' feedback through AI. Rather than depending on simple sentiment scores, I employed structured prompting with Gemini for extracting complaints, themes, and categorizations. Semantic search for in-depth Q&A was also incorporated.

Tools Utilized:

- Flask: To create a responsive and clean web interface.
- Pandas: For parsing uploaded review files.
- Google Gemini: For zero-shot classification and analysis from natural language prompts.
- FAISS: To construct a vector store that allows similarity-based retrieval of context.
- LangChain: Central to the app's functionality—used for handling prompt templates, chaining LLM outputs, and framing responses.

Key Features:

- LLM-driven insights: Themes, complaint detection, and review classification.
- LangChain Chains: For prompt + LLM + output parsing workflows.
- Review Chatbot: Responds to user queries from indexed reviews utilizing RAG.

Challenges Faced:

- Ensuring LLM responses were consistent and correctly formatted (especially tables).
- Designing prompts that guided the model toward structured, accurate responses.
- Balancing chunk sizes for optimal vector retrieval without context overflow.

Future Scope:

- Add trend visualizations like sentiment over time.
- Add authentication so restaurant owners can save their sessions.
- Support multi-language review analysis using Gemini’s multilingual capabilities.
- Deploy to a cloud platform like Render or Railway with persistent file and vector store management.