MediCurious - Medical LLM

Team Members: Ashlesha, Pavan

1. Introduction

Briefly recap the project goal:

- Build an AI system for personalized medical recommendations by addressing LLM limitations (ambiguous symptoms, outdated info, contextual safety).

TRY DEMO HERE - https://medicurious.azurewebsites.net/

2. Individual Contributions

Ashlesha Ahirwadi
Focus Areas: Dataset Curation, Model Fine-Tuning, Prompt Engineering, Evaluation Metrics

a. Dataset Sourcing
Action: Identified four critical datasets:
- Drug Safety Database: PDF with drug safety flags
- Clinical Guidelines (PDF): Extracted text/tables for up-to-date diagnostic protocols.
- Medication Guide (CSV): Cleaned and standardized drug data
- Symptom Prediction Dataset (CSV): Binary symptom-prognosis mappings for differential diagnosis.

b. Model Fine-Tuning and Prompt Engineering
Action: Fine-tuned a medical LLM model on a combined dataset.
- Prompt Engineering: Designed templates to structure user inputs
- Outcome: Improved accuracy in extracting symptoms, demographics, and intent from user queries.

Pavan Konam
Focus Areas: Preprocessing, Knowledge Graph Integration, Evaluation Metrics

a. Data Preprocessing and Integration
Action: Built preprocessing pipelines
- Merged symptom, drug, and guideline data into a unified JSONL format.
- Normalized drug safety data (lowercasing, trimming whitespace).

- Handled PDF text/table extraction for guidelines and drug safety rules.

b. Knowledge Graph Representation

Action: Created a knowledge graph to link symptoms, diagnoses, drugs, and guidelines:

- Nodes: Symptoms, drugs, guidelines, contextual flags
- Edges: Symptom-diagnosis relationships, drug contraindications, guideline references.

c. Evaluation of LLM

Action: Run identical test queries through both systems

- Used structure dataset (JSON file) and ran the same prompts through GPT 4o and MediCurious LLM

3. Conclusion

This work addresses critical gaps in LLMs for healthcare, offering safer, more reliable recommendations. While GPT-4o remains powerful for general tasks, our system's medical-domain optimizations make it a stronger choice for patient-facing applications.