Personalized Medicine AI

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Our team

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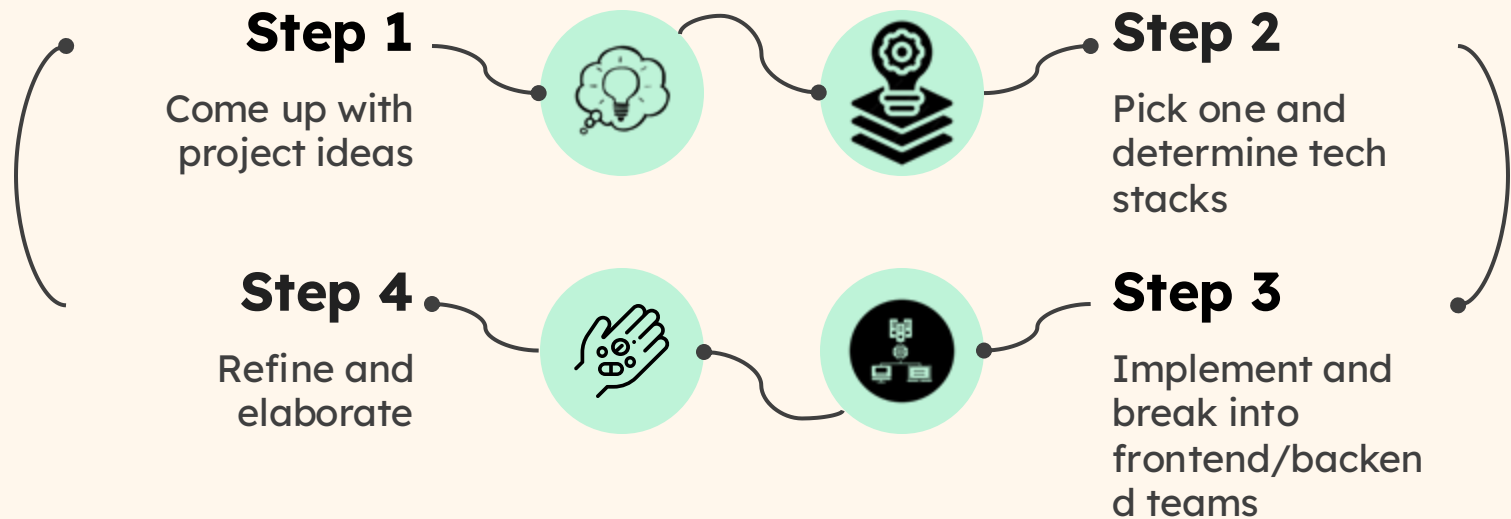Rising junior @ Peak to Peak Charter School, Colorado

Intro to the project

The Personalized Medicine AI chatbot is a web based tool designed to make healthcare advice more accessible. Many patients face understanding complex medical terms and finding information tailored to their needs. Our solution uses a LLama model combined with RAG to provide accurate, personalized responses based on user input and the knowledge base. It is important to note that this tool is NOT a doctor-it is intended solely for learning about general treatment options available without a prescription in the USA.

Our complete process

Step 1

Come up with project ideas

Step 2

Pick one and determine tech stacks

Step 4

Refine and elaborate

Step 3

Implement and break into frontend/backend teams

Market Need

>50%

Over **50%** of OTC pain reliever users report having misused them at some point

~79%

Nearly **79% of surveyed individuals** reported current or past OTC drug use, with analgesics (pain relievers) being the most common type.

6.4%

Overall, about **1 in 10 adults (6.4%)** reported skipping needed care due to cost in 2023.

Initial Brainstorming

- We wanted to build a personalized medicine assistant that helps users find OTC medications based on symptoms.
- Discussed AI chatbot integration, over-the-counter guidance, and user-friendly interaction
- Considered tools like Flask vs. Next.js, OpenAI vs. Together/Groq.

Decisions:

- Next.js for speed, scalability, and built-in routing
- Groq for LLaMA-3 due to fast inference
- OpenAI for embeddings

Ethical Dilemmas

The biggest ethical dilemma we faced when making our chatbot was making sure the datasets we used to train the model were compliant with HIPAA and other medical data laws.

DATA - RAG

- We aim for accurate results across 3 main domains: Allopathy, Naturopathy, and Homeopathy.
- RAG helped maintain accurate results.
- Data collected included numerous medical textbooks on diagnoses, medication, prescriptions, and OTC-available drugs.
- Pinecone for the vector storage.

Demo!

Project Extensions

By expanding the dataset in which the model gives its recommendations, the model can use a more diverse set of data, increasing the accuracy of the model.

Expand the Knowledge Base

Country-Specific Recommendations

By adding a location feature, the chatbot can give country-specific recommendations based on what is available over-the-counter in the user's location. This ensures the model complies with OTC medicine laws in the user's country.

Integration with Health Trackers

Integrating the model with health trackers and collecting data from a user's Fitbit, Apple Watch, etc. can offer more accurate and relevant treatments. This can include collecting data of a user's heart rate, sleep data, blood saturation (SpO_2), etc.

Skills/Lessons Learned

Designing clear prompts is crucial

Working around ethical guidelines is important

Test how the AI handles different situations

Thanks!