CAPSTONE PROJET PITCH

NUTRIFUSION

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Link to audio recordings :
https://drive.google.com/drive/folders/1IHRnHJGuh6vvT5Jdf_2PJxUMNIfOBykV?usp=drive_link

TRANSCRIPT 1 :

Hi. My name is Anica Remin Fernandez, today I would like to talk about the project I've done on nutrition. So as we all know, many online food recommendation systems today doesn't consider chronic health conditions like heart heart diseases or even diabetes. So this has initially led to unhealthy meal suggestions. So as a person, I wanted to design a system that I that could make more personalized health aware recipe recommendations. So the goal was to build a system that takes into accounts a user's age, preferred dish, a medical condition, and that suggests a meal that was not only personalized but also medically safe. I led the research on trusted data sources like USDA and edamam API, and set up a sonar qube for quality control. Initially, we use Falcon RW-1B, to generate modified recipe. We also alternatively used other models, but later we switched to Mistral 7b with combined FAISS for better retrieval and safer generation. And I also created prompt templates clean ingredients and defined health rules for diseases. We evaluated the outputs using mean reciprocal rank. The final suggested system reliably suggests disease, friendly meal. Friendly meals. For example, if you are asking for a cake recipes with someone with the diabetes, it will replace every harmful ingredients with low sugar alternatives and explain why it is unique, why it removed the output was safe and it was well ranked and was trustworthy.

TRANSCRIPT 2 :

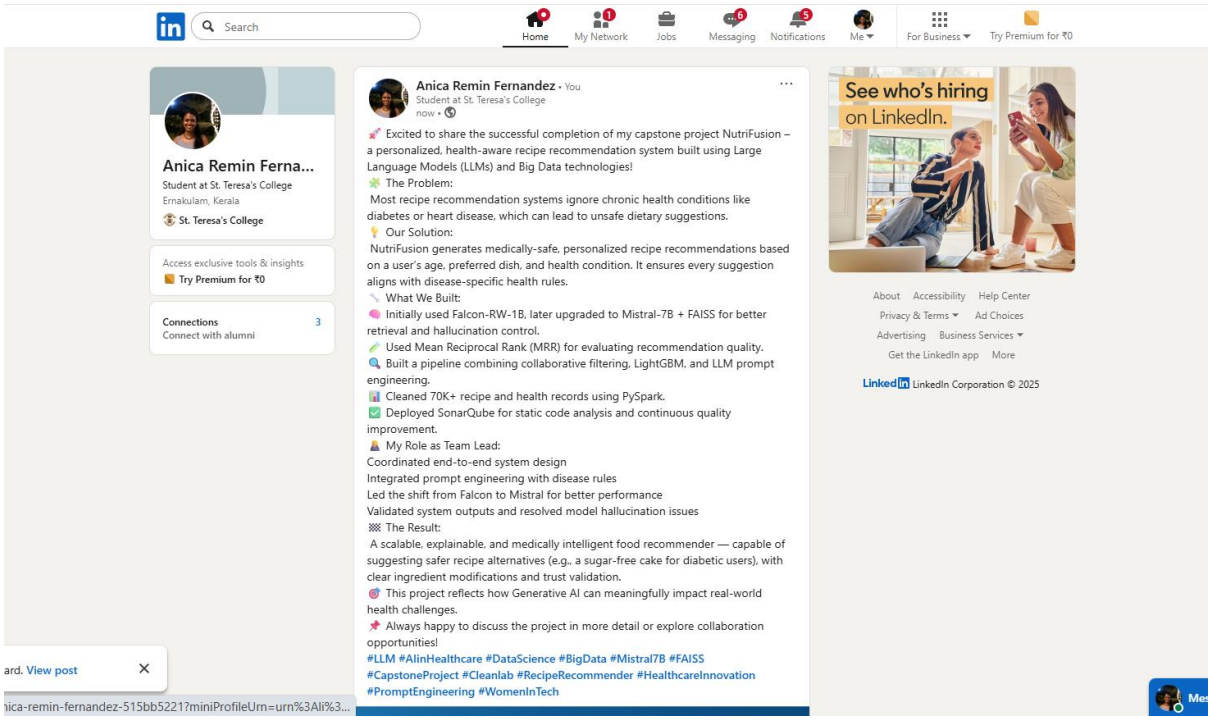
Hi there. As we all know, generic recipes apps often ignore the medical conditions of the patient, so which can eventually be very dangerous. As a person who has done a project on nutrition, I always wanted to create an AI system that produces a smart health complete meal suggestions that is really good for the user. The challenge was to design a personalized food recommender that considers age, health, conditions of the patient and the dishes that is verified by the user and that initially returns a safe recipe with explainable changes. I supervise the data set collection from trustable sources like USDA and Edamam API and I set

up a sonar qube to ensure that the code quality was on top notch. We use Falcon RW-IB as our LLM, but we struggled with having accuracy and the ingredient changes later, we switched to Mistral 7b that is paired with FAISS for vector-based retrieval. We later implemented strict ingredient formatting, defined disease specific health rules, and also engineered prompts that take control over the output. And I also conducted an evaluation using mean reciprocal rank and logged results, the system generated a safe recipe alternative with clear ingredient justification and to be asked for diabetic friendly cake, it returned a valid low sugar version, ranking as its top choice. The shift to mistral dramatically increased our accuracy, trust and output quality.

TRANSCIPT 3 :

Hi there. Today, I would like to speak about the nutrition project that has done as a capstone project in my final year. As we all know, managing chronic people with chronic diseases, generic recipe recommendation can have serious health risk. So I wanted to bridge the gap between these by our nutrition project, using the help of AI, our goal was mainly to build a health aware recipe recommendation that aligns with a user's age, medical conditions and choice for the dishes. I guided the team in collecting clean nutrition data from trusted sources like edva API and USDA, and also called reliability by installing and configuring the sonar cube. At first, we use Falcon RW-IB as our LLM model, but we had to switch to Mistral 7b and FAISS along with fives as the other one was unreliable and was getting hallucinated outputs. We created disease specific rules, clean ingredient text and crafted health specific prones. And I also verify the system using mean reciprocal rank and interpreted the results across multiple test cases. So as a final model, accurately recommended health alternatives, like generating a sugar free cake for a diabetic user, and it clearly explained why. The ingredients was changed. It was removed with the mistral, we achieved high trust, interpretability and ranking performance. The system is now scalable and adaptable for the real world health and diet applications. Thank you.

LINKEDN POST LINK : https://www.linkedin.com/posts/anica-remin-fernandez-515bb5221_llm-aiinhealthcare-datascience-activity-7353189314853273601-wml-?utm_source=share&utm_medium=member_desktop&rcm=ACoAADfic6EBPHpwBeepEnh4Vb4fZTFyHE6MaNQ



NutriFusion

AI-Powered Health-Aware Recipe Recommendations

Capstone Project Success

Excited to share the successful completion of my NutriFusion capstone project – a personalized, health-aware recipe recommendation system built using Large Language Models and Big Data technologies:

Problem & Solution

The Challenge: Most recipe systems ignore chronic health conditions like diabetes or heart disease, leading to unsafe dietary su:

Our Solution: Generate medically-safe, personalized recommndations based on user's age, preferred dish, and health condition.

Big Data

PySpark for cleaning 70k+ recipe and health records

Quality

SonarQube for static code analysis and continuous improvement

Key Achievements

- Coordinated end-to-end system design
- Integrated prompt engineering across views
- Unified the style shift from Falcon to Mistral for better performance

70K+
Records Processed

100%
Health Compliance