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DinnerMate

TEAM xxx Date 15.11.2023

Introduction
The DinnerMate small project integrates a generative AI model, particularly OpenAI's GPT-4, to assist users in meal (currently only dinner) planning and recipe generation. Our objective was to develop an intuitive chatbot that suggests personalized recipes based on user preferences such as likes, dislikes, allergies, and the number of people being cooked for. The project was selected for its potential to streamline daily meal planning and address the common indecisiveness people face regarding dinner choices in today's fast-paced lifestyle.

Background
Generative AI models, especially those developed by OpenAI, have been at the forefront of AI-driven text generation and understanding. This project leverages GPT-4's sophisticated capabilities to interpret user inputs and generate contextually relevant culinary suggestions. Unlike traditional recipe databases, DinnerMate provides interactive, tailored suggestions, demonstrating a novel application of AI in everyday decision-making.

Methodology
The project utilizes the OpenAI GPT-4-Turbo model for its superior language processing abilities. The chatbot was developed using JavaScript and associated web technologies, ensuring wide accessibility and ease of use. The decision to use GPT-4 was driven by its ability to generate coherent, context-aware responses. This model might be slightly overkill for this version of the application.
Vite was used to produce the web-part. This is a modern front end build tool that aims to provide a faster and more efficient development experience.

Application Design and Development
DinnerMate features a simple, user-friendly web interface. Users input their culinary preferences, and the AI generates a corresponding recipe. The development process involved integrating the OpenAI API for the chatbot functionality. The choice of a web-based platform was motivated by the desire to make the application accessible to a broad user base without putting in too much work (considering it’s only an assignment).

Experiments and Results
Initial tests involved inputting various dietary preferences and observing the chatbot's recipe suggestions. The data for interfacing with the model included an array of culinary likes, dislikes, and allergy considerations. The outcomes showed the AI's ability to generate accurate and relevant recipes, though the response time and appropriateness of suggestions varied and were noted for future improvements. We were also not too happy about the format of the output (not very readable)

Challenges and Problem-Solving
Most of challenge here was to figure out how to work with OpenAI’s API since none of us haven’t really used any APIs in this way before. This was simply solved by reading some documentation and watching YouTube videos. Also tried to host the website on azure, but without luck.

Discussion
The DinnerMate AI Chatbot showed notable effectiveness in creating personalized dinner plans and proved to be very useful. The performance is great, but the request takes some time as expected

since the response must be generated before it's sent back. When it comes to ethical considerations (dietary and health) our application relies solely on what OpenAI can provide, so there is no way to really make sure your inputs (e.g., allergies) are considered. Our team has learned that working with these sorts of APIs is not very difficult, and the possibilities are endless. A potential implication of these AI driven projects is the price of running APIs, so making free/cheap software would not be profitable.

Reproducibility

The project emphasized clear code documentation and consistent coding practices to ensure reproducibility. The GitHub repository includes documentation on setting up and interacting with the chatbot, along with detailed comments in the code.

Conclusion

The DinnerMate represents a significant step in applying generative AI models to daily tasks like meal planning. It showcases the practical use of AI in enhancing personal decision-making processes. The project provided valuable insights into user-AI interaction and the application of AI in non-traditional domains.

Future Work

Future enhancements could include multi-language support, integration with grocery list services, add nutritional facts and calorie goals. Further research could explore user behavior analytics to refine AI suggestions continually. Make DinnerMate available for more available through apps.

References

https://platform.openai.com/docs/api-reference help with API
https://chat.openai.com help with generating code