EatsAdvisor

Leveraging Machine Learning for Future Nutritional Decisions

Introduction:
In the forthcoming digital age landscape, a growing emphasis is predicted on health consciousness and the demand for personalized online nutritional resources. The proposed *EatsAdvisor* project aims to cater to this anticipated demand by conceptualizing a web application offering personalized nutritional insights based on user-specific inputs.

Objective:
The proposal outlines the development of a dual-faceted web application:
1. **Personalized Nutritional Projections:** With inputs like Age, Height, Weight, Gender, and Meals per day, the application will endeavor to generate curated meal plans for breakfast, lunch, and dinner.
2. **Nutritional Analysis & Recipe Suggestions:** By allowing users to input specific nutritional elements such as calories, fat content, and protein, the application will aim to generate a list of suitable recipes, complete with an in-depth nutritional breakdown.

Dataset:
The dataset proposed for integration is available on Kaggle. It contains 522,517 recipes spanning 312 categories, with 28 columns, providing a comprehensive data backbone for the envisioned application.

Columns - RecipeId, Name, CookTime, PrepTime, TotalTime, RecipeIngredientParts, Calories, FatContent, SaturatedFatContent, CholesterolContent, SodiumContent, CarbohydrateContent, FiberContent, SugarContent, ProteinContent, RecipeInstructions.

Technological Approach:
- **Machine Learning Model:**
  The recommendation engine for EatsAdvisor will be conceptualized using the Nearest Neighbors algorithm. This unsupervised learning model will target efficient neighbor searches to align with user requirements.
- **Backend Development:**
  The backend foundation will be envisaged using FastAPI, a modern Python-based web framework renowned for its quick processing and operational efficacy.
- **Frontend Framework:**
  For creating a user-centric interface, the application will be designed using Streamlit, an open-source app framework in Python. Given Streamlit's compatibility with a myriad of Python libraries, it is deemed suitable for this data-driven project.

Deployment Strategy:
Application Containerization:
The proposal envisions using Docker to ensure a standardized application experience across diverse environments. Owing to the anticipated multi-faceted nature of the project, incorporating a multi-container strategy will be imperative.
Scalability and Management:
Docker's inherent scalability and efficient management capabilities will be harnessed to handle the complexities of this ambitious project.
Service Integration with Docker-compose:
Docker-compose is proposed to ensure seamless integration and coordination among the diverse project components, all defined within a structured YAML file.

Conclusion and Projected Path:
EatsAdvisor, as proposed, seeks to be a pioneer in streamlining nutritional decisions in an evolving digital paradigm. Upon approval, subsequent phases will focus on integrating iterative feedback and continuous data assimilations. The overarching ambition is for EatsAdvisor to mature into a premier tool for those desiring comprehensive and personalized dietary insights.

References:
https://www.calculator.net/calorie-calculator.html
https://www.calculator.net/bmi-calculator.html
https://www.omnicalculator.com/health/meal-calorie