

PEOPLE+AI Health Analysis Solution:

Problem Statement:

Health Analysis:

Utilise AI to generate a health analysis of the product. The analysis can be general or user-specific, with relevant nudges to the user. Some pointers are:

Nutritional Analysis - Higher presence of nutrients desired in low qty (fats, sugar, sodium, calories)

- How processed and nutrient deficit is the product?
- Harmful Ingredients present
- If people follow certain diets, does it comply with it
- Is it diabetes/allergen friendly
- Are there any claims made by brands that could be misleading

What to optimise for

Scientific credibility & accuracy of the analysis provided

The information should add value to the user such that helping them make a decision

Solution:

Project Name:NutriBot

Tagline:

"Your Personal AI Dietitian—Making Healthy Choices Easier"

The Problem it Solves:

Aim and Objectives:

NutriBot addresses the increasing demand for accessible and transparent nutritional information in a world where health-conscious consumers seek clarity. Many individuals struggle to interpret food labels and understand how ingredients impact their health.

Our AI-driven tool aims to:

- **Provide Nutritional Insights:** Generate detailed analyses of food products, highlighting key nutritional components such as calories, sugars, fats, and proteins.
- **Identify Harmful Ingredients:** Alert users to potentially harmful substances, allergens, or ingredients that may not align with their dietary needs.
- **Tailor Recommendations:** Offer personalized suggestions based on user profiles, including dietary restrictions, medical conditions, and nutritional goals.
- **Enhance Dietary Compliance:** Help users adhere to specific diets (e.g., diabetic-friendly, gluten-free, vegan) by analyzing product compliance and recommending suitable alternatives.

Why People Should Use It:

In an era of rising health issues linked to diet and nutrition, consumers need tools that simplify decision-making. Gemini Health Scan not only demystifies food labels but also empowers users to make healthier choices tailored to their unique profiles. This user-centric approach enhances overall well-being by promoting informed dietary decisions.

Challenges I Ran Into:{most important part}

Data Extraction and Quality:

Initial Issue: Storing extracted data in a vector database initially yielded poor accuracy. The integration with Vertex AI did not meet expectations, leading to inconsistent outputs.

Solution: By combining Tesseract for OCR and Gemini for text extraction, I achieved cleaner data processing and improved accuracy in extracting relevant nutritional information.

Temporary Data Storage:

Initial Issue: Managing user profiles and extracted data without cloud storage presented challenges in data accessibility during sessions.

Solution: I utilized global variables to store temporary user data, enabling easy access and modification throughout the application without reliance on external storage.

User Profile Management:

Initial Issue: Collecting comprehensive user profiles while ensuring data privacy and security was a significant challenge.

Solution: I designed a user-friendly interface guiding users through the profile creation process, including validations to ensure accurate health-related information.

Testing and Validation:


Initial Issue: Ensuring the accuracy of health analyses generated by the AI model required extensive validation against reliable nutritional databases.

Solution: I implemented a thorough validation process by cross-referencing AI-generated outputs with established dietary guidelines and expert consultations.

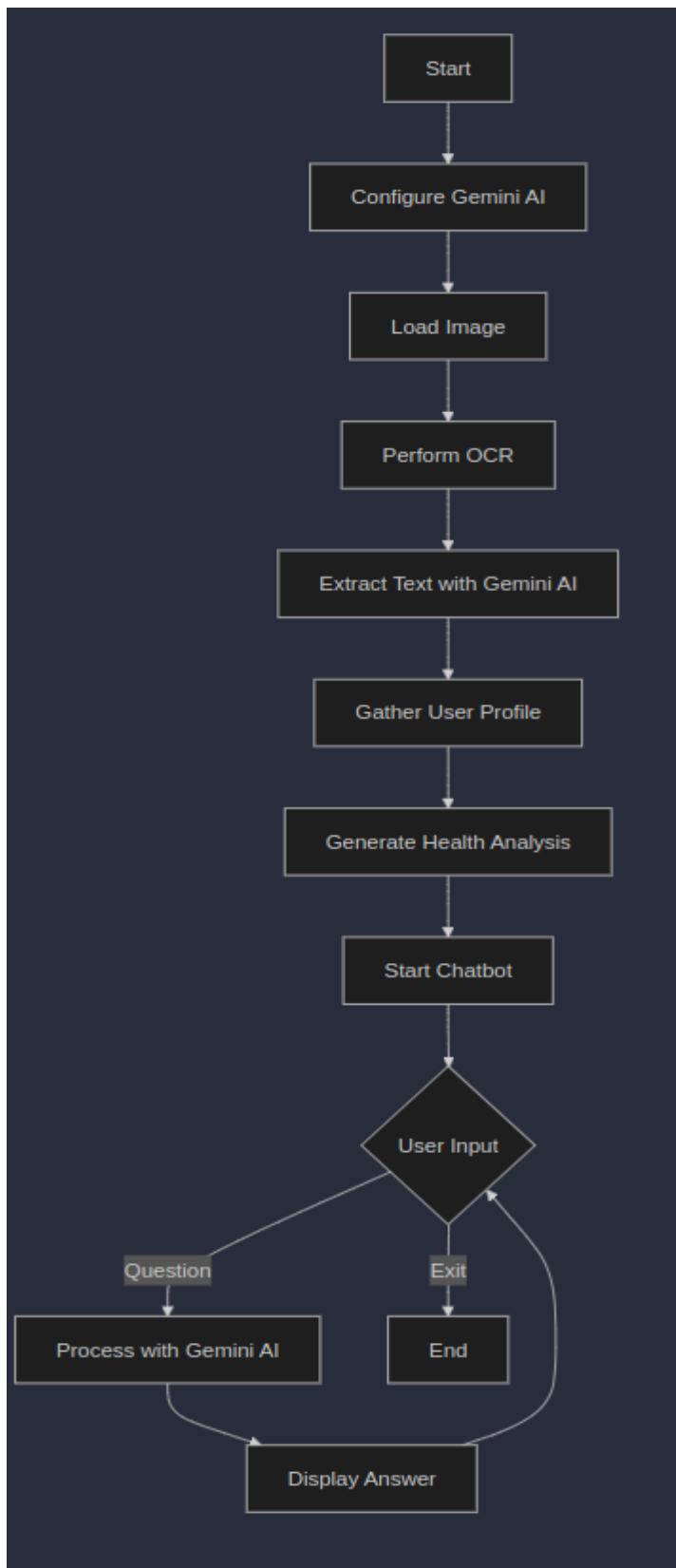
Technologies I Used:

- Programming Languages: Python
- AI Tools: Google Generative AI (Gemini)
- OCR Library: Tesseract
- Image Processing: OpenCV
- Web Framework: Flask (for backend deployment)
- Database Management: SQLAlchemy (for storing user profiles and product data)

Links:

- **GitHub Repository:** [https://github.com/Aryamantiwari17/Nutri_BOT] (containing source code, installation instructions, and usage guides)
- **Google Drive:** [Drive Link Here for Working Video] :[ working video.mp4]

Flowchart:



Future Enhancements:

- **Integration of LangChain Agents:** Utilize LangChain agents for better contextual understanding and improved interaction, enabling the system to provide more relevant responses based on user queries and history.
- **Machine Learning Models:** Integrate machine learning algorithms to predict potential health risks based on user profiles and product consumption patterns.
- **Mobile Application Development:** Create a mobile version of the Gemini Health Scan to improve accessibility and convenience for users on-the-go.
- **Expanded Database Integration:** Collaborate with nutritionists and dieticians to expand the database of food products and health guidelines for more accurate recommendations.
- **Enhanced User Interactivity:** Implement a recommendation engine that uses user data to suggest healthier alternatives or recipes, encouraging better eating habits.