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Online Diet Consultation Using AI

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Abstract-By offering customers AI-powered nutritional recommendations, the "Online Diet Consultation Using Artificial Intelligence" project transforms personalized nutrition. The system uses sophisticated data analysis to foresee possible health concerns and create personalized nutrition recommendations based on user information such as age, weight, dietary preferences, and lifestyle choices. This solution, which is a user-friendly platform, provides personalized meal planning advice, immediate help, and insightful health information without requiring in-person consultations. The program intends to lower illness risks and improve general well-being by encouraging healthy behaviors and proactive health management, giving people the power to take charge of their diet and long-term health.

Key Terms: Artificial Intelligence, Machine Learning, Streamlit, Body Mass Index (BMI), Nutrition Planning, Personalized Diet, Docker Deployment.

I.INTRODUCTION

The need for customized wellness solutions has grown as a result of the increased focus on clean health and individualized nutrition. People who are concerned about their health look for dietary recommendations that fit their particular requirements, tastes, and objectives. Online nutrition consulting driven by AI has emerged as a result of this change, providing tailored guidance derived on data-driven insights. AI systems provide individualized meal plans to promote weight control, the prevention of chronic diseases, and general well-being by examining lifestyle choices and health measurements.

AI-driven solutions dynamically adjust to user feedback, changing preferences, and new health data, in contrast to static dietary instructions. Meal plans are regularly improved by machine learning algorithms, guaranteeing relevant and individualized advice.

These AI-powered technologies make professional nutrition guidance more accessible by offering immediate, customized suggestions without the need for in-person meetings. They encourage sustainable lifestyle changes, improve user engagement, and give people the confidence to take charge of their health by blending in seamlessly with daily activities. In the end, AI-driven nutrition systems are revolutionary in lowering health risks, promoting informed food decisions for long-term wellbeing, and transforming preventative healthcare.

II.SCOPE OF THE PROJECT

The scope of the project includes the development of an online nutrition counseling system that uses artificial intelligence to provide personalized recommendations based on the user's unique medical knowledge ideas, interests, and goals. It will use machine learning and data analytics to process data such as medical history, activity level, and lifestyle. The system is designed to provide convenience, nutrition education, and health promotion. Key benefits include increased nutritional self-sufficiency and prevention of health-related problems. The project will focus on user-friendly design, data privacy, and scalable architecture.

III.EXISTING SYSTEM

Numerous current technologies use wearable technology, artificial intelligence, and nutrition databases to offer diet suggestions and health tracking. Wearable health devices like the Fitbit and Apple Watch track physical activity and link with diet applications to provide greater insights, while AI-based diet apps like MyFitnessPal, HealthifyMe, and Lose It! analyze user data to provide individualized meal plans. Comprehensive food databases are available for monitoring nutritional intake through platforms such as USDA Food Database and Nutritionix, and machine learning algorithms are used to evaluate health metrics like blood pressure, BMI, and sugar levels in order to suggest appropriate diets. AI chatbots like Lark and Ada Health offer real-time dietary guidance, while telemedicine platforms like Tata Health and Practo facilitate virtual dietician consultations. Furthermore, smart kitchen appliances like smart refrigerators and smart scales assist users in tracking food intake and portion sizes, improving the efficiency and accessibility of diet management.

Limitations of Existing System:

a) Generic meal plans: AI-powered diet applications offer generic suggestions.
b) Expensive wearables: Fitbits and Apple Watches are among the priciest devices.
c) Manual data entry: Entering information into nutrition databases takes a lot of time.

d) AI prediction errors: The quality of the data determines the accuracy of machine learning-based recommendations.
e) Limited telemedicine access: Not everyone can afford paid diet consults.
f) Insufficient human-like comprehension: AI chatbots are unable to handle intricate dietary requirements.

Pricey smart kitchen appliances: Appliances such as smart refrigerators and scales need a significant financial outlay.

IV.LITERATURE SURVEY

[1] Adish Devidas Bahirat et al. (2024), recommended employing artificial intelligence (AI) to provide food advice, with an emphasis on common health problems in India, such as diabetes and obesity. In order to deliver individualized nutritional recommendations, the AI Dietician (AID) system examines user data, such as height, weight, and age. It ensures food classification accuracy while tracking calorie intake, calculating nutritional prices, and making food item recommendations. The system is intended to be an affordable way for people to control their diets and enhance their health. Features include progress tracking graphs, a calorie tracker, and a chatbot for questions. With suggestions for future improvements including incorporating IoT devices for health monitoring and adapting certain dietary limitations, the study demonstrates the potential of AI in promoting good eating habits.

[2] Dr. P.S. Gawande et al. (2023), Suggested that involves the creation of an artificial intelligence (AI)-powered online diet advising system that functions as a personal dietitian. This AI-powered app customizes meal plans based on user attributes like height, weight, body type, and lifestyle. In addition to highlighting the need of a balanced diet, users can enter personal information to receive personalized dietary recommendations, doing away with the need for expensive consultations with human nutritionists. In addition to saving time and money, the suggested approach makes recommendations based on a range of preferences and medical problems. Nevertheless, it has drawbacks, including the need for precise user-entered data and the inability to take certain health conditions into consideration. Future improvements involve monitoring dietary consumption and growing its applicability in medical education and dietary control in environments like gyms and restaurants.

[3] Ms. Indira Adak et al. (2022), suggested that the creation of "Fit Track," an AI-powered diet advisor app that serves as a user's personal nutritionist. The goal of the program is to assist users in better managing their eating patterns and overall health, especially when they lead hectic lives. The software creates personalized nutrition programs by gathering personal health information like age, height, and weight. This saves time and money by doing away with the necessity for in-person meetings with dietitians. The features of the app, such as user registration, personalized nutrition regimens, and feedback systems, are described in the methodology section. For effective data processing and plan creation, the application makes use of the RETE algorithm. In the end, it is marketed as a useful resource for people looking for individualized dietary guidance without having to pay for traditional nutritionist services.

[4] Chang Liu et al. (2020), suggested presents a revolutionary deep learning-based food recognition system and highlights the importance of accurate dietary evaluation in weight reduction programs. This system uses cutting-edge visual recognition algorithms and an edge computing architecture to address issues in algorithm development and system design. It has back-end components for deep learning analysis on cloud servers and front-end components for preparing images on mobile devices. The suggested approach outperforms current techniques in terms of energy efficiency, response time, and food recognition accuracy. Extensive real-world data validation shows how successful the technology is. With continuous efforts to improve performance metrics, the study also emphasizes the usage of a pre-trained model with bounding boxes and domain-specific fine-tuning to improve classification accuracy.

[5] Shaikh Saqib et al. (2020), proposed an artificial intelligence-powered online dietician system that would provide customized diet programs based on user information including body type, height, weight, and daily activity levels. The system gathers pertinent user data, computes the required BMI and nutrient values, and recommends meals based on the user's requirements. The problems with traditional diet consults, which can be expensive and time-consuming, are addressed by this method. In an era where many people experience diet-related health problems, the suggested approach seeks to increase the accessibility of nutritional recommendations and encourage healthy eating practices. Additionally, the system has a strong backend for data handling, chat capabilities, and an intuitive user interface.

V.PROPOSED SYSTEM

Using artificial intelligence (AI), the planning process is an online nutrition consultation that creates customized nutrition plans according to each client's particular dietary requirements. To generate nutrition programs, the system uses artificial intelligence (AI) to examine the user's health, dietary needs, nutritional objectives, and personal preferences. For instance, if a user has diabetes and requires a diet high in iron, the system will generate a plan that incorporates items high in iron including legumes, leafy greens, and fortified grains, as well as foods that are simple to follow.

Every customized plan comes with a nutrition guide that teaches users about healthy eating and highlights the significance of particular foods. To make sure the food remains relevant over time, the technology also enables ongoing modifications based on user suggestions, meal statistics, and real-time data from health devices. By offering proper nutrition, facilitating healthy eating, and enabling consumers to comprehend their food choices, the objective is to enhance health outcomes. Finally, online nutrition counseling uses AI to revolutionize nutrition management by combining technology with nutritional science to empower individuals to achieve health and wellness.

Advantages of Proposed System:

Using a BMI calculator for personalised health monitoring: Determines BMI accurately to evaluate health and helps users choose the right diet regimens.

Using Nutritional Charts for Visual Representation: Demonstrates daily dietary intake with easy-to-read graphics and aids consumers in monitoring and enhancing their eating patterns.

Comprehensive Nutritional Data for Specific Foods: Shows the full nutritional values of the selected items and helps users choose foods with knowledge.

Create customised meal programs: Users can establish their own nutritional objectives with the Customisable Nutritional Intake Feature.

Self-direction and User Empowerment: Promotes self-management of health and lessens the need for ongoing expert advice.

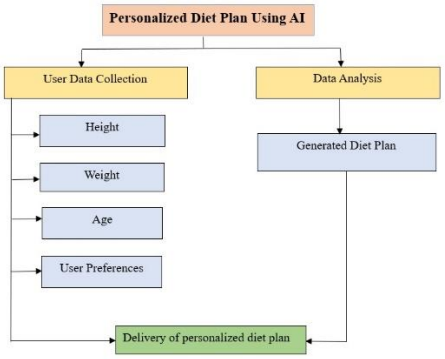


Figure 1: Proposed System

VI. SYSTEM ARCHITECTURE

The system architecture follows a layered design:

1. Backend:

FastAPI was used in its development to process user input and provide tailored suggestions via API endpoints.

2.Front-end:

Streamlit was used to create an intuitive web interface where users can enter their preferences and get dietary recommendations.

3.Implementation:

Docker is used to containerise application components. The multi-container architecture is managed by Docker Compose, which enables both local and cloud deployment.

VII.RESULTS AND ANALYSIS

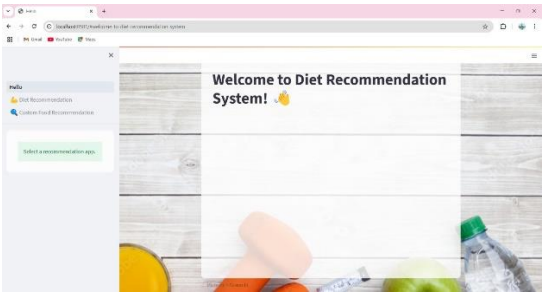
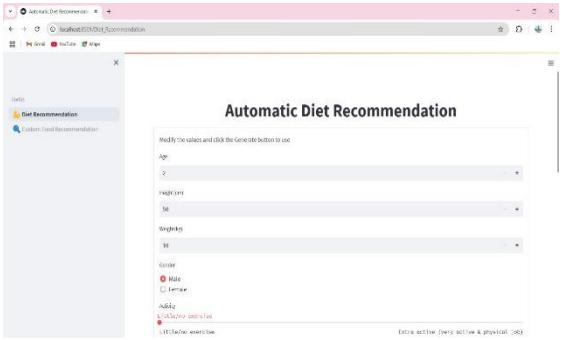


Figure 2: Home Page

The homepage in Figure 2 represents the Diet Recommendation System's homepage offers an overview of the program, which makes use of a content-based methodology using Streamlit, FastAPI, and Scikit-Learn. A welcome message and a recommendation module selection choice are presented to users. Users can switch between diet and personalized food



recommendations thanks to the user-friendly UI. To learn more about the implementation, a link to the project repository is supplied. Based on their individual interests and health objectives, the system is designed to help users make educated food decisions.

Figure 3: Diet Recommendation Page

The Diet recommendation Page in Figure 3 represents Users can enter personal information like age, height, weight, gender, and activity level using the Automatic Diet Recommendation interface. for individualized meal planning. Users can alter these numbers to create a diet plan that meets their own dietary needs. To improve calorie and nutrient estimation accuracy, the system classifies activity levels. For people looking for individualized diet suggestions, the user-friendly interface (UI) makes interaction smooth and easy. Switching between recommendation modules is made simple by the navigation panel on the left

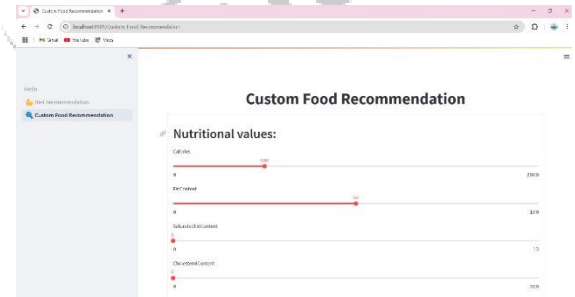


Figure 4: Custom Food Diet Recommendation Page

The custom recommendation page in Figure 4 is intended to the users can customize their dietary choices by modifying nutritional values using interactive sliders in the Custom Food Recommendation screen. Limits for calories, fat content, saturated fat content, and cholesterol content can be set using the system's parameters. Users may make educated dietary decisions thanks to the user-friendly user interface, which graphically depicts the chosen nutritional thresholds. This function is a component of a more comprehensive diet suggestion system made for individualized meal planning. The application's various areas can be easily accessed thanks to the left-side navigation panel.

VIII.CONCLUSION

The Online Diet Recommendation System uses Artificial intelligence (AI) to offer data-driven, individualized diet regimens based on each person's age, gender, BMI, and health concerns. The system encourages users to adopt healthy eating habits and supports preventative healthcare by including sophisticated health analysis and disease prediction capabilities. In contrast to conventional diet programs, our approach provides real-time flexibility, guaranteeing that customers obtain accurate and useful dietary advice. It improves accessibility and makes nutritional planning easier for people of all demographics because to its user-friendly web interface. This approach offers a thorough and clever way to promote improved nutrition management, illness prevention, and long-term health.

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