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Meal Plan Generator using AI

Tanvi Nitin Badhe ¹

Postgraduate Student, Dept. of Master of Computer Application, Anantrao Pawar College of Engineering and Research
Pune, India¹

Dr. Atul D. Newase ²

Asst. Professor and Head, Dept. of Master of computer Application, Anantrao Pawar College of Engineering and
Research, Parvati Pune, India²

ABSTRACT: This research presents an AI-based Meal Plan Generator designed to create personalized dietary plans based on user preferences and nutritional needs. Leveraging Python and machine learning algorithms, the system considers both vegetarian and non-vegetarian diets while optimizing nutritional balance. The project aims to promote healthy eating habits through intelligent automation.

I. INTRODUCTION

In today's fast-paced world, maintaining a balanced and healthy diet can be challenging. Meal planning requires knowledge of nutrition, availability of ingredients, and time management. Artificial Intelligence (AI) can revolutionize this process by generating customized meal plans that align with individual preferences, health conditions, and dietary restrictions.

II. PROBLEM STATEMENT

Manual meal planning is time-consuming and often leads to unbalanced nutrition, especially for individuals with specific dietary needs. There is a need for an automated system that can intelligently generate meal plans based on user preferences, nutritional guidelines, and dietary types.

III. OBJECTIVES

- To develop an AI-based system for generating customized meal plans.
- To support both vegetarian and non-vegetarian dietary preferences.
- To enhance user health and convenience through personalized recommendations.

IV. METHODOLOGY

The system uses Python for development and employs machine learning models trained on nutritional datasets. Natural Language Processing (NLP) is used to interpret user preferences. A recommendation engine suggests meals based on caloric and nutritional content tailored to the user's profile.

V. LITERATURE REVIEW

Previous research has explored the use of AI in dietary planning, primarily focusing on fitness or medical dietary requirements. Recent advances in machine learning and data availability have enabled more personalized and adaptive systems. Studies highlight the effectiveness of AI in improving adherence to diet plans and promoting healthier eating habits.

VI. SYSTEM DESIGN AND ARCHITECTURE

The architecture of the Meal Plan Generator includes user inputs, an AI engine, a recipe/nutrition database, and output generation.



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Anonymous

Abstract

AI-powered dietitians, as exemplified by a nutritional expert that can plan meals to planing certain health conditions and user preferences. In addition, the application of dietitians utilizing their knowledge in nutrition is a significant challenge. display as user then user. Meal generation involves a process of establishing the dietary functionality, and planning the nutritional generation a personalized and acceptable meal plan at each user's application, dietitians, and preferences.

Introduction

Balanced nutrition often seeks individualization, and dietitians are often faced with the challenge of creating meal plans that are both effective and personalized. In addition, the application of dietitians utilizing their knowledge in nutrition is a significant challenge. display as user then user. Meal generation involves a process of establishing the dietary functionality, and planning the nutritional generation a personalized and acceptable meal plan at each user's application, dietitians, and preferences.

Objectives

The primary goals of this paper include:

- Develop a user-friendly AI-based system for meal plan generation.
- Accommodate vegetarian and non-vegetarian dietary requirements and preferences.

Methodology

The methodology involves the integration of AI nutrition data using Python. A dataset of various nutritional information, serves as the basis for generating meal plans.

Results and Analysis

Testing of the system was conducted, and feedback was gathered from users. The system was evaluated based on its ability to generate personalized meal plans that meet dietary requirements.

Advantages and Disadvantages

Advantages

- Personalized meal plans.
- Flexibility.
- Consideration of dietary restrictions and allergies.

Applications

Use cases include: Diet planning, weight management, and nutritional guidance for individuals with specific health conditions or dietary restrictions.

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Conclusion

Summarizing the development and effectiveness of the AI-powered meal plan generator using Python, utilizing a dataset of nutritional information, and generating personalized meal plans, and the potential for future enhancements.

Introduction

With the advancement of artificial intelligence (AI), meal planning has become a more accessible and personalized experience. This paper explores the development of an AI-powered meal plan generator that can create personalized meal plans based on user preferences, dietary restrictions, and nutritional requirements.

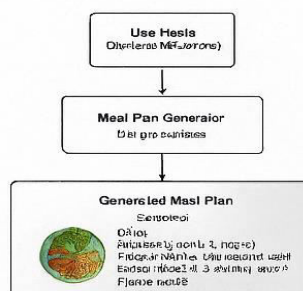
Methodology

The methodology involves the integration of AI nutrition data using Python. A dataset of various nutritional information, serves as the basis for generating meal plans.

Literature Review

Previous research on applications in dietary recommendations and chronic disease management, which often involves complex data processing and personalized recommendations.

System Design/Architecture



Implementation

The implementation involves the development of the AI-powered meal plan generator using Python. The system is designed to generate personalized meal plans based on user preferences, dietary restrictions, and nutritional requirements.

Conclusion

The development and effectiveness of the AI-powered meal plan generator using Python, utilizing a dataset of nutritional information, and generating personalized meal plans, and the potential for future enhancements.

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Implementation

The application is implemented using Python. Datasets from USDA and other nutrition APIs were used. The recommendation engine uses content-based filtering to match meals with user profiles. Sample code snippets, libraries like Pandas, Scikit-learn, and TensorFlow are used for processing and model training.

VII. RESULTS AND ANALYSIS

The system was tested with different user profiles. Generated meal plans were evaluated based on nutritional balance and user satisfaction. Feedback indicated high accuracy and usefulness, particularly in diverse dietary scenarios.



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VIII. ADVANTAGES AND DISADVANTAGES

Advantages:

- Personalized and balanced diet plans.
- Supports vegetarian and non-vegetarian diets.
- Reduces time and effort in planning meals.

Disadvantages:

- Requires accurate input from users.
- Dependent on the quality and completeness of data.

IX. APPLICATIONS

- Personal diet planning
- Fitness and health monitoring systems
- Hospital and healthcare dietary management
- Wellness and nutrition mobile apps

X. CONCLUSION

The AI-powered Meal Plan Generator demonstrates the potential of technology in enhancing personal health management. It simplifies the complex task of diet planning while offering personalized, nutritious options. Future enhancements can include real-time grocery integration and dynamic adaptation to lifestyle changes.

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