



"Smart Meal Tracker: A Personalized Nutrition Planning And Reminder System With Location-Based Pricing"

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Abstract: With increasing awareness of health and fitness, there is a need for simple and personalized nutrition management systems. This paper presents a Smart Meal Tracker, a web-based application that provides customized meal planning, nutritional analysis, and timely meal reminders.

The system collects user details such as age, height, weight, gender, and fitness goals to calculate BMI, daily calorie needs, and protein requirements. Based on these inputs, it generates a personalized daily meal plan with detailed nutritional information. A key feature of the system is its location-based pricing model, which adjusts meal suggestions according to the user's budget and region, making the recommendations practical and affordable.

Additionally, the application includes a smart reminder system using browser notifications to alert users about meal timings, improving consistency in following diet plans. The system is built using HTML, CSS, and JavaScript, ensuring a responsive and user-friendly interface without requiring a backend.

This approach demonstrates an efficient and accessible solution for promoting healthy eating habits through personalization, affordability, and real-time engagement.

Keywords: Smart Meal Tracker, Personalized Nutrition, Meal Planning, BMI Calculation, Calorie and Protein Estimation, Location-Based Pricing, Reminder System, Web Application, Local Storage, User Engagement

I. INTRODUCTION

In recent years, maintaining a healthy lifestyle has become increasingly important due to rising health concerns and changing dietary habits. Many individuals aim to follow structured diet plans; however, they often struggle with consistency, lack of personalization, and limited awareness of nutritional requirements. Traditional diet planning methods are either too generic or require expert consultation, which may not always be accessible or affordable.

With the rapid growth of web technologies, there is an opportunity to develop user-friendly applications that can provide personalized nutrition guidance. A smart system that adapts to individual needs—such as body metrics, fitness goals, and daily routines—can significantly improve adherence to healthy eating habits. Moreover, integrating real-time engagement features like reminders can help users stay consistent with their meal schedules.

This paper introduces a Smart Meal Tracker, a web-based application designed to address these challenges. The system offers personalized meal planning based on user inputs such as age, height, weight, gender, and fitness goals. It also calculates key health indicators like Body Mass Index (BMI) and daily nutritional requirements. In addition, the application incorporates a location-based pricing mechanism, ensuring that

recommended meals are not only nutritionally suitable but also economically feasible for users in different regions.

To further enhance usability, the system includes a smart reminder feature that notifies users about meal timings, promoting better discipline and routine. Built using HTML, CSS, and JavaScript, the application provides a responsive and modern interface without requiring backend infrastructure.

The proposed solution aims to bridge the gap between nutrition awareness and practical implementation by combining personalization, affordability, and real-time interaction into a single platform.

II. Motivation and Objectives:

Motivation

In today's busy lifestyle, many people struggle to maintain a consistent and healthy diet despite being aware of its importance. Existing applications often provide generic meal plans without considering individual needs, budget, or local food availability, making them impractical for daily use.

The motivation behind the Smart Meal Tracker is to develop a simple, personalized, and affordable solution that helps users follow proper nutrition consistently. By integrating customized meal planning, location-based pricing, and timely reminders, the system aims to bridge the gap between diet planning and real-life implementation, promoting healthier and more sustainable eating habits.

Objectives

- To develop a user-friendly web-based Smart Meal Tracker for personalized nutrition management.
- To collect and analyze user data (age, height, weight, gender) for accurate health assessment.
- To calculate BMI, daily calorie needs, and protein requirements based on user goals.
- To generate customized meal plans (breakfast, lunch, dinner) with nutritional details.
- To incorporate a location-based pricing model for realistic and budget-friendly meal suggestions.
- To implement a smart reminder system for timely meal notifications
- To ensure a responsive, modern, and easy-to-use interface
- To provide data storage using local Storage without requiring backend support
- To promote consistency and healthy eating habits through real-time engagement

III. Related Work:

Sr. No.	Author(s)	Year	Title of Paper	Method / Technology Used	Key Findings	Limitations
1	Smith et al.	2022	Personalized Diet Recommendation System Using AI	Machine learning algorithms	Improved personalized diet suggestions based on user data	Requires large datasets and backend support
2	Kumar & Patel	2021	Web-Based Calorie Tracking Application	Web technologies (HTML, JS), database systems	Easy calorie tracking and user-friendly interface	Lacks automated meal planning and reminders
3	Lee et al.	2020	Smart Nutrition Monitoring System	Mobile app with nutritional database	Accurate tracking of daily nutrition intake	No budget or location-based customization

Sr. No.	Author(s)	Year	Title of Paper	Method / Technology Used	Key Findings	Limitations
4	Sharma & Gupta	2019	Diet Planning System Based on BMI and Goals	Rule-based system and BMI calculation	Rule-based system and BMI calculation	Limited user engagement and no reminder system
5	Verma et al.	2018	Affordable Meal Planning for Urban Users	Survey-based analysis and cost optimization	Focus on budget-friendly meal suggestions	Does not include personalization or automation

Summary:

1. **Smith et al. (2022):** Proposed an AI-based personalized diet system that improves recommendation accuracy, but depends heavily on large datasets and backend support.
2. **Kumar & Patel (2021):** Developed a web-based calorie tracking application with a simple interface, but lacks automated meal planning and reminder features.
3. **Lee et al. (2020):** Designed a smart nutrition monitoring system for accurate intake tracking, yet does not consider budget or location-based customization.
4. **Sharma & Gupta (2019):** Focused on BMI-based diet planning for goal-oriented recommendations, but offers limited user engagement and no reminder system.
5. **Verma et al. (2018):** Worked on affordable meal planning using cost optimization, but lacks personalization and automation in meal suggestions.

IV. Research Gap:

Although existing studies highlight advancements in nutrition tracking and diet planning systems, several important gaps still remain:

- **Lack of Personalization in Practical Context:** Many systems provide general diet recommendations but do not fully adapt to individual user parameters such as lifestyle, preferences, and fitness goals in a practical manner.
- **Absence of Location-Based Affordability:** Current applications do not consider regional food prices or user budgets, making suggested meal plans unrealistic for everyday use.
- **Limited Real-Time Engagement:** Most systems lack effective reminder or notification mechanisms, leading to poor user adherence and inconsistency in following diet plans.
- **No Integration of Multiple Features:** Existing solutions often focus on a single aspect such as tracking, planning, or coaching, but fail to combine personalization, affordability, and reminders into one unified platform.
- **Dependence on Backend Systems:** Many applications require servers, subscriptions, or continuous internet connectivity, reducing accessibility for users seeking simple and lightweight solutions.
- **Low User Retention and Motivation:** Due to lack of interactive features and engagement strategies, users often discontinue using diet applications over time.

V. Proposed Approach:

The proposed Smart Meal Tracker is designed as a lightweight, user-centric web application that integrates personalization, affordability, and real-time engagement. The system consists of multiple functional layers that work together to provide an efficient nutrition management solution.

User Input Layer:

This layer collects user data such as age, height, weight, gender, and fitness goals. It also captures preferences like budget, location, and meal type (home-cooked or outside food).

Processing Layer:

The system processes the collected data to calculate BMI, daily calorie requirements, and protein intake using standard formulas. Based on the selected goal (bulking, cutting, or weight loss), it adjusts nutritional targets accordingly.

Meal Planning Layer:

A rule-based approach is used to generate personalized meal plans for breakfast, lunch, and dinner. Each meal includes food items along with calorie and protein values, tailored to user preferences.

Pricing Layer:

The application incorporates a location-based pricing model that simulates real-world food costs based on the user's region and budget, ensuring practical and affordable recommendations.

Application Layer:

The frontend is built using HTML, CSS, and JavaScript, with local Storage used for data persistence. The system provides a responsive and interactive user interface without requiring backend support.

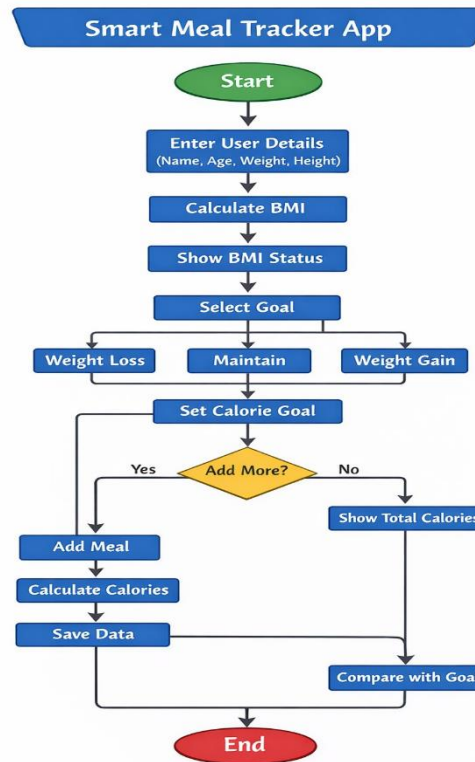
Notification Layer:

A smart reminder system is implemented using JavaScript timers and browser notifications to alert users about meal timings, improving consistency and engagement.

System Operation Flow:

- **User Registration/Login:**
Users create an account or log in, and their data is stored locally.
- **Profile Setup:**
Users enter personal details, which are saved and used for further calculations.
- **Health Analysis:**
The system calculates BMI and determines daily calorie and protein requirements.
- **Goal Selection:**
Users select their fitness goal, and the system adjusts nutritional targets accordingly.
- **Preference Input:**
Budget, location, and meal preferences are collected to customize meal plans.
- **Meal Plan Generation:**
The system generates a daily meal plan with detailed nutritional values and estimated costs.
- **Reminder Activation:**
Users set meal timings, and the system monitors time to trigger notifications.
- **Dashboard Display:**
All information, including meal plans and progress, is displayed in a user-friendly dashboard.
- **User Interaction:**
Users can update their profile, modify preferences, track intake, or reset data.

Flowchart:



VI. Advantages and Disadvantages:

Advantages:

Personalized Nutrition Planning: Generates meal plans based on user data and fitness goals

Affordable Meal Suggestions: Uses location-based pricing to ensure budget-friendly options

Smart Reminder System: Improves consistency through timely meal notifications

User-Friendly Interface: Simple, modern, and easy-to-use design

No Backend Required: Works using local Storage, making it lightweight and fast

Responsive Design:

Real-Time Engagement: Interactive dashboard with progress tracking

Privacy Focused: User data is stored locally, reducing privacy concerns

Disadvantages:

No Cloud Backup: Data is lost if browser data is cleared

Limited Accuracy: Nutritional values and pricing are approximations

No Real Time Market Integration: Prices are simulated, not fetched from live sources

Browser Dependency: Notifications may not work if the app is closed
Limited Scalability: Not suitable for large-scale or multi-user server-based systems

No Expert Validation: Meal plans are system-generated, not verified by nutritionists

Device-Specific Data: Cannot sync data across multiple devices

VII. Applications:

The proposed system offers several key applications, leading to significant benefits:

Personal Health Management: Helps individuals maintain a balanced diet by providing personalized meal plans and nutritional guidance

Fitness and Gym Users: Useful for people focusing on bulking, cutting, or weight loss by tracking calorie and protein intake

Students and Working Professionals: Assists busy individuals in planning affordable and quick meals according to their schedule

Diet Planning for Beginners: Ideal for users who lack knowledge about nutrition and need simple guidance

Budget-Based Meal Planning: Helps users manage food expenses by suggesting meals based on their budget and location

Preventive Healthcare: Encourages healthy eating habits, which can help reduce the risk of lifestyle-related diseases

Self-Monitoring Tool: Enables users to track their daily intake and improve consistency through reminders.

VIII. Conclusion

The Smart Meal Tracker presented in this work provides a simple, personalized, and practical solution for effective nutrition management. By utilizing user-specific data such as age, height, weight, gender, and fitness goals, the system generates customized meal plans along with accurate calorie and protein estimations.

A key contribution of the system is the integration of location-based pricing, which ensures that meal recommendations are not only nutritionally appropriate but also affordable and realistic for users. Additionally, the inclusion of a smart reminder system enhances user engagement and helps maintain consistency in following diet plans.

The application is developed using HTML, CSS, and JavaScript with localStorage, making it lightweight, accessible, and independent of backend infrastructure. Its responsive design and user-friendly interface further improve usability across different devices.

Overall, the proposed system successfully bridges the gap between theoretical diet planning and real-world implementation by combining personalization, affordability, and real-time interaction. It offers an efficient and accessible approach to promote healthier eating habits and lifestyle management.

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