

DietSense: The Food Recommendation System Using Mood, Weather, and Crowd Craving Analysis

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Abstract: - Food recommendation applications and websites are popular in today's modern world, but most of them suggest meals using traditional or outdated methods without considering the user's lifestyle and geographical factors. These systems often ignore the user's mood, weather conditions, food allergies, or local food preferences, social media trends, and crowd cravings, which can make the recommendations impractical or inappropriate to match best for the user's needs. To overcome this problem, through this paper, we present DietSense, an internet-based meal recommendation model that provides personalised food suggestions based on multiple real-life inputs and genuine data collected from users. The system examines user age, preferred meal type such as breakfast, lunch, dinner, snacks, current mood, food allergies or dietary restrictions (optional), live weather conditions, and crowd craving, survey data collected from people from the same, or specific areas. DietSense uses a transparent methodology, where outcomes are determined by a defined set of rules without using any external AI services or fake datasets, which makes the system easy to understand, user-friendly and more trustworthy. In addition to meal recommendations, the system also provides a list of ingredients required to cook at home and step-by-step instructions to cook, nutritional information (like protein, fats, and carbohydrates), audio-based food preparation. Steps (in multiple languages), video guidance, one-click Ingredients and Food ordering, and helpful learning resources. By combining personal, environmental, and social factors, DietSense improves the usefulness and practicality of food recommendations. This system shows that simple and explainable models can effectively support healthier and more informed food choices in everyday life.

Keywords:

Personal food recommendation system, Personalised nutrition, Mood-based meal suggestion, Weather-based food recommendation, Crowd craving analysis.

I. INTRODUCTION:

Nutritional habits play an important role in maintaining good health and overall wellbeing. In day-to-day life, many people have started using diet & food recommendation applications to maintain health. This application is made to help users choose the best food options based on live weather, mood, and user input such as age, meal type, and allergies. However, most of the existing systems provide similar meal suggestions and fail to consider real-life factors that impact food choices. In existing

life, food selection is affected by several personal and environmental conditions.

A person's mood can change what food they want, like choosing comfort food when stressed or light meals when feeling energetic. Weather also matters; people like warm, heavy food when it's cold and lighter food when it's hot. Age, allergies, and favourite meal types also help decide what food suits someone.

Another important feature that is often ignored by traditional food recommendation systems is social influence and trends. People always choose popular food and on demand in their local area. Local food cravings, festivals, social media trends, and regional preferences can affect meal choices, but most systems do not consider this information for food recommendations. Paying no attention to these factors can reduce user satisfaction and make recommendations feel unrealistic or impractical for effective suggestions in real life.

To overcome this challenge, we introduce you to DietSense, an internet-based meal recommendation system that fits into users' lifestyles. DietSense suggests personalised meals based on factors such as age, mood, meal preferences, food allergies, live weather detection, and a survey of crowd craving data from people in the same and specific areas. As a replacement for external AI services, our system uses a rule-based and trustworthy process, making its recommendations transparent and easy for users to understand.

In addition to meal suggestions, DietSense does more than just suggest meals. It gives step-by-step recipes, nutrition information, audio and video cooking guidance in a suitable language, and links to helpful learning resources. Instead of simply telling users what to eat, this system explains why the specific meal is a good choice for them. This helps people make healthier food decisions and makes diet recommendations more useful and practical in everyday life.

II. METHODOLOGY:

In our day-to-day life we are consuming wrong food at wrong time, which cause health issues and disturb our lifecycle to overcome this problem we are introducing a system named as a DietSense. The DietSense means sensible dieting based on real-time condition is made for user which suggest your meals based on mood and live weather detection, we must give some inputs such as mood, age, meal type, allergies (if any) after that it will fetch the weather temperature and will suggest you meals according to it.

The system uses AI and survey data to offer smart, personalized dietary recommendations based on user details and environmental conditions, encouraging healthier habits and preventive care.

The system will display recipe and nutrition data from the database, collect user input via a web interface, and gather weather data in real time. AI techniques will support smart decision-making, and the design will accommodate future enhancements.

A. Proposed Model

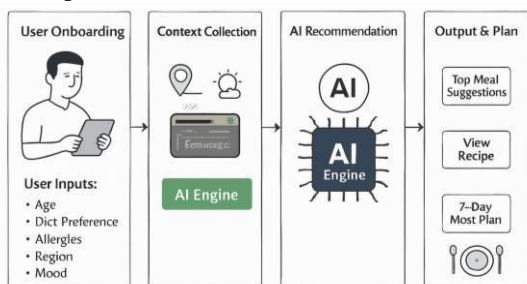


Figure 1: Working of Model

In the above image in figure 1 it is shown how system works, firstly the system will collect input information and along with that it will automatically fetch weather conditions. All this information is processed by the AI recommendation engine which generate suitable meals to us. Finally, the system presents the output in the form of meal suggestions, recipes, and a 7 days meal plan. This architecture enables DietSense to deliver adaptive and personalized food recommendations instead of generic diet suggestions.

Age	MealType	Allergy	Temperature (°C)	Weather	Mood	RecommendedFood
22	Breakfast	None	28	Sunny	Happy	Vegetable Upma
35	Lunch	Nuts	32	Sunny	Neutral	Veg Biryani
19	Snack	Dairy	30	Cloudy	Excited	Fruit Salad
45	Dinner	None	18	Rainy	Sad	Tomato Soup
29	Lunch	Gluten	25	Windy	Stressed	Grilled Chicken
60	Breakfast	None	16	Rainy	Calm	Oats Porridge
27	Dinner	Nuts	20	Cloudy	Happy	Paneer Curry
33	Snack	None	35	Sunny	Tired	Coconut Water
41	Lunch	Dairy	22	Rainy	Relaxed	Lemon Rice
24	Dinner	None	27	Sunny	Excited	Pasta Primavera

Figure 2: Dataset of system

The sample dataset is created to train an AI system that recommends food based on a person's situation and preferences. Each row in the dataset represents one user and includes details like age, meal type (breakfast, lunch, etc.), allergies, temperature, weather condition, and current mood. The output of the system is the recommended food item.

The dataset combines personal information (like age), environmental factors (weather and temperature), food restrictions (allergies), and emotions (mood) to suggest suitable meals. It helps the model learn how to choose the best food option for different situations.

To improve user interaction, the system will work on digital visualisation technologies to present dietary recommendations clearly. This will include AI-assisted visual content generation to support textual information.

The overall method shows that being modular, scalable, and open to technological growth. Using web technologies, AI systems, and real time data services, this approach provides a flexible foundation for future development without focusing on implementation details.

III. LITERATURE REVIEW:

Diet recommendation systems usually track calories, provide standardised meal plans, or it suggest diet to user based on past preferences. Many people develop systems using machine learning techniques, but the lack of transparency requires a large dataset. Studies in context-aware computing reveal that the mood, weather, and personal controls affect food choices, but few of the diet recommendation systems combine all these factors to help users. This highlights the need for an understandable and practical approach that reflects real-life eating behaviour.

World Health Organization [1] the domains where AI can play a key role be that of nutrition. Many factors influence an individual's health, such as physical exercise, sleep, and pollution, but food and nutrition are some of the most key factors being a daily need. Food varies based on a person, the season, and the time of day. With the variations in personal food requirements and preferences, this research paper aimed to create logic and a machine learning model to create a recommendation engine for food items based on the weather outside. Trattner and Elswiler [2] provide detailed food recommendation systems that highlight how personalisation can improve nutritional suggestions. However, they also pointed out that many existing systems depend on limited user inputs and lack contextual awareness.

Firth, J., et al. [3] the research says that technology-based interventions help maintain health in the long term but highlights the importance of personalised, adaptive systems for better user engagement. Researchers have thoroughly studied context-aware recommendation systems to improve how

accurately decisions are made. The Food Safety and Standards Authority of India (FSSAI) [4] launched the Eat Right India campaign to promote healthier eating habits and raise awareness about food safety. The initiative provides guidelines on balanced diets, nutrition, and safe food practices, encouraging individuals to make better food choices in their daily lives. For AI-based food recommendation systems like DietSense, these guidelines offer a useful system to ensure that personalized meal suggestions not only match user preferences and context but also support healthy and safe eating habits.

The World Health Organization (WHO) [5] highlights that poor nutrition, overweight, and obesity are major global health challenges. According to WHO (2021), unhealthy diets and sedentary lifestyles contribute significantly to these conditions, increasing the risk of chronic diseases such as diabetes, heart disease, and certain cancers. For AI-based food recommendation systems like DietSense, this emphasizes the importance of providing personalized meal suggestions that not only suit user preferences and context but also encourage balanced and healthy diets, helping users maintain proper nutrition and prevent obesity. Pallavi and Anusha (2025) [6] developed a mood-based food recommendation system that suggests meals according to a user's current emotional state. Their study shows that considering mood can improve user satisfaction and make food choices more personalized. This approach is relevant to DietSense, which also aims to factor in emotions alongside other signals like weather and crowd cravings to provide smarter meal recommendations.

Sawant (2025) [7] discusses how artificial intelligence can be used to suggest personalized meals for different monsoon moods, combining weather conditions with emotional context to recommend comfort foods that match rainy-day feelings. The article illustrates how AI could function as a food guide that reads both weather and mood to tailor meal ideas—from light, refreshing options during gentle rain to warm, cozy dishes during heavy showers—highlighting the growing interest in context-aware food suggestions. The ICMR–NIN Dietary Guidelines for Indians [8] (2024) provide evidence-based advice on balanced diets, food diversity, and healthy eating habits to prevent malnutrition and chronic diseases. These guidelines can help DietSense ensure that AI-based meal recommendations are not only personalized but also nutritionally safe and healthy. Hosseini-Pozveh and colleagues. [9] proposed a multidimensional context-aware recommendation system for mobile commerce. Their approach considers various contextual factors such as time, location, and user behaviour to improve recommendation accuracy. This study provides foundational methods for context integration, which are directly relevant to DietSense when combining mood, weather, and crowd signals for smarter food suggestions.

Islam and co-authors [10] developed a system for personalized meal recommendations based on human behaviour. By analysing user preferences and social interactions, the system suggests meals and plans menus tailored to individual patterns. This work is closely related to DietSense, showing how user behaviour can guide personalized food choices in real time. Kale and Rikters [11] studied food trends on social media during rainy days, analysing tweets to understand crowd cravings. Their findings reveal how weather influences collective food preferences, providing insights for integrating crowd behaviour into recommendation systems like

DietSense. NXT Interactive (2026) [12] presents an AI Mood-Based Meal

Recommender that suggests meals based on a user's mood and preferences. It shows how emotional context can improve personalization in food recommendation systems like DietSense.

Lawrence (2024) [13] emphasizes the importance of a healthy and sustainable diet for overall well-being, highlighting the role of balanced nutrition in maintaining longterm health. Granero (2022) [14] focuses on how nutrition affects mental health, showing that proper diets can support a positive mental state. Gupta et al. (2021) [15] developed a mood-based food recommendation system that suggests meals according to a user's emotional state, demonstrating how technology can personalize nutrition based on mood. Together, these studies show that combining health, nutrition, and emotional context can guide AI systems like DietSense to provide smarter, healthier, and personalized food recommendations. Swathi et al. (2024) [16] developed an appetite recommendation system that uses emotional signals to tailor food suggestions. Their model shows that understanding a person's emotions can help improve the relevance of recommended meals, supporting the idea that emotional context should be part of AI-based food recommendation systems like

DietSense.Maia and Ferreira (2018) [17] proposed a context-aware food recommendation system that uses multiple contextual factors—such as user situation and environment—to improve food suggestions. Their work shows that considering contextual information beyond simple preferences can make recommendations more accurate and relevant, which supports the DietSense goal of using factors like mood, weather, and crowd behavior in meal recommendations.

Mahajan and Kaur (2024) [18] provide a comprehensive review of food recommender systems, summarizing how different algorithms and data sources have been used to personalize food and recipe suggestions, and highlighting gaps where more context-aware techniques can improve performance. Supura et al. (2025) [19] focus on systems that combine health issues and climatic conditions, showing that integrating environmental factors like weather can make food recommendations more relevant and useful for users' real-world needs. Errakha et al.

(2024) [20] survey context-aware recommender systems more broadly, explaining how including context such as time, location, environment, and user situation enhances recommendation relevance. Together, these studies show that advancing beyond basic preference-based recommendation toward systems that consider health, context, and environmental signals — like DietSense aims to do with mood, weather, and crowd cravings — is an important direction in food recommendation research.

IV. BENEFITS:

DietSense used technology to provide context-driven dietary guidance and smart decision support. This system helps to give personalised meal suggestions based on individual preferences & some other factors.

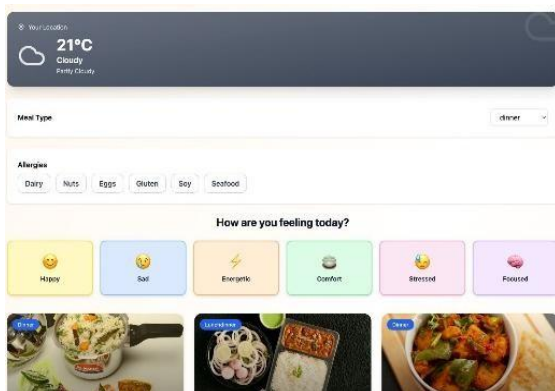


Figure 3: Dashboard of system

By using digital tools, this project keeps track of healthcare. Its primary focus is to help users to maintain their food choices. The platform helps people learn about healthy eating, which can lead to better long-term health management.

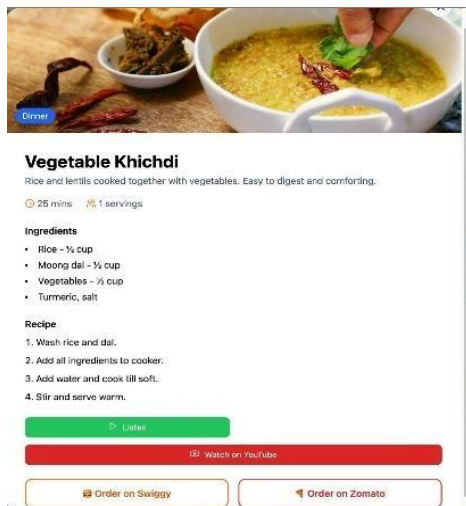


Figure 4: Recipe Card

The system is built to be user-friendly and flexible, which will be accessible for anyone. Its scalable design allows for future

improvements without needing major changes, ensuring it remains useful and relevant.

DietSense show that how AI is supporting health-related decisions / issues in everyday life. It emphasizes technology's role in improving lifestyle management and encouraging the use of digital health tools.

V. CONCLUSION:

DietSense is a technology that gives food suggestions based on details like your age, type of meal, allergies, how you are feeling, and the weather. It not only recommends meals but also shares recipe steps and the ingredients you need.

The system makes following diet advice easier by using videos, so users can understand quickly. Its personalised suggestions make it better than usual diet plans and help people stick to healthy eating. DietSense supports healthy habits and preventive care with digital tools. Right now, it uses existing data, but in the future, it can improve with machine learning and more health and food information. To sum up, DietSense is a strong and flexible system for giving smart nutrition support in daily life.

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