



Recipe Recommendation Using AI

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Project Guide
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Outline

- Introduction
- Literature Survey of the existing systems
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Introduction

- The advent of AI in the culinary world has revolutionized how we explore and discover recipes.
- An AI-driven recipe recommendation system offers a dynamic solution to the typical challenges faced by food enthusiasts.
- By leveraging machine learning, such systems can provide personalized recipe suggestions based on individual dietary preferences, ingredient availability, and past user interactions.

Motivation -

- Growing Demand for Personalized Nutrition: Increased interest in tailored, health-conscious meal solutions that meet specific dietary needs and make efficient use of available ingredients.
- Limitations of Existing Platforms: Recipe platforms often fail with generic search results and non-adaptive features, underscoring the need for an AI-enhanced, user-centric culinary solution

Objectives

- To develop a Modern Search Bar for Recipe Name Search using an Autocomplete Feature.
- To process recipe descriptions based on available ingredients with the user using TF-IDF vectorization.
- To Generate a Recipe Feed Based on Search and Recommendations using Word2Vec Algorithm.
- Implement an AI Chatbot for Recipe Recommendations.

Literature Survey of the existing system

Title	Author	Year	Outcomes	Methodology	Results
[1]AI-Based Recipe Recommendation	X. Zhang, L. Chen	2023	Developed a recommendation system using ingredient matching and ranking	Utilized TF-IDF for ingredient similarity, and a feed ranking algorithm to rank the most relevant recipes	Achieved 85% accuracy in suggesting relevant recipes based on user preferences
[2]Personalized Recipe Suggestions	S. Kumar, A. Patel	2022	Integrated an AI-based autocomplete feature for recipe search	Implemented autocomplete for ingredients and recipes, with a feed ranking algorithm for personalized suggestions	The autocomplete feature reduced search time by 40%, providing users with quick and accurate suggestions.

Literature Survey of the existing system

Title	Author	Year	Outcomes	Methodology	Results
[3]AutoChef: AI Chatbot for Recipe Suggestions	P. Singh, M. Verma	2021	Developed an AI-powered chatbot that interacts with users in real time to recommend recipes based on their input.	Combined an AI chatbot with TF-IDF for analyzing ingredient similarity, enabling natural language queries.	User engagement increased as users preferred interacting with the chatbot for personalized suggestions. The chatbot's recommendations had a 75% success rate in meeting user expectations
[4] Smart Recipe Chatbot	K. Lee, J. Park	2020	Designed a smart chatbot to assist users in finding healthy recipes through a conversational interface	Used an AI chatbot for interactive recommendations , integrating autocomplete for quicker search input.	People found it easier to search for recipes and liked how the chatbot suggested meals that fit their health goals.

Limitations of existing systems

Despite advancements in AI-driven recipe recommendation systems, significant limitations persist, particularly with static personalization and inadequate adaptation to users' evolving dietary needs.

- **Complexity in Navigation:** Users often face difficulties navigating through complex interfaces to find the recipes or features they want, detracting from the overall user experience.
- **Performance Under Constraints:** When faced with limited data or uncommon user queries, the systems may perform poorly, offering limited or no suitable recommendations.
- **Limited Interaction with Users :** Most existing recipe platforms lack chatbot integration, which limits user engagement and personalized assistance. Without a conversational interface, users miss out on real-time support for cooking tips, hindering their overall experience.

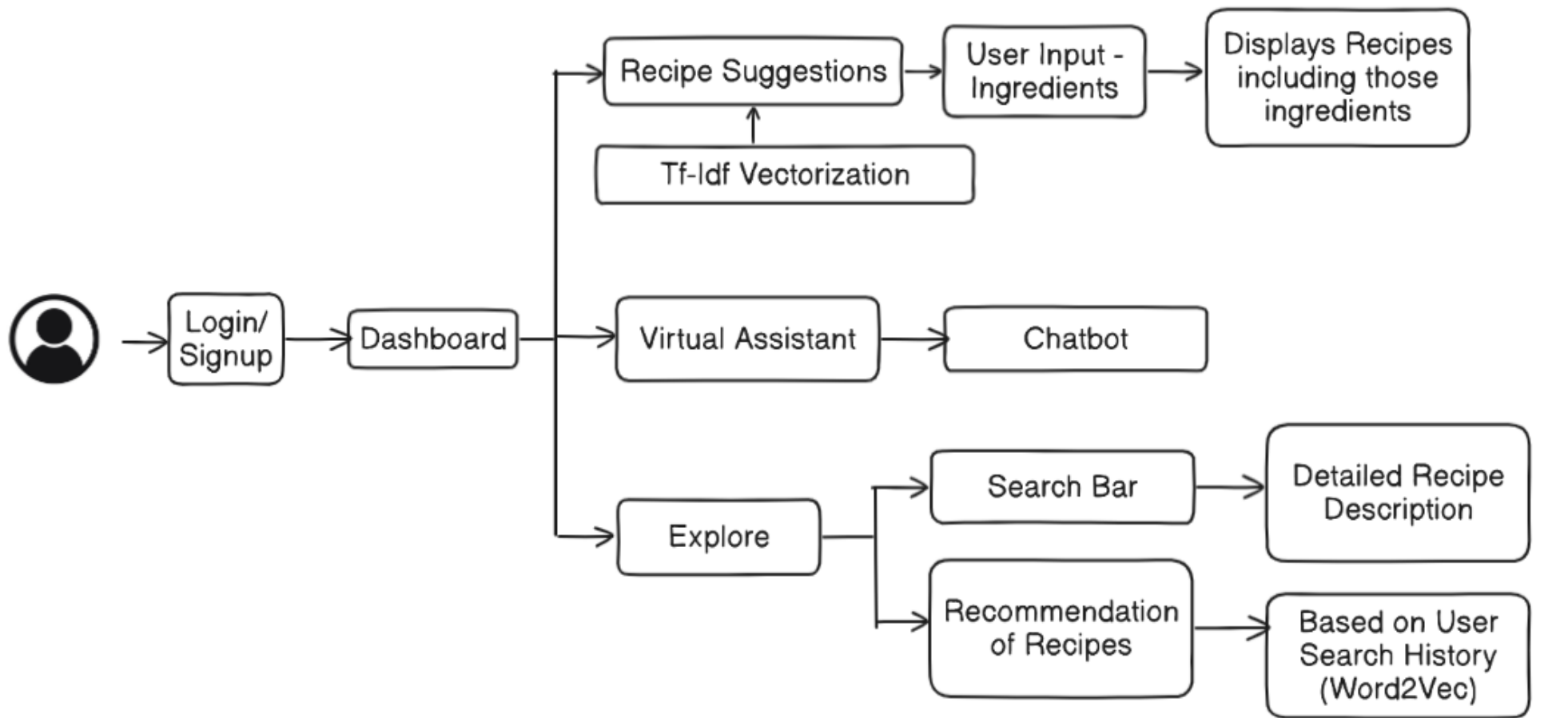
Problem statement

- Users often find it challenging to discover recipes that suit their specific tastes and dietary preferences.
- Many existing recipe platforms provide extensive lists without personalized recommendations, leading to frustration and wasted time as users navigate through irrelevant options.
- This lack of tailored suggestions can result in users missing out on potential recipes that align with their cooking styles.

Solution

- The AI-Driven Recipe Recommendation System provides tailored recipe suggestions based on user preferences and past cooking habits.
- Utilizing advanced algorithms for ingredient matching, the system enhances user experience by quickly delivering relevant recipes, helping users find suitable options effortlessly.

System Design



Technologies and methodologies

- **Web Technologies:**

Frontend: HTML5, CSS3, JavaScript

Backend: Mysql , Flask

- **Dataset:**

Kaggle -Indian Food and Its Recipes Dataset (With Images)

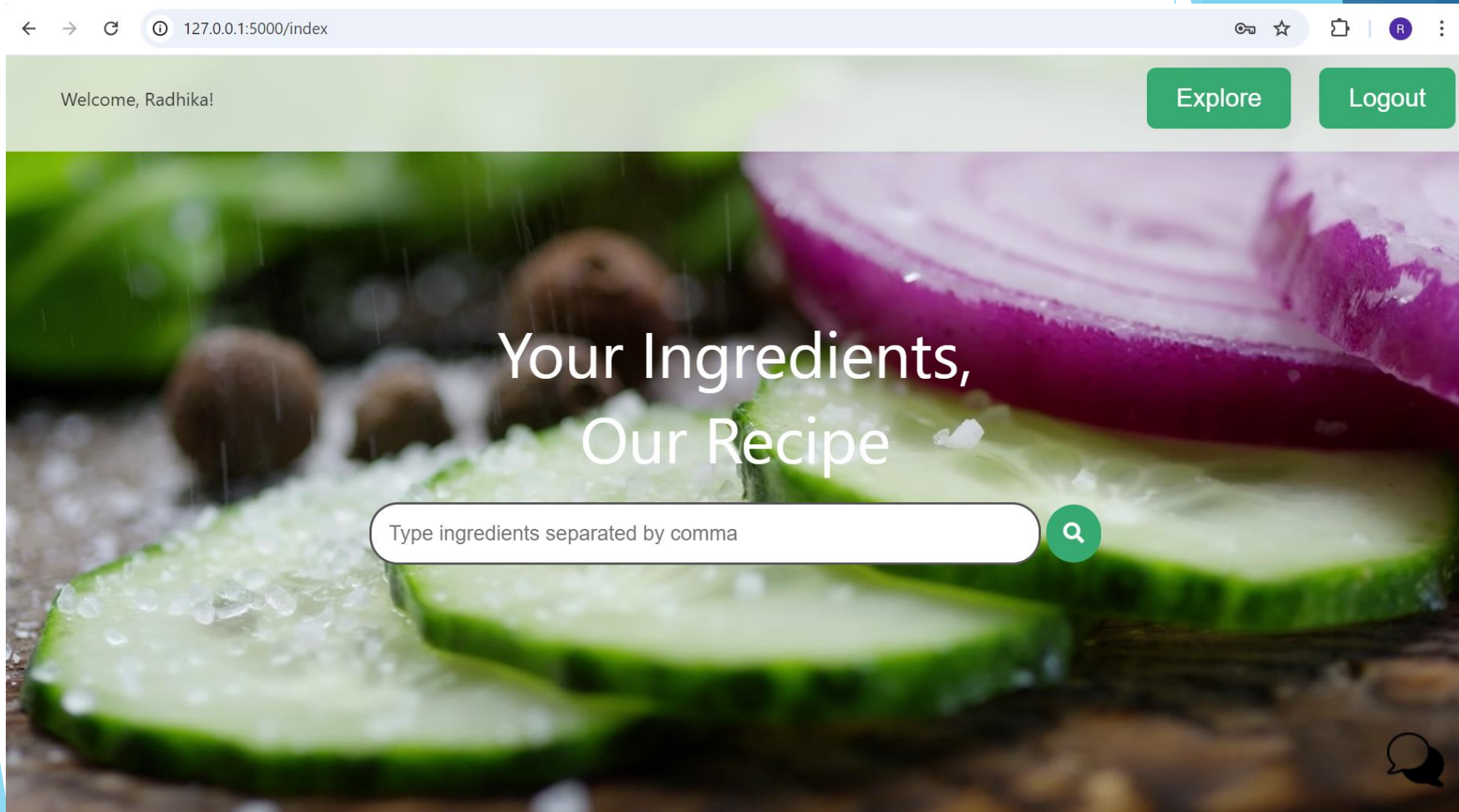
<https://www.kaggle.com/datasets/kishanpahadiya/indian-food-and-its-recipes-dataset-with-images>

- **Algorithms:**

TF-IDF(Term-Frequency and Inverse Document Frequency)

Word2Vec

Implementation



Home

Profile

Chatbot

Chettinad Chicken Recipe | Pepper Chicken Dry | South Indian

Ingredients: To Marinate Chicken 500 grams Chicken, (chicken with bones gives better taste) 10 cloves Garlic 2 inch Ginger 1/2 teaspoon Turmeric powder (Haldi) 1 Lemon, juice extracted For Chettinad Chicken 2 Onion, finely chopped 5 cloves Garlic, finely chopped 1 inch Ginger, finely chopped 1 Tomato, finely chopped 2 sprig Curry leaves, roughly torn 1/2 teaspoon Turmeric powder (Haldi) 1 teaspoon Cumin powder (Jeera), roasted 1 teaspoon Fennel Powder, roasted 1 tablespoon Coriander Powder (Dhania), roasted 2-1/2 tablespoon Black pepper powder Salt, to taste Oil, as required Water, as required Coriander (Dhania) Leaves, for garnish

Procedure: To begin making the Chettinad Dry Pepper Chicken Recipe, clean the chicken thoroughly and wash it well. First step is to marinate the chicken. Make a paste of the ginger and garlic by grinding in a mixer grinder or a pestle and mortar. Into a large mixing bowl, add the chicken pieces along with bones, turmeric powder, ginger garlic paste, lemon juice and salt. Mix well to combine. Cover the bowl, place it in the refrigerator and marinate the chicken for 30 minutes. Heat oil in a kadai/wok on medium flame, add the chopped onions, ginger and garlic and sauté till onions turn soft and lightly brown. Add curry leaves and stir well for a few seconds. At this stage add finely chopped tomatoes and cook till tomatoes turn soft and mushy. This will take about 3-4 minutes. Now add the marinated Chettinad Chicken and let it cook for 3-5 minutes. Add all the spice powders: cumin powder, fennel seeds powder, coriander powder, crushed pepper or pepper powder and salt. Cover the pan and sprinkle a little water and cook the Chettinad Chicken until the chicken is tender. Once done, check the salt and pepper and adjust accordingly and cook the Chettinad Pepper Chicken in the open for another couple of minutes to evaporate excess moisture. Once done, turn off the heat and stir in the chopped coriander leaves. Transfer the Chettinad Pepper Chicken to a serving bowl and serve hot. Serve Chettinad Dry Pepper Chicken Recipe with Pickled onions as an appetizer. Or you could also serve it as a side dish to a meal along with Steamed rice and Milagu Rasam Recipe for lunch or dinner.

Peanut Butter Chicken Recipe

Ingredients: 300 grams Chicken breasts, boneless 1 Onion 1 Tomato 3/4 cup Chicken stock 3/4 cup Peanut Butter, smooth 1 tablespoon Chilli oil, (can be substituted with 1/8 teaspoon smoked paprika) 1/2 teaspoon Salt 1/2 teaspoon Black pepper powder 2 tablespoon Oil

Procedure: To begin making the Peanut Butter Chicken recipe, heat oil in a large skillet, add onion and stir until translucent. Once the onions are soft and translucent, add the chicken pieces; cook until chicken starts to turn white. Add chilli oil, followed by salt and pepper. Keep the heat on medium through the whole process and continue stirring. Th

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Masala Methi Bhindi
Sabzi Recipe

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Rajma Masala
Recipe

Similarity Score:
0.78



Chana Dal And
Methi Ki Sabzi
Recipe

Similarity Score:
0.78



Arhar Ki Dal with
Lahsun Tadka

Similarity Score:
0.76



Aloo Bhindi Masala
Gravy Recipe

Similarity Score:
0.74



Karela Masala Sabzi
Recipe

Similarity Score:
0.73



Dry Palak Dal Sabz
Recipe

Similarity Score:
0.72



Prawn Ghee Pepper Masala Recipe With Garlic

Ingredients:

[300 grams Prawns', 'cleaned & de-veined 1 tablespoon Ghee 2 sprig Curry leaves 1 tablespoon Garlic', 'finely chopped 1 teaspoon Whole Black Peppercorns', 'crushed in a mortar and pestle 1 Onion', 'thinly sliced 1 teaspoon Dabur Homemade Tamarind Paste 1/2 teaspoon Jaggery For the fresh masala 2 Dry Red Chillies 1 teaspoon Whole Black Peppercorns 1 teaspoon Cumin seeds (Jeera) 1 teaspoon Fennel seeds (Saunf) 1 Star anise 2 sprig Curry leaves']

Instructions:

To begin making the Prawn Ghee Pepper Masala Recipe With Garlic, we will first make the fresh masala. Heat a skillet on medium low flame, dry roast the red chillies, whole black peppercorns, cumin seeds, fennel seeds, star anise and the curry leaves. This will take about 4-6 minutes. Turn off the flame and allow the mixture to cool. Transfer to a mixer jar and grind to a coarse mixture without using any water. Transfer to a bowl and set aside. In a small bowl, mix together the tamarind paste and jaggery with a teaspoon of hot water, mix well and set aside. Heat a skillet, with ghee on medium low flame, once the ghee melts, add in the curry leaves and allow it to crackle. To this add the chopped garlic, and the freshly pounded peppercorns and saute for 30 seconds or until the garlic appears well fried. Now add in the sliced onions and fry till it turns into a light brown colour. At this stage, freshly ground masala and the tamarind-jaggery. Mix well, and finally add in the salt. Now that the masala has come together, add in the washed and cleaned prawns and cook on medium high heat. Prawns typically cook really quick and wont take more than 3-5 minutes to curl up, indicating the are cooked. Turn off the flame and transfer the Prawn Ghee Pepper Masala Recipe With Garlic to a serving bowl and serve hot. Serve Prawn Ghee Pepper Masala Recipe With Garlic as part of a meal along with Steamed Rice, Nadan Meen Kari Recipe (Kerala Style Fish Curry) for a satisfying meal.

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Conclusion

In conclusion, the AI-based Recipe Recommendation system represents a significant advancement in personalized culinary experiences. By leveraging machine learning algorithms, such as TF-IDF for text analysis and sophisticated ranking methods, the system is designed to provide users with tailored recipe suggestions based on their preferences and dietary needs.

References

[1] Zhang, X., & Chen, L. (2023) “AI-Based Recipe Recommendation Using TF-IDF and Feed Ranking”. Developed a recipe recommendation system using ingredient similarity (TF-IDF) and feed ranking to personalize suggestions.

[2] Kumar, S., & Patel, A. (2022) “Personalized Recipe Suggestions with Autocomplete and Feed Ranking”. Introduced an autocomplete feature and a feed ranking algorithm for faster and more relevant recipe searches.

[3] Singh, P., & Verma, M. (2021) “AutoChef: AI Chatbot for Recipe Suggestions”. Designed an AI chatbot that provides real-time, conversational recipe suggestions based on user input and preferences.

[4] Lee, K., & Park, J. (2020) ‘Smart Recipe Chatbot with Autocomplete and AI Ranking’. Created a chatbot to assist in finding healthy recipes, using autocomplete for faster searches and feed ranking for personalized recommendations.

Thank You...!!