Recipe Finder Website (CooKar)

Project Proposal

Course Instructor:

Sir Zeeshan Nazar

Group Members:

Umaima Shahid	23l-0893
Haadiyah Zafar	23l-0744
Anum Aamir	23l-0523

National University Of Computer and Emerging Sciences
Department of Computer Science Lahore,
Pakistan

Abstract

In today’s fast-paced lifestyle, many individuals face difficulty deciding what to cook with the ingredients they have, often leading to repetitive meals and food wastage. The Recipe Finder Website aims to solve this problem by providing a user-friendly platform where users can search for recipes based on available ingredients, cuisine type, and dietary preferences. The system will include features such as calorie count, step-by-step instructions, YouTube video links, and a commenting section to build community interaction. The website will be developed using React.js and TailwindCSS for the frontend, Node.js with Express (or Python Flask) for the backend, and MongoDB Atlas for database storage. Deployment will be done using Vercel and Render. By combining technology with culinary creativity, this project encourages diversity in cooking, supports dietary needs, and reduces food waste.

1. Introduction

In today's fast-paced world, cooking can often feel like a daunting task, especially when individuals struggle to make the most of the ingredients they have on hand. Many people find themselves preparing the same meals repeatedly, either due to a lack of inspiration or uncertainty about how to combine available ingredients into something new and exciting. The Recipe Finder Website aims to alleviate these common cooking challenges by providing a user-friendly platform where individuals can easily search for recipes tailored to their specific preferences.

This project recognizes the diverse culinary landscape and the importance of accommodating various dietary requirements, whether for health, ethical, or personal reasons. By allowing users to filter recipes based on ingredients, cuisine types, and dietary restrictions, the website fosters an inclusive cooking environment. Users will have the opportunity to comment on recipes, sharing their experiences and tips with others. Through this initiative, we aspire to empower individuals to explore new flavors, reduce food waste, and ultimately enhance their cooking skills, making meal preparation a more enjoyable and fulfilling activity.

2. Goals and Objectives

The primary goals of the Recipe Finder Website are to enhance the cooking experience for users by providing a platform that makes recipe exploration easy and enjoyable. The specific objectives of this project are as follows:

- **Ingredient-Based Recipe Search**: Implement a feature that allows users to search for recipes based on the ingredients they have available at home, reducing food waste and encouraging creativity in meal preparation.

- **Cuisine Type Filtering**: Enable users to filter recipes by cuisine type, ensuring a diverse range of options that reflect various culinary traditions.

- **Dietary Preference Filtering**: Allow users to filter recipes according to dietary preferences, accommodating different nutritional needs and restrictions.

- **Calorie Count Feature**: Include the calorie count for each recipe, helping users make informed dietary choices and manage their nutritional intake.

- **Commenting System**: Incorporate a commenting feature that allows users to share their experiences, tips, and modifications on specific recipes, fostering a sense of community and interaction.

- **Detailed Recipe Instructions**: Provide clear, step-by-step instructions for each recipe, including cooking time and serving details, to simplify the cooking process for users.

- **YouTube Link for Help**: Allow the addition of a YouTube link for each recipe, providing users with video tutorials and visual guidance to enhance their cooking experience.

3. Scope of the Project

This project aims to develop a Recipe Finder Website that allows users to search recipes by name, ingredients, and categories. The system will provide detailed recipe instructions,

cooking time, and servings. The frontend will be built with React.js and TailwindCSS, while the backend will be developed using Node.js with Express (or Python Flask if chosen). MongoDB Atlas will be used for data storage, and deployment will be carried out using Vercel (frontend) and Render (backend). Optional features such as user authentication, recipe upload, and filters (by cuisine, diet, or time) may also be included to improve user experience.

4. Initial Study and Work Done so Far

Related Research and Prior Work:

Several studies and platforms have explored recipe recommendation systems. Tian et al. (2022) introduced a graph-based approach using hierarchical graph attention networks to model relationships among users, ingredients, and recipes, improving personalized recommendations. Similarly, Rodrigues et al. (2023) developed *RecipeIS*, which leverages deep learning (ResNet-50) to identify ingredients from images and recommend suitable recipes. In the health domain, Yang et al. (2017) proposed *Yum-Me*, a nutrient-aware recommender system designed to align recipes with users' dietary goals. More recent reviews by Yera et al. (2023) and Bondevik et al. (2024) summarize food recommender systems, highlighting gaps in personalization, dietary preference integration, and evaluation methods.

Many of these systems, however, remain limited either in user interaction (e.g., lack of community-driven features) or flexibility in handling diverse filters such as cuisine type, calorie count, and video tutorials.

Problem Importance and Research Gap:

Despite the availability of existing platforms, there are still several challenges left unaddressed:

1. **Overemphasis on Recipe Search Alone** – Most applications focus on basic ingredient-to-recipe matching but do not integrate additional useful layers such as calorie count, serving size, or cooking guidance through embedded tutorial videos.

2. **Limited Community Engagement** – While some platforms allow reviews, few provide a structured commenting or discussion system where users can exchange modifications, cooking tips, or substitutions.

3. **Deployment Accessibility** – Many existing solutions are either limited to mobile apps or region-specific services. A lightweight, web-based solution with global accessibility using cloud deployment is still underrepresented.

4. **Integration of Diet and Cuisine Filters Together** – Most recipe platforms emphasize either dietary needs (vegan, keto, halal, etc.) or cuisine types (Italian, Pakistani, Chinese), but rarely provide seamless filtering for both dimensions simultaneously.

This highlights a clear **research gap**: a recipe platform that balances functionality (search, filter, instructions), personalization (dietary and cuisine filters), and community features (commenting, sharing), while being easy to access through modern deployment platforms like Vercel and Render.

Work Done So Far:

To address these gaps, the following initial steps have already been completed:

- **Literature and Platform Review:** Studied existing recipe websites and related research to identify strengths and limitations, with a focus on ingredient-based searching and user interaction features.

- **Requirement Analysis:** Defined project objectives including ingredient-based search, calorie counts, commenting system, and YouTube integration to enhance usability.

- **Technology Stack Finalization:** Selected React.js with TailwindCSS for frontend development, Node.js with Express (or Python Flask as an alternative) for backend logic, and MongoDB Atlas for data storage. Deployment strategies were also finalized (Vercel for frontend, Render for backend).

- **Preliminary Prototyping:** Designed the initial wireframes and frontend layout using Figma.

- **Database Design:** Drafted the schema for MongoDB collections including *Recipes*, *Users*, and *Comments*, ensuring scalability for future features like recipe uploads and authentication.

Moving forward, the project will expand to integrate full-stack functionality, refine filtering mechanisms, and incorporate user interaction features. This approach directly addresses the identified research gap and offers a more holistic and community-driven recipe exploration platform.