# **Project Proposal**

# **CookBot AI- An Intelligent Recipe Recommendation System**

1. Introduction CookBot AI is a Python-based intelligent recipe recommendation system designed to assist users in finding recipes based on the ingredients they have available. The system not only suggests recipes but also provides detailed nutritional information for each dish. By leveraging a structured recipe database, CookBot AI aims to simplify meal planning and promote healthier eating habits.

2. Problem Statement Many individuals struggle with meal preparation due to a lack of inspiration or knowledge about what can be made with the ingredients they currently have. Additionally, health-conscious users often seek nutritional information to maintain balanced diets. Existing solutions, such as general search engines or recipe websites, require manual searching and filtering, which can be time-consuming. CookBot AI aims to streamline this process by instantly suggesting relevant recipes with detailed nutritional insights.

3. Objectives The primary objectives of CookBot AI are:

* To recommend recipes based on user-input ingredients.
* To provide detailed nutritional information for each suggested dish.
* To offer a user-friendly command-line interface for easy accessibility.
* To maintain a scalable and extensible recipe database.

### 4. Features

* **Ingredient-Based Search**: Users input a list of available ingredients, and the system returns relevant recipes.
* **Nutritional Information Display**: Each recipe includes caloric content, protein, carbohydrate, and fat breakdowns.
* **User-Friendly Interaction**: Simple and intuitive text-based interaction for quick responses.
* **Scalability**: The ability to expand the recipe database with more dishes and nutritional data.

### 5. Technical Approach

* **Programming Language**: Python
* **Data Storage**: JSON file to store recipes and their nutritional information.
* **Algorithm**: A filtering mechanism that matches user-input ingredients with available recipes.
* **Nutritional Data Integration**: Manually curated values based on ingredient composition and portion sizes.

### 6. Implementation Plan

1. **Requirement Analysis**: Define necessary features, data structure, and user interaction flow.
2. **Database Development**: Create a structured JSON file with recipes, ingredients, and nutritional data.
3. **Algorithm Development**: Implement the matching logic to suggest recipes based on user input.
4. **Interface Design**: Develop a command-line interface for user interaction.
5. **Testing and Debugging**: Conduct unit tests to ensure reliability and accuracy.
6. **Deployment and Maintenance**: Make the project accessible and continuously update the recipe database.

### 7. Expected Outcomes

* A functional AI-driven recipe recommendation system.
* Accurate and reliable nutritional information for suggested dishes.
* A seamless and efficient user experience for meal planning.

### 8. Future Enhancements

* **Machine Learning Integration**: Improve recipe recommendations based on user preferences and historical choices.
* **Web or Mobile Interface**: Expand beyond the command-line interface for a more accessible user experience.
* **Multilingual Support**: Enable recipe suggestions in multiple languages.

9. Conclusion CookBot AI is an innovative solution for individuals looking for quick and nutritious meal ideas. By intelligently suggesting recipes based on available ingredients and providing detailed nutritional insights, this system enhances meal preparation efficiency. With future enhancements, CookBot AI has the potential to become a widely used intelligent meal-planning assistant.

Doganer Kartum SD2 97285