

RecipeGenie

Introduction

- **Objective:** The goal of this project is to develop an AI-based system that can recognize food dishes from images, retrieve relevant recipes, and allow users to customize those recipes through a chatbot. The system will bridge the gap between image recognition, recipe retrieval, and user interaction for a seamless culinary experience.

Technology Stack

- **Deep Learning Model (CNN):** The system will use a convolutional neural network to classify food items.
 - **Dataset:** The model will be trained on a publicly available food dataset.
 - **Architecture:** A CNN architecture (e.g., ResNet, VGG, or MobileNet)
 - **Training & Evaluation:** Training the model involves optimizing hyperparameters (e.g., learning rate, batch size) and evaluating performance with metrics like accuracy, precision, and recall.
- **Recipe API Integration:** The system will integrate with an external recipe API to extract relevant recipes
- **Chatbot Integration:** A chatbot will be integrated into the system to allow users to interact with it and customize the recipe.

3. Methodology

- **Data Collection & Preparation:** The project will start by collecting a food dataset for training the CNN model. Data preprocessing will include resizing images, normalization, and data augmentation to improve the model's robustness.
- **CNN Architecture:** The CNN model will be designed with a suitable architecture for food image classification including number of layers, types of layers and activation functions.
- **Model Training and Testing:** The CNN will be trained on the prepared dataset. Evaluation will include checking for accuracy and performance on unseen data.
- **API Integration:** The recipe API integration will allow the system to fetch relevant recipe data.
- **Chatbot Development:** The chatbot will process user input to make recipe modifications to account for dietary and culinary preferences.

Expected Outcomes

- **Food Recognition Accuracy:** The system will aim for high accuracy in food recognition (with metrics like precision and recall), enabling reliable recipe suggestions.
- **Recipe Retrieval:** The API will provide relevant and diverse recipes based on food identification in a clear concise manner.
- **User Satisfaction:** The chatbot will allow for real-time recipe modifications, ensuring the user can tailor the recipe to their preferences. This flexibility is expected to improve the overall user experience.

Conclusion

- This project combines technologies in image recognition, natural language processing, and API integration to create a versatile system for food identification and recipe modification.