Restaurant Recommendation System - Project Demo Document

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Abstract

This project demonstrates a Restaurant Recommendation System that leverages contextual filters, Explainable AI, and dashboard analytics to provide intelligent food recommendations. It integrates multiple factors like cuisine, budget, group size, weather, and user preferences.

Introduction

Restaurant recommendation systems help users make dining decisions by analyzing multiple contextual factors. Our system enhances traditional methods by including Explainable AI reasoning, so users can understand why a restaurant was recommended. Additionally, the project integrates a dashboard for analytics insights.

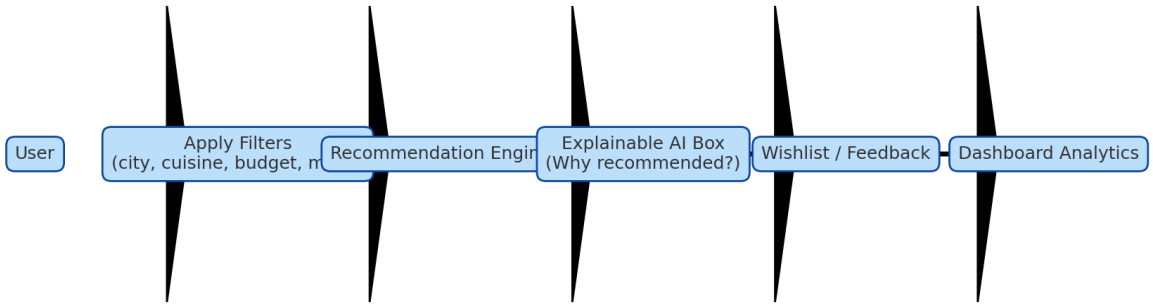
Objectives

- To design a context-aware restaurant recommendation system
- To integrate Explainable AI for transparency
- To provide a dashboard for analytics and insights
- To build a user-friendly Flask-based web application

System Requirements

- Hardware: Laptop/Desktop with minimum 4GB RAM
  Software: Python, Flask, HTML/CSS/JS, Chart.js
  Database: JSON/CSV for restaurant and user data

Work Flow Diagram:



System Design

The following figures illustrate the architecture and workflow of the system.

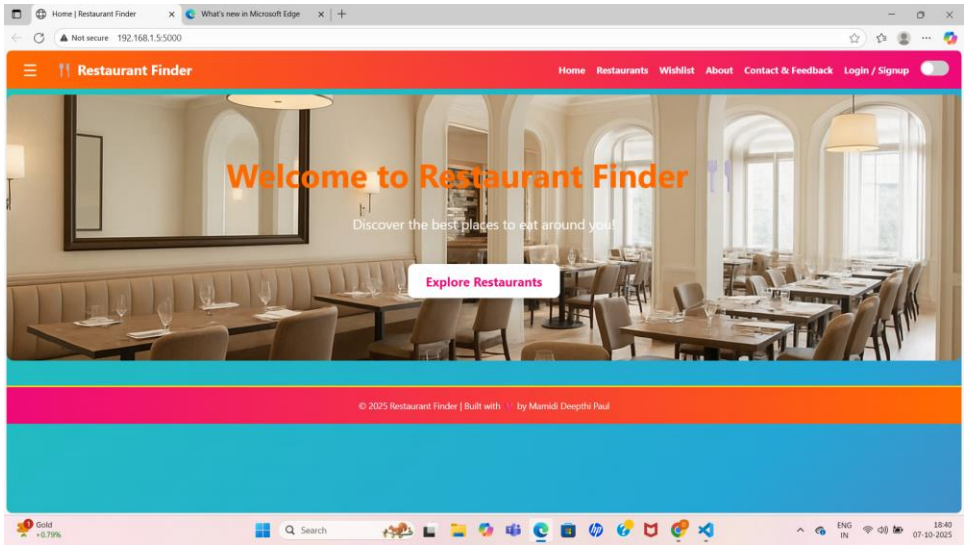


Figure 1: Homepage of Restaurant Finder

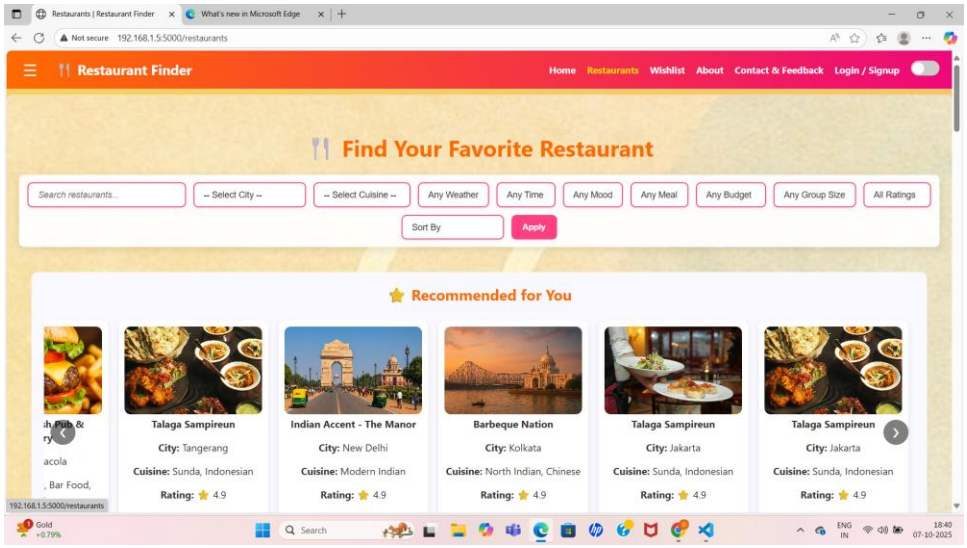


Figure 2: Restaurant Search and Filters with Recommendations

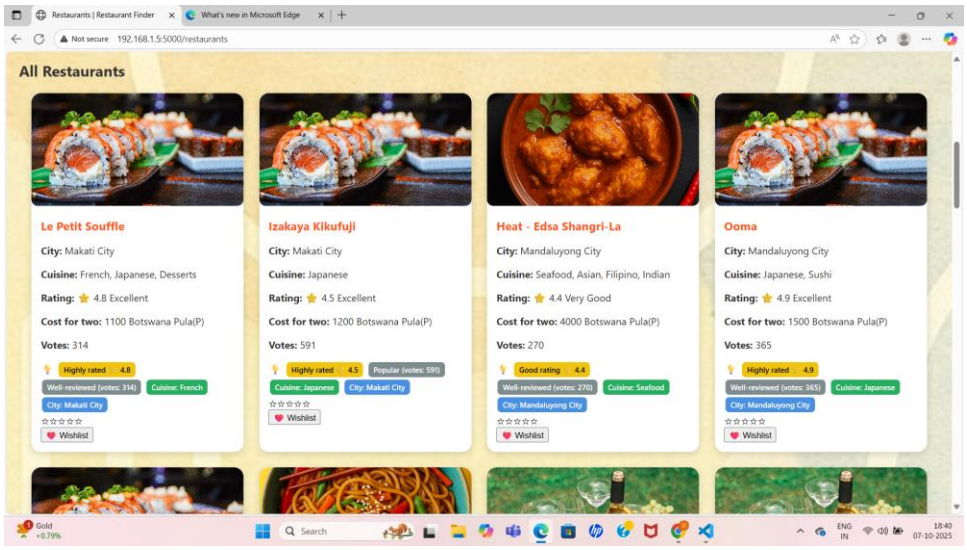


Figure 3: Recommendation Cards with Explainable AI Features

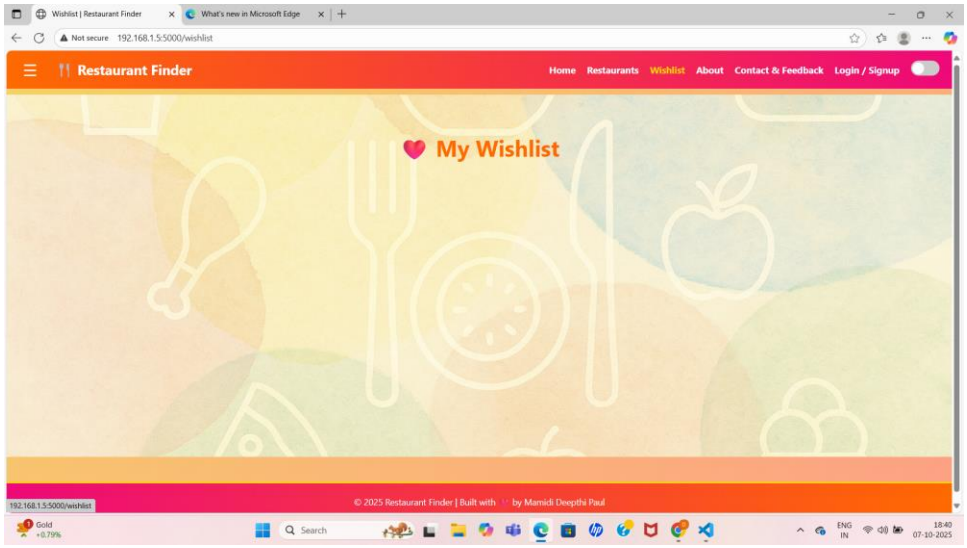


Figure 4: Wishlist Feature

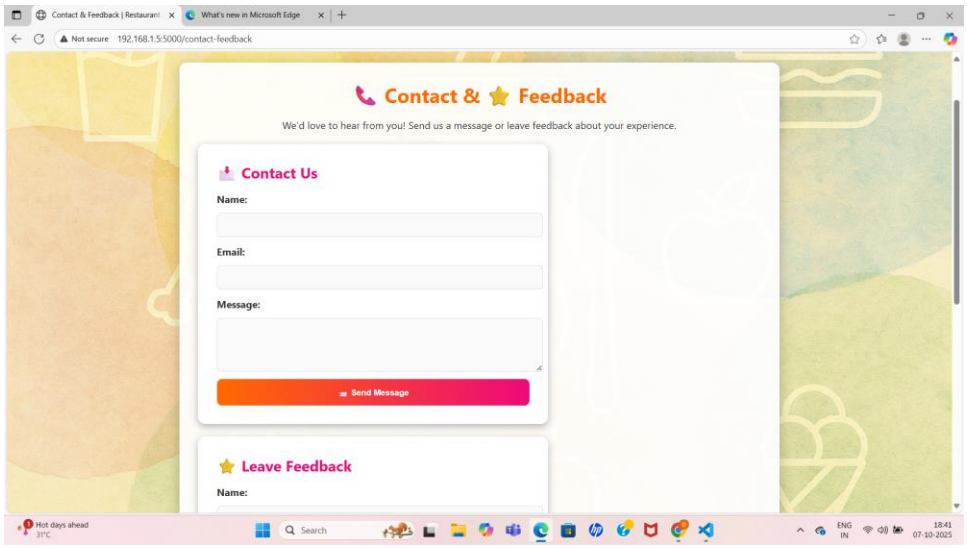


Figure 5: Contact and Feedback Page

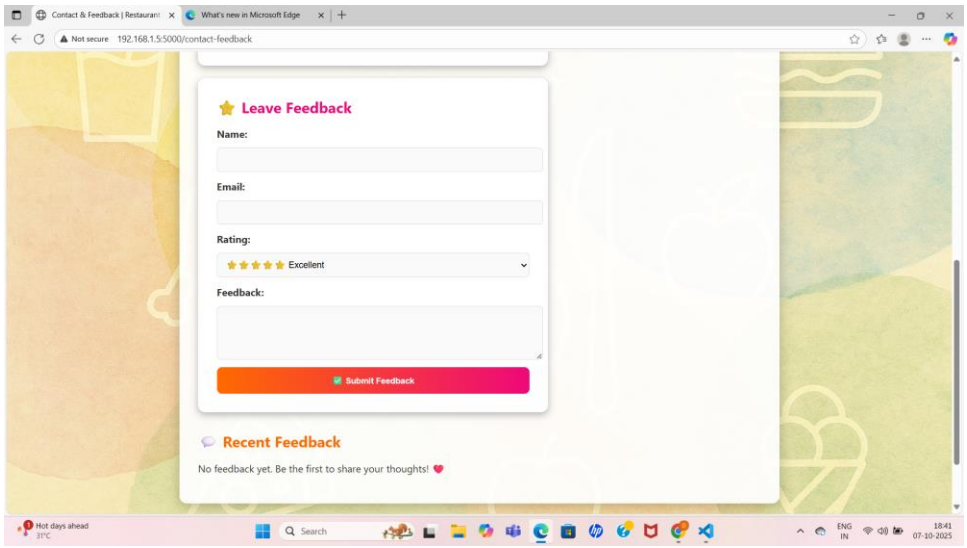


Figure 6: Feedback Form Submission

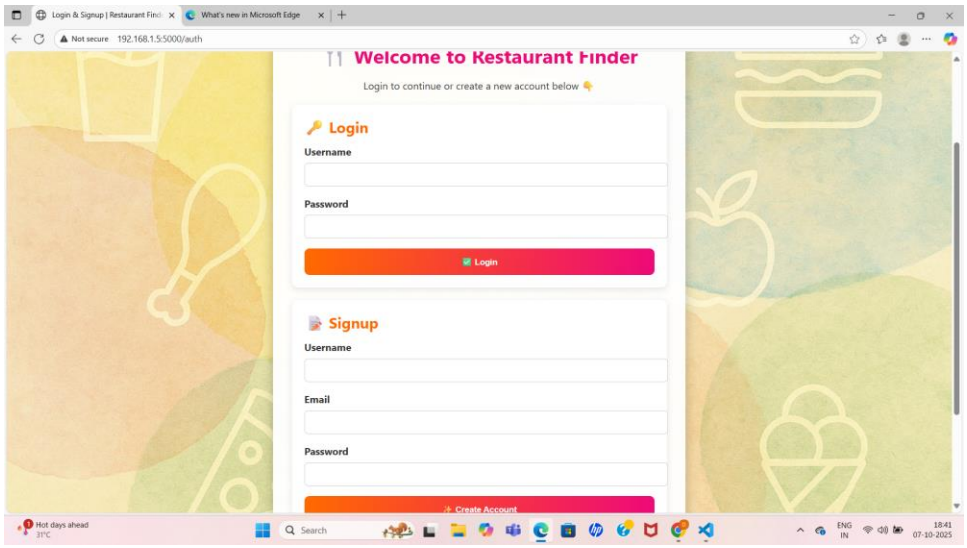


Figure 7: Login and Signup Page

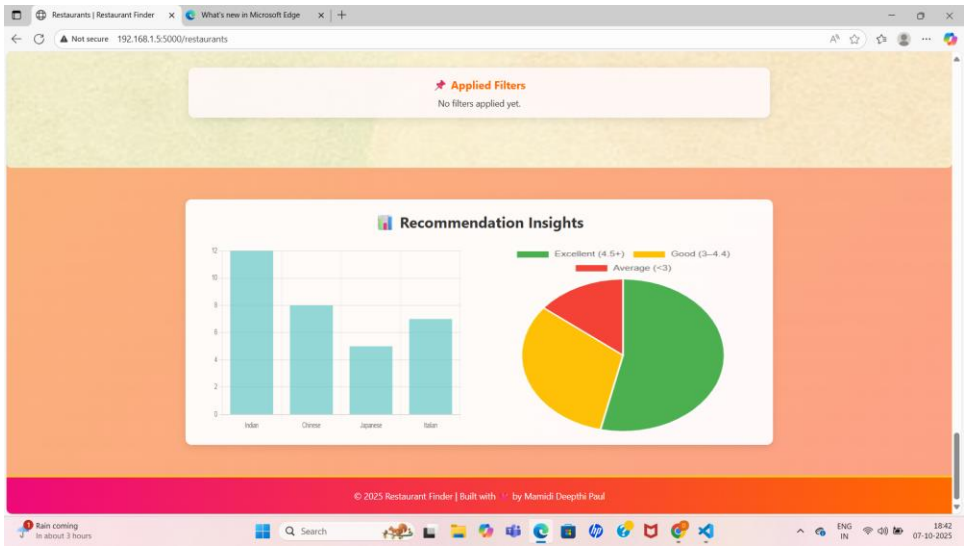


Figure 8: Dashboard Analytics with Cuisine & Rating Insights

Implementation

The system is implemented using Flask for backend, HTML/CSS/JS for frontend, and Chart.js for analytics visualization. Filters are dynamically fetched from the backend, and Explainable AI reasons are shown in each recommendation card.

Results and Analysis

The system provides accurate recommendations based on contextual filters. Explainable AI reasoning helps users trust the system's suggestions. The dashboard provides visual insights into cuisine preferences and rating distributions.

Advantages of the System

- Transparency with Explainable AI
- Context-aware recommendations (weather, mood, group size, etc.)
- User-friendly design with wish list & feedback
- Dashboard insights for analysis
- Scalable Flask backend

Conclusion

The project successfully demonstrates a restaurant recommendation system with explainable AI and analytics integration. It improves transparency, usability, and decision-making for users.

Future Work

- Integrating real-time restaurant APIs
- Adding collaborative filtering for personalization
- Extending dashboard analytics for deeper insights
- Deploying system on cloud for scalability