**Project Initialization and Planning Phase**

|  |  |
| --- | --- |
| Date | 18 June 2025 |
| Team ID | SWTID1749631993 |
| Project Title | Restaurant Recommendation System |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) report**

The proposal report focuses on improving the dining experience through a machine learning-based personalized restaurant recommendation system. The system assists users in finding restaurants based on their cuisine preferences, ratings, and budget. At the same time, it enables restaurant owners and food delivery platforms to gain insights about customers and refine their offers. It includes a TF-IDF and Nearest Neighbors-based recommendation engine, user-specific recommendations, and scenario-based insights for visitors, owners, and delivery platforms.

|  |  |
| --- | --- |
| **Project Overview** | |
| Objective | The primary objective is to develop a restaurant recommendation system that helps users discover restaurants based on their preferences |
| Scope | The project aims to implement a personalized restaurant recommendation system using machine learning techniques like TF-IDF and Nearest Neighbors, integrated with a web-based user interface. |
| **Problem Statement** | |
| Description | Many users face difficulty in discovering new restaurants that align with their preferences due to the overwhelming number of options and lack of personalization in traditional search methods. This leads to poor user engagement. |
| Impact | By solving this problem, the recommendation system will improve customer satisfaction, help users make informed and better dining decisions. It also offers value to restaurant owners and delivery platforms by targeting the right audience, contributing to higher engagement. |
| **Proposed Solution** | |
| Approach | Employing machine learning techniques such as TF-IDF vectorization and Nearest Neighbors to analyze restaurant attributes and user preferences. |
| Key Features | -Implement a content-based recommendation model using TF-IDF and cosine similarity  -Real-time restaurant suggestions based on user input of restaurant name  -User friendly web interface developed using Flask for quick access to personalized results |

**Resource Requirements**

|  |  |  |
| --- | --- | --- |
| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | Intel i3 or i5 CPU |
| Memory | RAM specifications | 8 GB |
| Storage | Disk space for data, models, and logs | 256 GB SSD |
| **Software** | | |
| Frameworks | Python frameworks | Flask |
| Libraries | Additional libraries | scikit-learn, pandas, numpy, matplotlib, seaborn |
| Development Environment | IDE, version control | Jupyter Notebook, Git, VS Code |
| **Data** | | |
| Data | Source, size, format | Kaggle Zomato dataset ~51,000 rows |