PROJECT PROPOSAL
Task: Restaurant Recommendation

1. **Title:** "Development of a Restaurant Recommendation System Based on User Preferences

2. **Introduction:**

In today's digital age, where the abundance of choices can be overwhelming, restaurant recommendation systems play a crucial role in assisting users in making informed decisions.The project aims to leverage machine learning techniques to develop a personalized recommendation system tailored to individual user preferences.By providing users with relevant and personalized restaurant suggestions, the system aims to enhance user satisfaction and streamline the restaurant selection process.

3. **Problem Statement:**
➢ Users often face the challenge of sifting through numerous restaurant options to find one that matches their specific preferences in terms of cuisine, price range, location, and ambiance.
➢ This process can be timeconsuming and frustrating, leading to suboptimal dining experiences and reduced customer satisfaction.
➢ The proposed recommendation system seeks to address this problem by automating the process of restaurant selection, thereby saving users time and effort while ensuring a more personalized dining experience.

4. **Proposed Solution:**
➢ The project proposes the development of a contentbased filtering approach for restaurant recommendations.
➢ Unlike collaborative filtering methods that rely on user interactions and preferences, contentbased filtering analyzes the attributes of items (restaurants) to make recommendations.
➢ By considering factors such as cuisine type, aggregate rating, and userdefined preferences, the system will suggest restaurants that closely match the user's tastes and preferences.

5. **Methodology:**
➢ Data Collection: Restaurant data will be obtained from reliable sources such as online review platforms or publicly available datasets. The dataset will include information such as restaurant names, cuisines, aggregate ratings, and user reviews.
➢ Data Preprocessing: Before building the recommendation system, the dataset will undergo preprocessing steps such as handling missing values, encoding categorical variables, and filtering restaurants based on predefined criteria such as aggregate rating.
➢ ContentBased Filtering: The recommendation system will employ the Jaccard similarity metric to measure the similarity between user preferences and

restaurant features. Restaurants with higher similarity scores will be recommended to users.

➤ Evaluation: The performance of the recommendation system will be evaluated using metrics such as precision, recall, and accuracy. Additionally, user feedback and satisfaction surveys may be used to assess the system's effectiveness in providing relevant recommendations.

6. **Project Timeline:**
➤ Week 1: Data collection and preprocessing.
➤ Week 2: Implementation of contentbased filtering approach.
➤ Week 3: Evaluation and finetuning of the recommendation system.
➤ Week 4: Documentation, preparation of project report, and final presentation.

7. **Resources Required:**
➤ Software: Python programming language, libraries including pandas, scikitlearn, matplotlib, and seaborn for data preprocessing, machine learning, and visualization.
➤ Hardware: Standard laptop/desktop with sufficient processing power and memory to handle data analysis tasks.

8. **Expected Deliverables:**
➤ A fully implemented restaurant recommendation system capable of providing personalized suggestions to users based on their preferences.
➤ Detailed project documentation including code comments, explanations of methodologies, and results analysis.
➤ A project report summarizing the findings, challenges faced, and recommendations for future work.

9. **Budget Allocation:**
➤ No additional budget is required as the project will utilize opensource software tools and existing hardware resources. However, any unforeseen expenses will be managed within the allocated budget for the internship program.

10. **Conclusion:**
➤ The project proposal outlines a comprehensive plan for the development of a restaurant recommendation system based on user preferences.
➤ By leveraging machine learning techniques and contentbased filtering, the system aims to enhance user satisfaction and provide a more personalized dining experience.
➤ The successful implementation of the recommendation system will contribute to the advancement of data science and technology in the domain of restaurant recommendation systems.