**Project Proposal**

**Topic**: Recommendation systems

Rahul Chandani, Analee Graig, Syed Faquaruddin Quadri, Zoya Shafique

**Introduction:**

The aim of this project is to develop a recommendation system for restaurants using the Yelp dataset and machine learning algorithms. The restaurant industry is highly competitive, and customers are looking for new and exciting dining experiences. With the help of social platforms such as Yelp, customers have a lot of options to choose from which can be overwhelming and time-consuming to navigate. A recommendation system can help users find the right restaurants for their needs quickly and easily, making the dining experience more enjoyable and efficient.

The main objective of this project is to build a successful recommendation system for restaurants based on the user's previous data. The system will analyze the Yelp dataset, which contains data on hundreds of thousands of restaurants across the Unites States, to provide relevant recommendations for the user based on their previous ratings and preferences, such as cuisine, location, price range, and rating.

The success of the system depends on its accuracy and reliability. Therefore, this project will focus on evaluating the performance of the recommendation system using metrics such as precision, recall, and f1 score. The project will also explore different ML algorithms such as collaborative filtering, content-based filtering, or hybrid approaches to determine the best approach

**Objective:**

1. To develop a recommendation system for restaurants that provides personalized recommendations to users based on their previous rating.
2. To use machine learning algorithms to analyze the Yelp dataset and develop the recommendation systems.
3. To evaluate the accuracy and reliability of the recommendation system.

**Methodology:**

The methodology involves following steps

1. Data collection: collecting relevant information from the Yelp dataset (restaurant information only).
2. Data pre-processing: cleaning and organizing data to prepare for analysis.
3. Data analysis: analyzing the data using machine learning algorithms such as collaborative filtering, content-based filtering, or hybrid approaches to develop the recommendation system.
4. Evaluation: evaluating the accuracy and reliability of the recommendation system using metrics such as precision, recall, and F1 score.

**Expected outcome:**

The expected outcome of this project is a recommendation system for restaurants that provides personalized and accurate recommendations for users based on their previous restaurant ratings. The system should be able to provide relevant recommendations based on user preferences, such as cuisine, location, price range, and ratings.

**Timeline:**

The timeline for this project will be as follows:

1. Data collection and pre-processing: 1 week
2. Data analysis and model development: 2 weeks
3. Evaluation and testing: 1 week
4. Report writing and presentation preparation: 1 week

**Deliverables:**

The deliverables for this project include:

1. A written report on the development and evaluation of the recommendation system.
2. A presentation summarizing the main findings of the project.
3. A working prototype of the recommendation system, which can be tested by users.