1. Title

ChefMate: Restaurant Clustering & Cooking Guide Application

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2. Executive Summary

- The ChefMate project aims to develop an intelligent application that clusters and recommends restaurants based on user preferences, integrating a chatbot to assist users with cooking recipes. The project leverages machine learning, cloud computing, and dynamic user interfaces to enhance user experience in the food and beverage domain.

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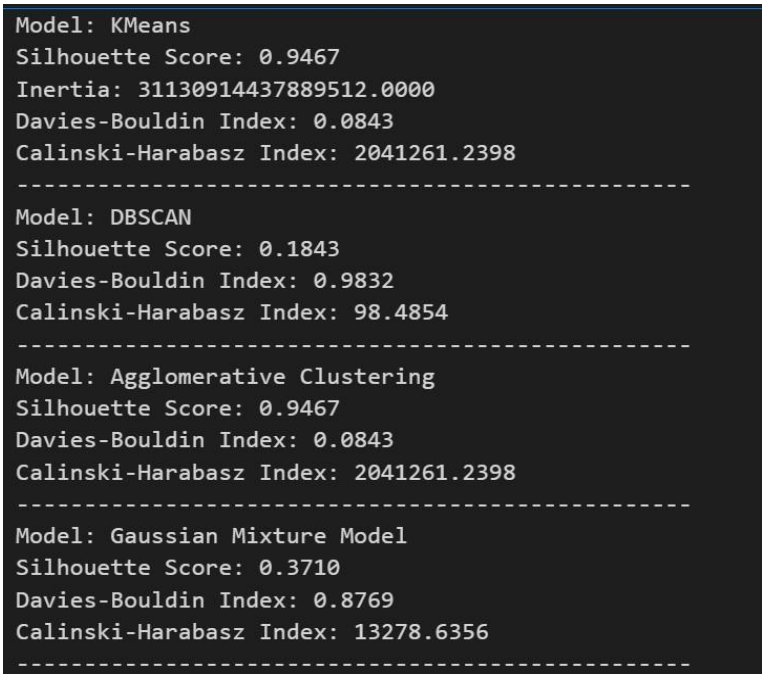
4. Introduction

- **Background**: The food and beverage industry is increasingly relying on technology to enhance customer experiences. ChefMate addresses this need by providing personalized restaurant recommendations and cooking assistance.
- **Problem Statement**: The project seeks to solve the challenge of finding suitable restaurants based on user preferences and providing cooking guidance through an interactive chatbot.
- **Objectives**:
- To develop a clustering model for restaurant recommendations.
- To create a user-friendly application using Streamlit.
- To integrate a chatbot for recipe assistance.
- **Scope**: The project focuses on restaurant clustering and cooking guidance, excluding other food-related services.

5. Methodology

- **Data Collection**: Utilized the provided Zomato dataset in JSON format, containing various restaurant details.
- **Data Storage**: Raw data was stored in AWS S3 for easy access
- **Data Cleaning and Preprocessing**: Data was cleaned to handle missing values and converted into structured SQL tables for analysis.
- **Data management**: Used AWS RDS to store the cleaned data for structured querying.
- **Model Training**: Pulled the cleaned data from AWS RDS for a clustering model and trained using the cleaned data to group restaurants based on similarities.

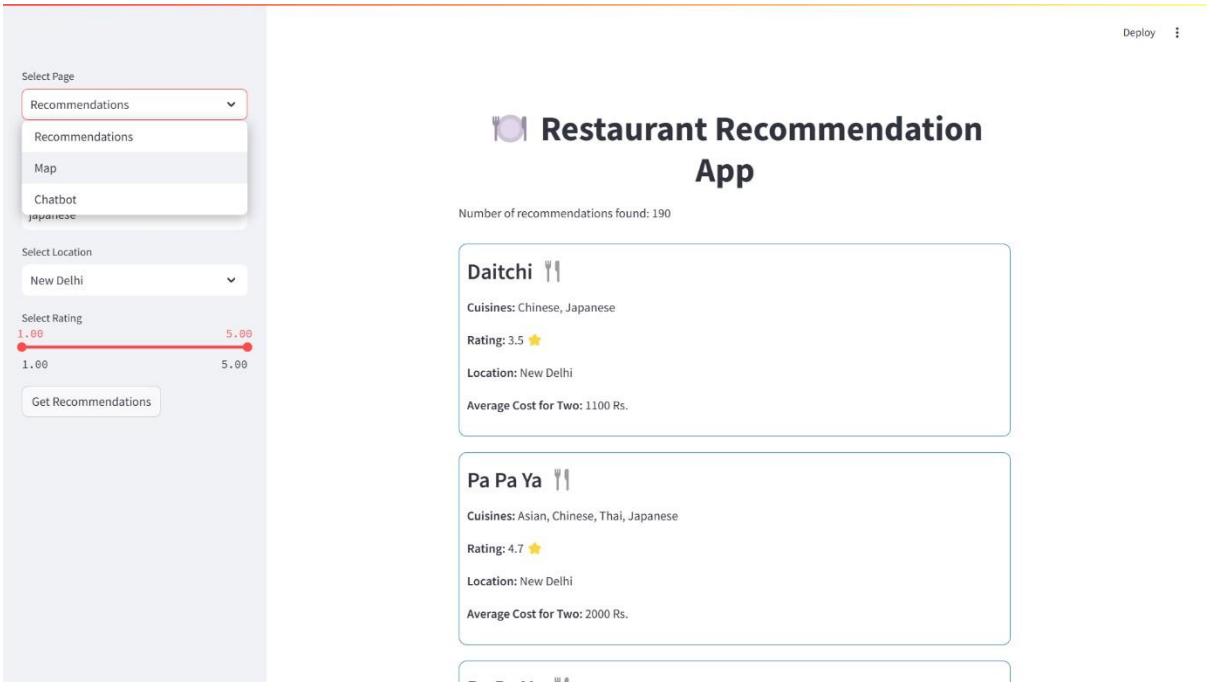
  Used different clustering models and compared it using Silhouette Score.



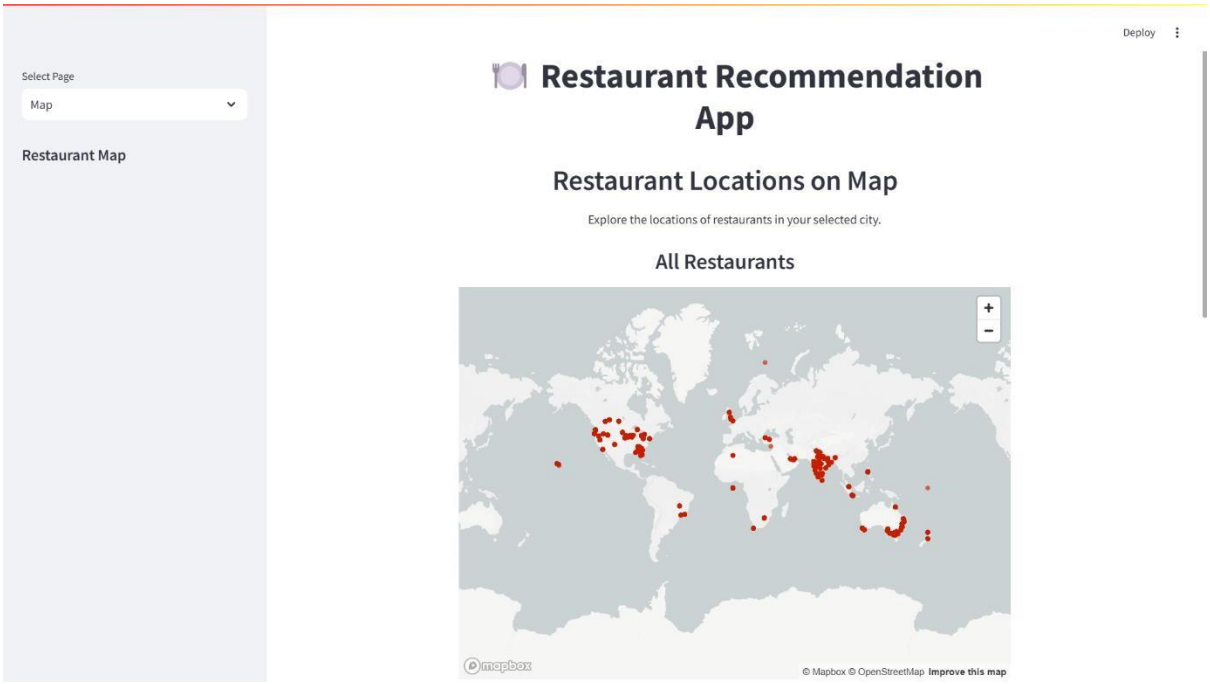
- **Application Development**: Used the clustered model and developed a Streamlit application that provides restaurant recommendations and integrates a chatbot for recipe guidance.
- **Deployment**: The application was deployed on AWS EC2 for real-time user interaction.

6. Results and Discussion

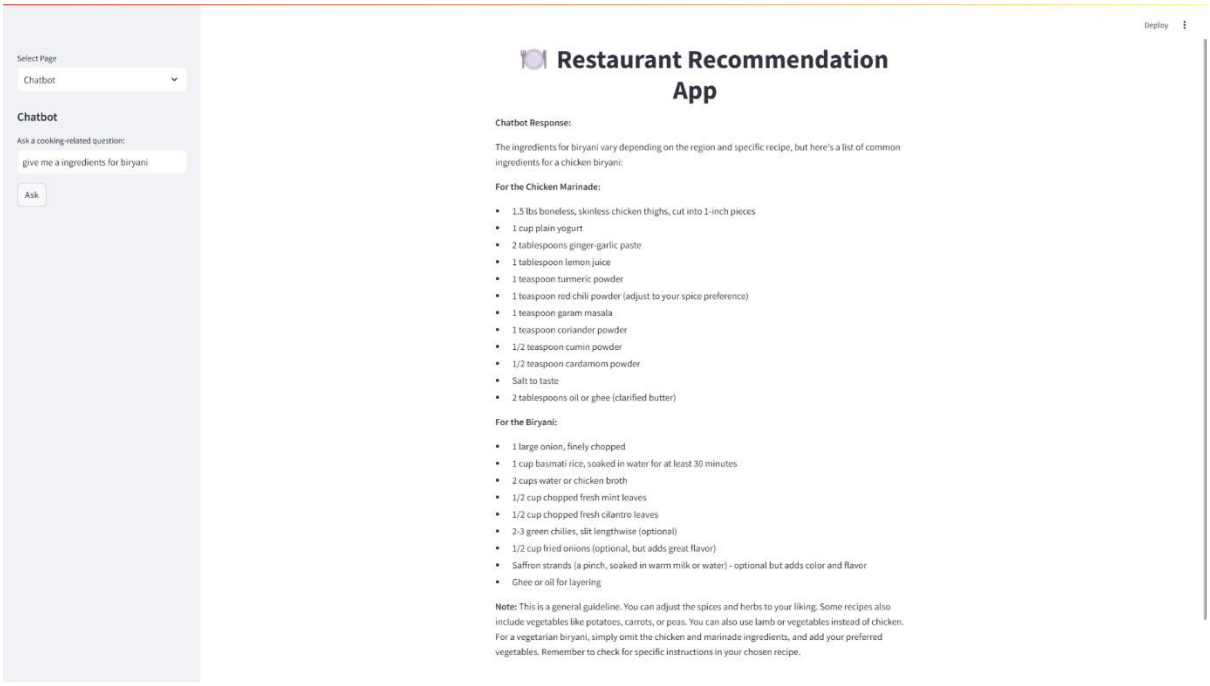
- **Findings**: The application successfully provides personalized restaurant recommendations based on user inputs.



- **Visualizations**: Interactive maps and visual metrics were implemented to enhance user insights.



- **Interpretation**: The results indicate that users find the recommendations relevant and the chatbot helpful in cooking guidance.



- **Limitations**: Some limitations included data quality issues and the need for continuous updates to the dataset.

7. Conclusions

- The ChefMate project successfully met its objectives by developing a functional application that enhances user experience in restaurant selection and cooking assistance. The integration of machine learning and cloud services proved effective in achieving the project goals.

8. Recommendations

- Future work could explore integrating the application with food delivery platforms to enhance user engagement further.
- Continuous improvement of the chatbot's capabilities based on user feedback is recommended.