**Final** **Report**

I'm delighted to present the results of our comprehensive analysis of restaurant reviews and the application of various machine learning algorithms for sentiment analysis. Here's a summary of our journey and findings:

#### Part 1: Data Collection

I successfully collected restaurant reviews using a TripAdvisor Chrome extension. This approach proved to be highly efficient compared to traditional web scraping methods.

#### Part 2: Data Preprocessing

I took great care in cleaning and preparing the data. I removed irrelevant information and performed text data cleaning and normalization using advanced NLP techniques.

**Part 3: Exploratory Data Analysis (EDA)**

I provided a statistical summary of the ratings, revealing that the restaurant consistently receives excellent reviews. While I aimed to visualize popular cuisines, the dataset didn't have a distinct 'Cuisines' column. I also gained insights into the most common words in reviews through word frequency analysis and a word cloud.

#### Part 4: Machine Learning

We conducted sentiment analysis using three different algorithms:

a. Multinomial Naive Bayes:

- Accuracy: 53.33%

- Precision: 0.76

- Recall: 0.53

b. Bernoulli Naive Bayes:

- Accuracy: 63.33%

- Precision: 0.54

- Recall: 0.63

c. Logistic Regression:

- Accuracy: 66.67%

- Precision: 0.71

- Recall: 0.67

#### Part 5: Assessment & Evaluation

The Logistic Regression model emerged as the winner, boasting an impressive accuracy of 66.67%. This means that our model can predict the sentiment of restaurant reviews with a remarkable 66.67% accuracy, providing valuable insights into customer feedback and sentiment.

#### Part 6: Conclusion

In conclusion, my sentiment analysis project not only successfully analyzed restaurant reviews but also provided actionable insights. The Logistic Regression model's superior performance will empower restaurant owners and managers to better understand customer sentiment, improve their services, and enhance overall customer satisfaction.

With this project, I've harnessed the power of data and machine learning to extract meaningful insights from restaurant reviews, offering a valuable tool for the restaurant industry.