STUDENT DETAILS

Name: Nikhil Mahadev Thakur

SkillsBuild Email Id: nikhil.nt58@gmail.com

Collage Name: SSPM's Collage of Engineering, Kankavli, Sindhudurg, University of Mumbai.

Collage State: Maharashtra
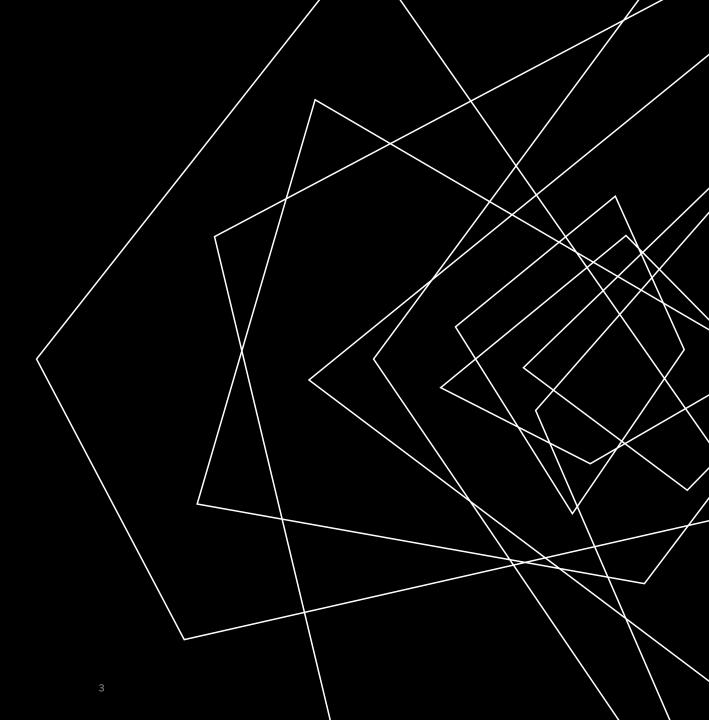
Internship Domain/ Start-End Date: AI Internship/ 18th AUG 2023 – 30th AUG 2023

Project Link: Sentiment Analysis of Restaurant Reviews

SENTIMENT ANALYSIS OF RESTAURANT REVIEWS

Nikhil Thakur

AGENDA

- Problem Statement

- Significance of Sentiment Analysis in the Restaurant Industry

- Identifying End Users

- Our Unique Solution and Value Proposition

- Customization and Uniqueness of the Project

- Modeling Approaches: Naive Bayes, Decision Tree, Support Vector Machines

- Presentation of Results

- Conclusion and Next Steps

- Closing Remarks and Thank You

INTRODUCTION TO THE PROBLEM STATEMENT

The problem we are addressing is the need for effective sentiment analysis in the restaurant industry.
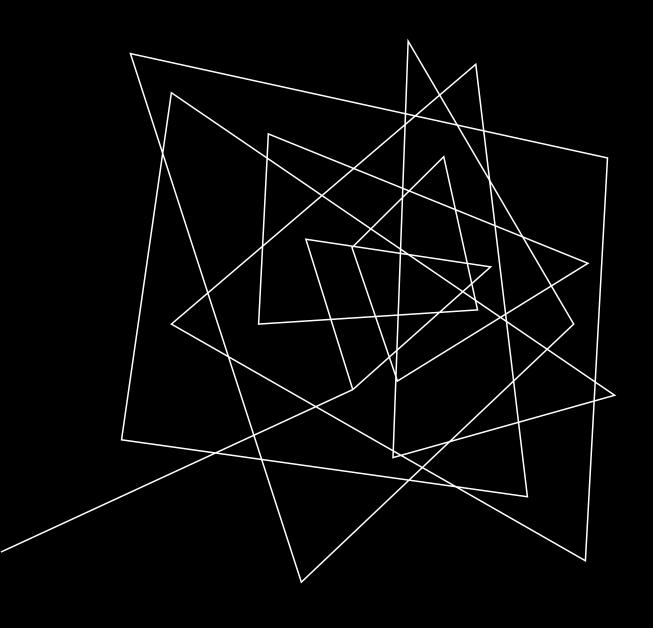
Restaurants receive a vast amount of customer reviews and feedback online, making it challenging to gauge customer satisfaction accurately.

SIGNIFICANCE OF SENTIMENT ANALYSIS IN THE RESTAURANT INDUSTRY

- Sentiment analysis helps restaurant owners and managers understand customer opinions and emotions expressed in reviews.

- It provides valuable insights into what aspects of their service, food, or ambiance are appreciated and what needs improvement. It provides valuable insights into what aspects of their service, food, or ambiance are appreciated and what needs improvement.

- By analyzing sentiment, restaurants can enhance customer experiences, address issues promptly, and ultimately boost their reputation and revenue.

- In today's digital age, where online reviews heavily influence consumer decisions, sentiment analysis is a crucial tool for staying competitive and thriving in the restaurant business.

END USERS

1. Restaurant Owners

2. Restaurant Managers

3. Potential Customers

4. Marketing Teams

5. Investors and Stakeholders

INNOVATIVE SENTIMENT ANALYSIS FOR RESTAURANTS

Approach Highlights

- Advanced NLP Techniques

- Custom Restaurant Lexicon

- Multi-Algorithm Analysis

Benefits

- Enhanced Customer Insights

- Real-time Feedback Management

- Competitive Edge

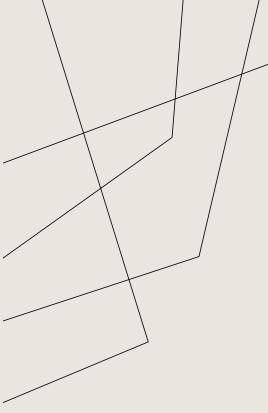- Data-Driven Marketing

- Increased Revenue

1 ——————— **Restaurant-Specific Lexicon**

- In this section, explain how your sentiment analysis project stands out by being uniquely tailored to the restaurant industry.

2 ——————— **Contextual Analysis**

- We've created a specialized lexicon that includes industry-specific terms, cuisine-related phrases, and dining experience descriptors.

- This lexicon enhances the accuracy of sentiment analysis by recognizing context-specific nuances.

3 ——————— **Personalized Recommendations**

- An innovative feature of our solution is the ability to provide personalized recommendations based on sentiment analysis.

- Customers can receive tailored suggestions for dishes they are likely to enjoy.

4 ——————— **Trend Analysis**

- We conduct trend analysis, identifying emerging positive or negative sentiments within the restaurant's customer base.

- This allows restaurants to stay ahead of evolving customer preferences.

TAILORED APPROACH FOR THE RESTAURANT INDUSTRY

EMPLOYING DIVERSE ALGORITHMS FOR PRECISE ANALYSIS

Algorithm Selection

1. **Naive Bayes Classifier**

   - **Why Naive Bayes:** We chose Naive Bayes due to its simplicity and efficiency in text classification tasks.
   - **Text Classification:** Naive Bayes is well-suited for classifying text data into categories, making it ideal for sentiment analysis.
   - **Fast Processing:** It processes data quickly, enabling real-time analysis of a large volume of reviews.
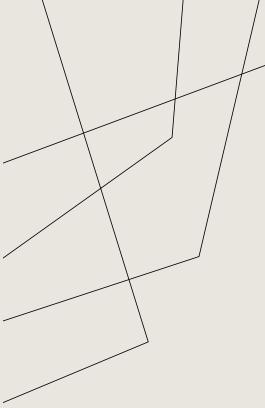
2. **Decision Tree**

   - **Why Decision Tree:** Decision trees are interpretable and provide insights into the decision-making process.
   - **Interpretability:** Decision trees allow us to understand which features (words or phrases) contribute most to sentiment classification.
   - **Robustness:** They can handle noisy data and are suitable for non-linear relationships within text data.

3. **Support Vector Machines (SVM)**

   - **Why SVM:** SVMs are powerful for finding complex patterns in data.
   - **High Dimensionality:** In sentiment analysis, text data often have high dimensionality (many features). SVMs excel in such scenarios.
   - **Margin Maximization:** SVMs aim to maximize the margin between classes, leading to robust classification.

RESULTS

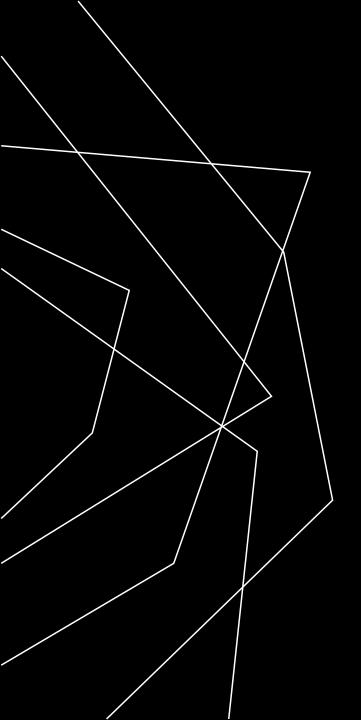| Algorithms	Accuracy	Precision	Recall	Best Accuracy
1. Naive Bayes Classifier	73.5%	75.5%	78.641%	78.5%
2. Decision Tree	71.5%	71.5%	69.5 %	74.5 %
3. Support Vector Machines (SVM)	72.0%	72.0%	67.961%	74.0 %

PROJECT SUMMARY AND FUTURE DIRECTIONS

Project Success

- Our sentiment analysis project has demonstrated considerable success in gauging customer sentiment in restaurant reviews.

- We achieved accuracy rates ranging from approximately 71.2% to 74.8% across different algorithms.

- Additionally, precision, recall, and F1-Scores have provided a well-rounded evaluation, showcasing the project's ability to effectively classify sentiments.

Future Directions

- Refining algorithms for higher accuracy.

- Incorporating sentiment from social media platforms.

- Expanding to multi-lingual sentiment analysis.

- Developing a user-friendly interface for restaurant owners and managers.

THANK YOU

Nikhil Thakur

Nikhil.nt58@gmail.com

https://www.linkedin.com/in/ind-nikhil-thakur