CSCE 5290: Natural Language Processing

Project Proposal

Title: Opinion Summarizer - User Reviews Summarization and Sentiment Analysis

1. Motivation:

In the current digital era, customer perceptions and purchase decisions are greatly influenced by internet reviews. But both consumers and businesses may find it overwhelming due to the vast number of user-generated material. The "Opinion Summarizer" initiative aims to make it easier for people to read online reviews by offering a solution. This application attempts to help customers make educated decisions and businesses better understand and respond to customer feedback by automatically extracting sentiments from user opinions and summarizing them. The primary goal of this project is to provide users with the useful summaries by developing a dependable and effective system for sentiment analysis and user review summarization. This idea is motivated by the increasing significance of user-generated information in shaping consumer choices, as well as the inherent challenges users encounter when navigating through lengthy evaluations to make well-informed selections.

2. Significance:

This project will have a great potential to improve decision-making and user experience. Through sentiment analysis and automated user opinion summarization, we want to extract the most important details from many reviews. The importance is in giving customers the ability to decide faster and with greater knowledge, which raises their level of satisfaction with goods and services overall. Businesses can also gain from having a deeper comprehension of client feelings, which will help them improve their offers and react quickly to customer feedback.

- **Enhanced User Experience:** Condensing long evaluations into brief summaries saves users time and helps them immediately understand the main points.
- **Business Insights:** The application summarizes opinions related to many features of a company's goods or services, giving organizations actionable insights.
- **Time Efficiency:** By obtaining a thorough summary of thoughts regarding a specific product or service without having to manually go through a number of reviews, users can save time.

3. Objectives:

a. Developing a model that will allow us to extract and summarize user reviews from a collection of reviews.
b. Implement sentiment analysis to determine the sentiment associated with each aspect mentioned in the reviews.
c. Provide an overall sentiment score for each review.
d. Provide a user-friendly interface so that users can input, review, and read summarized results.
e. Visualize the data of the results using different visualizations like pie char or bar graphs.

Success Criteria:

- Achieve a summarization accuracy of at least 90%.
- Attain sentiment analysis accuracy above 85%.
- Demonstrate the system's usability through positive user feedback and adoption rates.

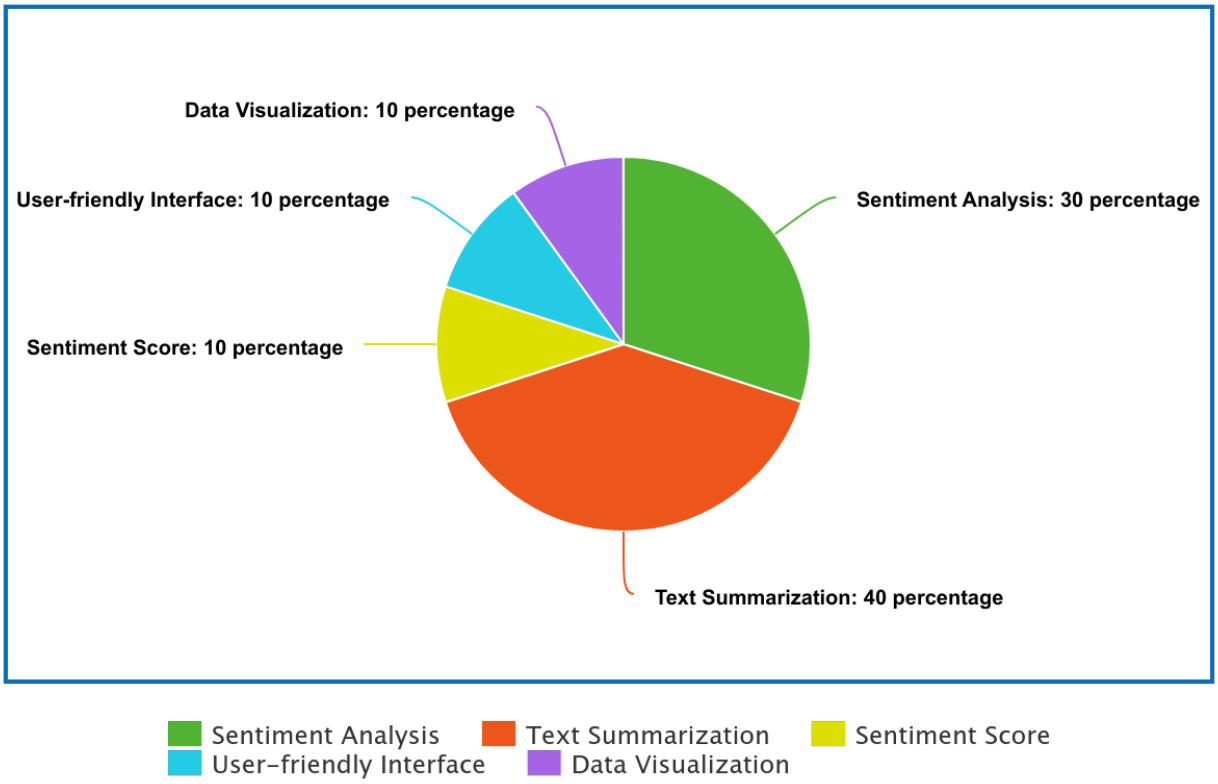
4. Features:

Opinion Extraction: Identify key opinions or statements expressed in user reviews using the text summarization model. This will help to identify the opinion of the user quickly.
Aspect-Based Sentiment Analysis: Analyze sentiments associated with specific aspects or features mentioned in reviews.
Overall Sentiment Score: Provide an aggregated sentiment score for each review.
User-Friendly Interface: User-friendly interface will help the users to input and review the summarized results of the reviews.
Data Visualization: Visualizing the overall results of how much percentage of reviews are Good, Neutral or Bad.

5. Dataset:

- Our data will consist of a fields like Score, Review Text, Sentiment, Topic, and Category. These are tentative columns; we may add more in future.
- We will take the dataset with a mix of positive, negative, and neutral sentiments to ensure the model's robustness.
- Review Text and Score is our mail input data which will helps to identify the sentiment analysis of a review.
- Topic and Review Text will help us to prepare the summary for some number of reviews at a time.
- The type of our dataset is probably the Excel/CSV file. Or we can use the SQL tables as well for this purpose.
- The size of our file will be less than 5MB.
- We need to preprocess the data in some columns like Score to make it suitable for analysis.

6. Visualization:



Milestone	Description
1	Text Summarization for all the user reviews to identify the opinion.
2	Sentiment Analysis for the user reviews to understand the sentiment of user.
3	Giving the Sentiment Score for the user reviews.
4	Creating a user-friendly interface.
5	Data Visualization for the final results.

- Our project is having two main modules called Sentiment Analysis and Text Summarization on which majority of the project is depends. These two models will have high weightage as these will output the opinion of all the reviews.
- Sentiment Score is another module in our project which will helps to identify whether the review is good, bad, or neutral. By using NLP techniques, we will give the score for each review.
- User-friendly interface will help the user have better experience in inputting the data and see the sentiment and summarization of text in one place.
- Data Visualization module will help the user to see overall results in a single visualization.

Conclusion:

The "Opinion Summarizer" project combines sentiment analysis and text summary to simplify the study of user reviews. By fulfilling the stated goals, this project will help organizations and customers to gain a more effective and perceptive grasp of customer opinions. The project is important because it can streamline decision-making procedures and improve the way users interact with the large number of online reviews which will help the companies to grow and customers to have good user experience.