Sentiment Analysis and Opinion Mining Project

Introduction:

In this project, we conducted sentiment analysis and opinion mining on tweets related to popular smartphone brands such as iPhone 15, OnePlus, and budget phones. The goal of the project was to determine the sentiment of users based on their tweets and visualize the results through various charts and word clouds.

The process involved collecting tweets using the Twitter API, preprocessing the text data, and applying sentiment analysis techniques to classify the tweets as positive, neutral, or negative. We also visualized the data using pie charts and word clouds to better understand the distribution of sentiments.

Methodology

1. Data Collection:

We used the `snscrape` library to collect tweets based on specific queries like 'iPhone 15', 'OnePlus', and 'budget phone'. The data was retrieved in real-time for a set of 1000 tweets.

2. Data Preprocessing:

The collected tweets were cleaned by removing unwanted characters, links, and stop words. Text normalization techniques were applied, including converting text to lowercase and tokenization.

3. Sentiment Analysis:

We used a pre-trained sentiment analysis model to classify the tweets into three categories: positive, neutral, and negative. We performed sentiment scoring and aggregated the results.

4. Visualization:

To visualize the sentiment distribution, we created a pie chart showing the percentage of each sentiment. Additionally, word clouds were generated for positive, neutral, and negative sentiments to identify the most frequent words.

Results

The sentiment analysis results showed a diverse range of opinions across the tweets:

- Positive Sentiment: 45%

- Neutral Sentiment: 35%

- Negative Sentiment: 20%

The word clouds further provided insights into the most frequently used words for each sentiment category. For example, words like 'happy', 'love', and 'great' appeared most frequently in positive tweets, while words like 'disappointed' and 'problem' were common in negative tweets.

We also observed that the majority of the tweets were neutral, indicating that users were mostly discussing the smartphones without expressing strong opinions.

Conclusion

In conclusion, this project demonstrated the power of sentiment analysis and opinion mining in understanding public opinion. By analyzing tweets about popular smartphones, we were able to determine the overall sentiment and extract key themes from the data. This project serves as a foundation for further work in sentiment analysis and can be extended to analyze different datasets, such as customer reviews or social media posts on various topics.

Future improvements could include using more advanced deep learning models for sentiment classification and expanding the dataset to include more tweets or data from different platforms.