SOFTWARE REQUIREMENTS SPECIFICATION

TWITTER SENTIMENT ANALYSER

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1 Introduction

1.1 Purpose

The purpose of Twitter Sentiment Analysis is to analyze and determine the sentiment or emotion behind tweets on Twitter. By analyzing large volumes of tweets related to a particular topic, brand, or person, sentiment analysis can help individuals and organizations understand the public's opinion or perception of a particular topic.

Twitter Sentiment Analysis can be used in various ways such as:

1) **Business**: Companies can use sentiment analysis to monitor their brand's reputation, evaluate customer feedback, and identify areas of improvement.

2) **Politics**: Sentiment analysis can be used to gauge public opinion on political candidates or policies, which can help political parties to design their campaign strategies.

3) **Marketing**: Sentiment analysis can help marketers to identify consumer preferences and monitor trends, which can be used to develop targeted advertising campaigns.

4) **Public opinion**: Sentiment analysis can be used to understand public opinion on various social and environmental issues, which can be helpful for policymakers.

Overall, Twitter Sentiment Analysis is a valuable tool that can help individuals and organizations make informed decisions based on public opinion or perception.

1.2 Intended Audience and Reading Suggestions

This SRS is for developers, project managers, users and testers. Further the discussion will provide all the internal, external, functional and also non-functional informations about "TWITTER SENTIMENT ANALYSER".

1.3 Project Scope

The project scope of the Twitter Sentimental Analyzer involves the development of a software application that can perform sentiment analysis on tweets related to a specific keyword, hashtag, or Twitter handle. The application will be designed to retrieve tweets from Twitter's API and analyze them using natural language processing (NLP) techniques to determine the overall sentiment of the text.

The project scope includes the following:

1) **User Interface**: The application will have a user-friendly interface that allows users to enter a Twitter handle, search for a specific keyword or hashtag, and view the sentiment analysis results.

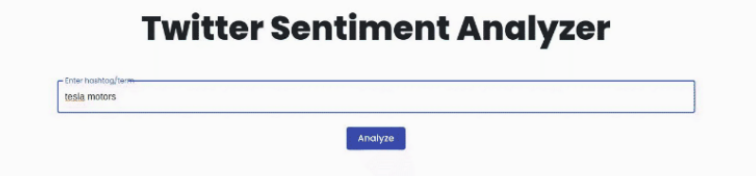

Figure 1.1: User Interface

2) **Data Retrieval**: The application will retrieve data from Twitter's API, including the text of the tweets and other relevant metadata.

3) **Sentiment Analysis**: The application will perform sentiment analysis on the retrieved tweets using NLP techniques to determine the overall sentiment of the text. The sentiment analysis will be based on a predefined sentiment analysis model, which will be trained on a dataset of labeled tweets.

4) **Results Display**: The application will display the overall sentiment score and the sentiment of each individual tweet in a clear and concise manner.

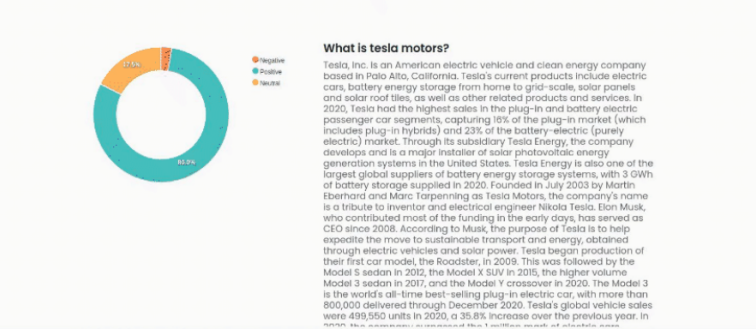

Figure 1.2: Result

5) **Performance**: The application will be designed to handle large volumes of data and provide results in a timely manner.

6) **Security**: The application will be designed with security in mind, and user data will be protected.

The project scope also includes the development of a database to store the analyzed data and the implementation of data visualization tools to display the sentiment analysis results.

The project scope does not include the development of a mobile application or integration with other social media platforms. It is also important to note that the sentiment analysis results may not always be accurate, as it is difficult to accurately determine the sentiment of a text using NLP techniques.

Overall, the project scope of the Twitter Sentimental Analyzer is focused on developing a software application that can perform sentiment analysis on tweets related to a specific topic or user, and provide users with a clear understanding of the sentiment of the text.

1.4 Overview

Overall, the Twitter sentiment analyzer should provide a valuable tool for users to understand the sentiment of Twitter users about various topics, brands, or events. It should be user-friendly, efficient, flexible, scalable, and secure.

2 Overall Description

2.1 Product Perspective

From a product perspective, a Twitter sentiment analyzer can be seen as a tool that provides valuable insights into how people feel about a particular topic, brand, or event on Twitter. The product can be used by individuals, organizations, and businesses to understand the sentiment of their customers, target audience, or competitors.

2.2 Operating Environment

The website will be operate in any Operating Environment - Mac, Windows, Linux etc.

2.3 Design

The user interface of the Twitter Sentimental Analyzer is designed to be intuitive and user-friendly.The server pulls tweets using tweepy and performs inference using Keras. It also pulls data from the Wikipedia API based the hashtag chosen to display a short description. Users can enter a Twitter handle or search term, and view the sentiment analysis results in a clear and concise manner. The user interface includes charts and graphs to help users visualize the sentiment analysis results, and the interface is designed to be responsive, allowing users to view the results on different devices.

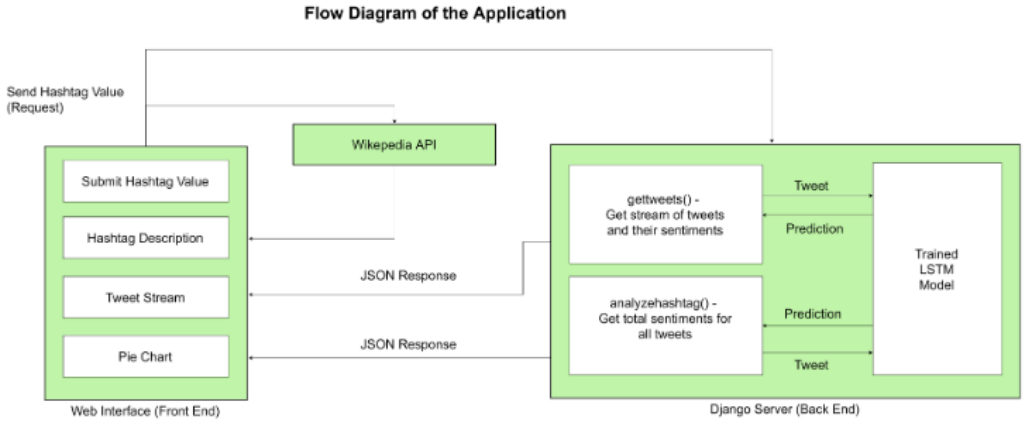

Figure 2.1: Flow Diagram

3 System Features

"TWITTER SENTIMENT ANALYSER" is a result processing web software.

3.1 System Architecture

The Twitter Sentimental Analyzer is built using a client-server architecture. The server-side of the application consists of a RESTful API that retrieves tweets from Twitter's API, performs sentiment analysis on the tweets using NLP techniques, and stores the sentiment analysis results in a database. The client-side of the application consists of a web-based user interface that allows users to enter a Twitter handle or search term, view the sentiment analysis results, and export the results as a CSV file.

3.2 Functional Requirements

Developers Requirements

1. **Proficiency in programming languages** : Developers should be proficient in programming languages like Python, R, or Java, which are commonly used for machine learning and natural language processing.
2. **Familiarity with machine learning algorithms**: Developers should have knowledge of machine learning algorithms, including supervised and unsupervised learning techniques, to build the sentiment analysis model.
3. **Expertise in natural language processing**: Developers should have expertise in natural language processing techniques, such as text preprocessing, feature extraction, and sentiment analysis.
4. **Familiarity with Twitter API**: Developers should be familiar with the Twitter API to collect data from Twitter and use it for sentiment analysis.
5. **Knowledge of data visualization tools**: Developers should have knowledge of data visualization tools, such as Matplotlib or Tableau, to present the sentiment analysis results visually.
6. **Understanding of evaluation metrics**: Developers should understand evaluation metrics such as accuracy, precision, recall, F1-score, and confusion matrix to evaluate the performance of the sentiment analyzer.

7. **Familiarity with software development methodologies**: Developers should be familiar with software development methodologies like Agile or Scrum, to manage the project effectively.

Overall, building a Twitter sentiment analyzer requires a combination of technical skills, including programming, machine learning, and natural language processing, along with an understanding of software development methodologies and problem-solving skills.

User Requirements

1. **Twitter Data Collection**: The system shall allow users to enter a search query to collect Twitter data. The system shall provide users with the ability to filter out retweets and duplicate tweets.

2. **Sentiment Analysis**: The system shall allow users to perform sentiment analysis on collected tweets. The system shall classify each tweet as positive, negative, or neutral. The system shall provide a sentiment score for each tweet.

3. **Reporting**: The system shall provide users with a dashboard to view sentiment analysis results.

The system shall display the sentiment distribution of collected tweets. The system shall display the top keywords associated with positive and negative tweets. The system shall allow users to export sentiment analysis results to a CSV file. By meeting these functional requirements, users of a Twitter Sentiment Analyzer can effectively collect and analyze Twitter data to gain valuable insights into customer sentiment.

4 Other Nonfunctional Requirements

4.1 Performance Requirements

The system should provide quick and accurate analysis of tweets with minimal delay.

4.2 Security Requirements

The system should ensure the protection of user data and maintain the privacy and confidentiality of sensitive information.

4.3 Reliability

The system should operate consistently without any failures, errors or unexpected downtime.

4.4 User Friendly

The system should be easy to use, understand, and navigate for users of all skill levels.

4.5 Accuracy

The system should provide accurate results, and the analysis should align with the actual sentiment of the tweets.