The system will gather tweets from a specified source, such as a Twitter API or a database of pre-collected tweets.

The system shall preprocess the tweets by removing any irrelevant data, such as URLs and mentions, and tokenize the text into individual words.

The system will utilize a machine learning model, such as a supervised classifier, to classify the sentiment of each tweet as positive, negative, or neutral.

The system shall train the machine learning model on a labeled dataset of tweets, using techniques such as cross-validation and feature selection to improve accuracy.

The system will provide a user interface that allows users to input a keyword or topic and receive a real-time stream of tweets related to that topic.

The system shall display the sentiment of each tweet in the stream, as well as an overall sentiment score for the topic based on the sentiments of all the tweets collected.

The system will provide visualizations, such as graphs and charts, to allow users to explore sentiment trends over time and across different topics.

The system shall be scalable and able to handle large volumes of tweets without compromising performance or accuracy.

The system will provide a RESTful API that allows developers to integrate sentiment analysis functionality into their own applications.

The system shall ensure data privacy and security by implementing measures such as encryption and access controls to protect sensitive data.

Use case diagram:

