**Project Overview**

This project focuses on utilizing Twitter sentiment analysis to predict stock price movements. By leveraging the vast amount of real-time data generated on Twitter, the project aims to capture the sentiment of tweets related to specific stocks and use this information to forecast price trends. The core idea is to analyze the polarity of sentiments expressed in tweets—whether they are positive, negative, or neutral—and correlate these sentiments with stock price movements. The project employs Natural Language Processing (NLP) techniques to preprocess and analyze tweet data and machine learning models such as Logistic Regression and Naïve Bayes to predict whether a stock price will increase or decrease based on the analyzed sentiments.

**Methodology**

To enhance the predictive power, the project also explores feature engineering techniques by introducing additional variables such as user influence, the number of tweets, and the number of likes received. This holistic approach aims to provide a more comprehensive understanding of market sentiment and its impact on stock prices. Despite initial challenges with model accuracy, particularly with false positives, the project continuously iterates on model improvement by addressing data imbalances and integrating new features. Future directions include transitioning from binary classification to regression models to predict actual stock prices, thereby offering a more nuanced and actionable insight for traders and investors. The project highlights the potential of combining social media sentiment with traditional financial analysis to create robust predictive models.