SIGNS - Stock Insights from Global News Sentiments

Data Science Boot Camp Fall 2024

Group Members : Hirak Bandyopadhyay, Kunal Mozumdar, Rishabh Bhardwaj, Langchen Liu, Yaman Sanghvi

Objective:

The goal of this project is to predict whether stock prices will rise or fall based on sentiment analysis of financial and geopolitical news. The focus is on gathering sentiment data from news and social media platforms, analyzing relevant stock price factors, and building machine learning models to forecast stock price movements.

Business Value/ Impact:

Accurate stock price prediction is a crucial for investors and financial institutions which aid them in forming more informed trading strategy. This project aims to study the historical behavior of markets and how various news events like financial news, geopolitical news of war and conflict or even news or rumors about elections results influence the market behavior. By integrating this kind of sentiment analysis with financial data this project aims to optimize trading strategies by forecasting stock prices accurately. The following stakeholders would be benefactors of the project :

-- Financial analyst and Traders
-- Investment firms
-- Economist and Political Scientist
-- Individual investors

Key Tasks:
-- Data Collections:
  - Stock price data and market features (Source: https://www.kaggle.com/datasets/borismarjanovic/price-volume-data-for-all-us-stocks-etfs/data)
  - Sentiment data from financial news (Source : https://www.kaggle.com/competitions/stock-market-prediction-and-sentimental-analysis/data)
-- Features Engineering:
  - Identify relevant features like market sentiment, cashflow, trading volume, historical stock.
  - Examine correlations between different features to understand which factors influence stock prices.
-- Model Development:
  - Develop ML models to predict stock prices trends.
  - Apply ensemble learning techniques to improve models

KPIs:

-- Prediction accuracy of future stock prices.
-- Correlations between market sentiment, specific global events and stock price movements.
-- Identify top features that have significant impact on stock prices.