



Stock Market Sentiment Analysis

By Boula Akladyous

Project Outline

Background

Problem Statement

Business Value

Methodology

Exploratory Data Analysis

Classification and Effectiveness

Results



Background

Stock market sentiment is a qualitative and evolving technique designed to measure the attitude and mood of investors, and how a group feels about the market economy.

There are various factors that influence market sentiment, which include news (economic, political and industry related) and social media. These factors help influence stock sentiment as they impact stock market trend. Market sentiment can be used to determine investors' opinions of a specific stock or asset and how optimistic people are about the current market conditions.



Problem Statement

News Tracking

Provide real time sentiment analysis tool on tracking financial articles from different sources.

Trend Identification

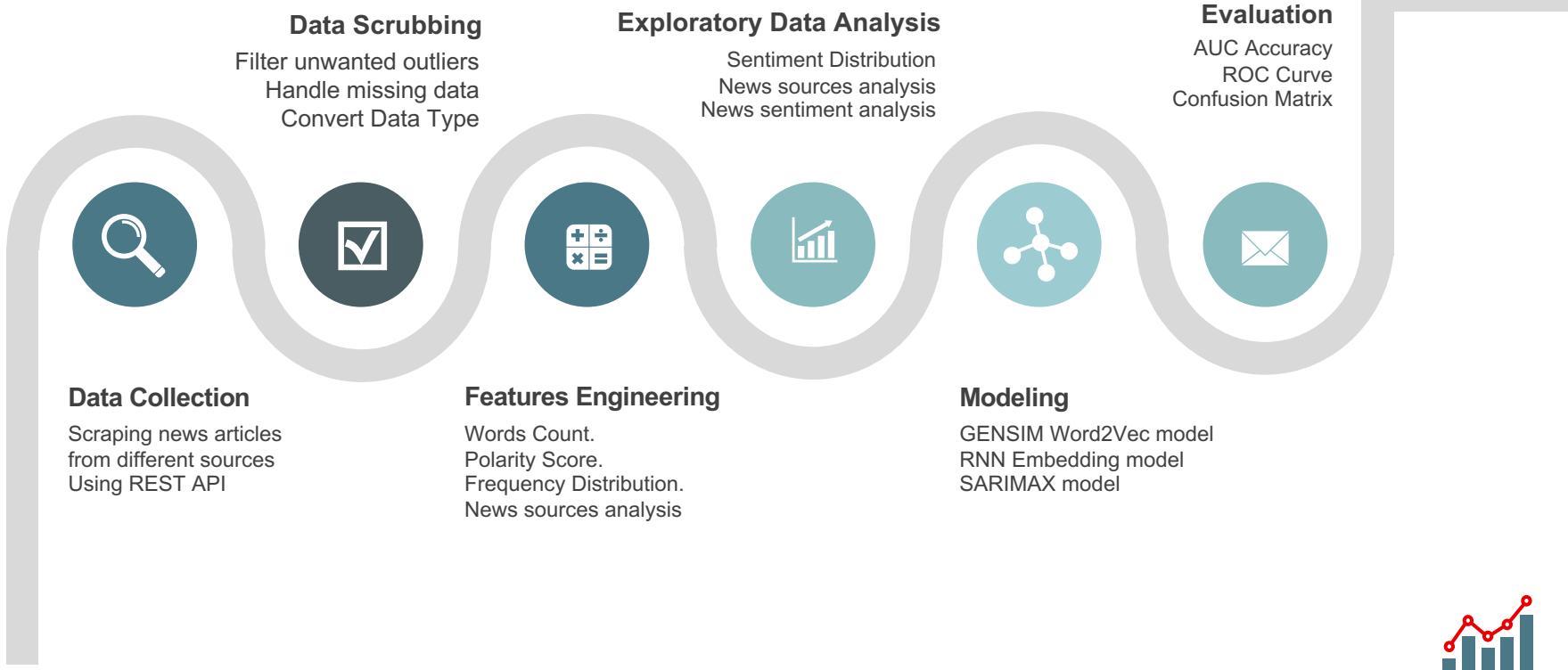
Identification of trends in the stock prices of a company by performing fundamental analysis.

Prediction Model

Classification model to gain meaningful insights on predicting either market sentiment and future prices.



Methodology



Exploratory Data Analysis

Stock Market Sentiment Analysis



Market Sentiment

- ✓ Sentiment Distribution
- ✓ Financial News Sources
- ✓ News Sentiment Analysis
- ✓ WordCloud

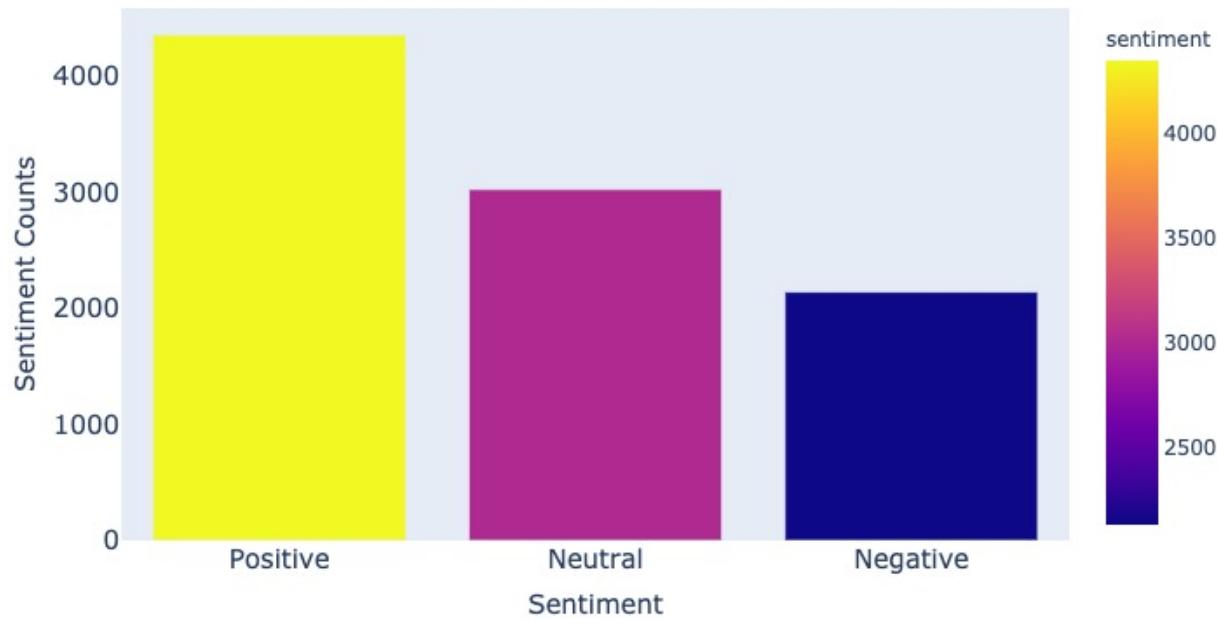


Exploratory Data Analysis

Stock Market Sentiment Analysis

Sentiment Distribution

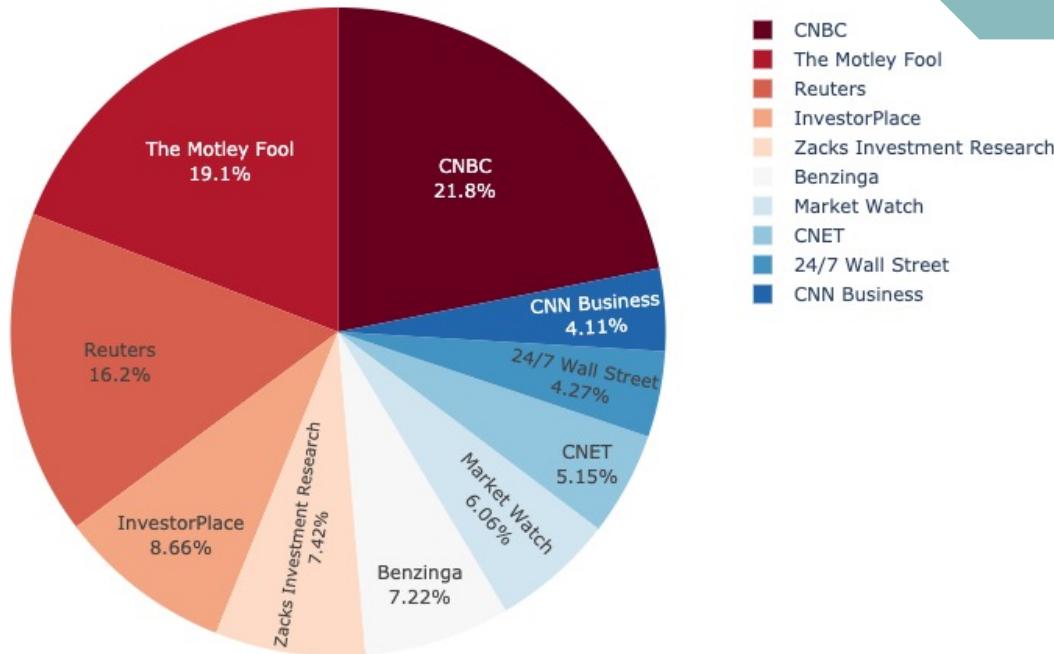
Sentiment Distribution



Exploratory Data Analysis

Stock Market Sentiment Analysis

Top 10 news source



News Sources

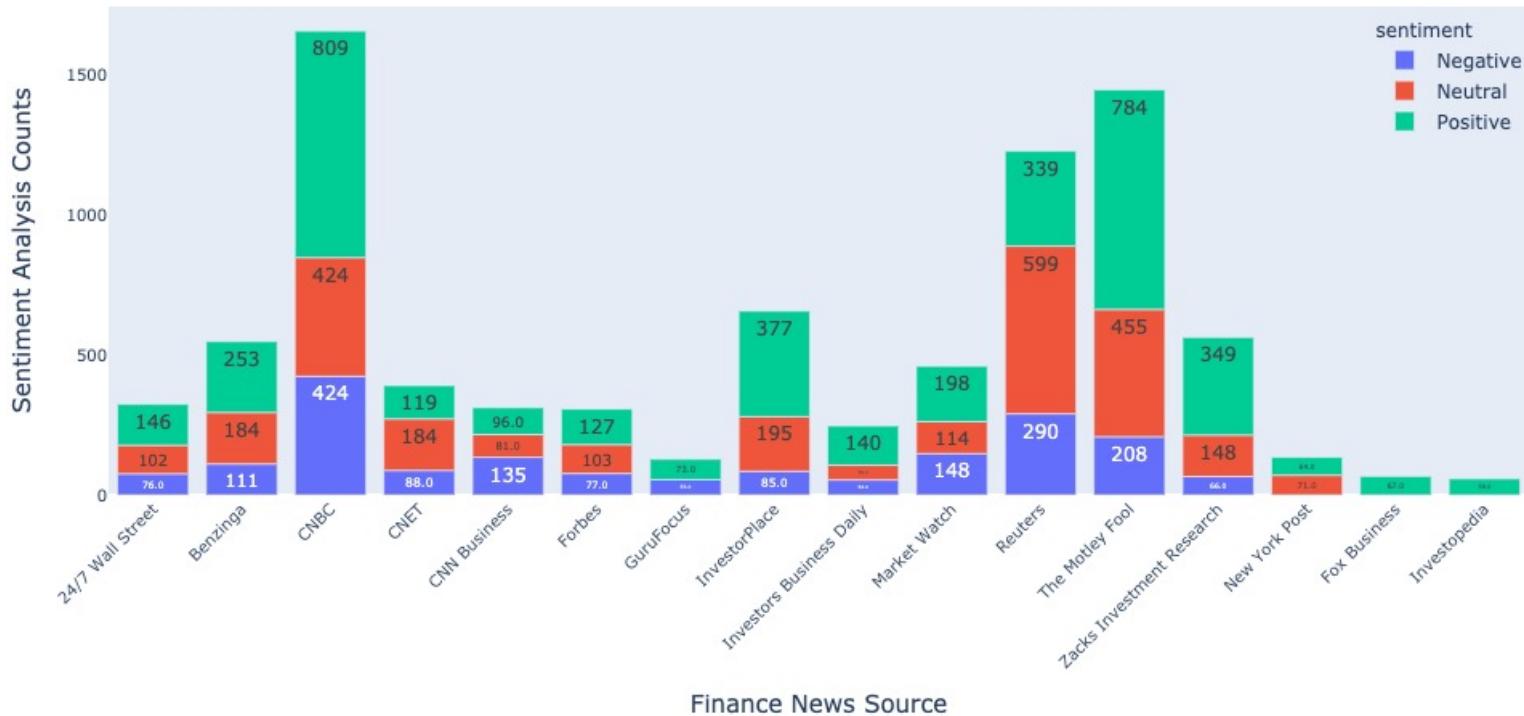


Exploratory Data Analysis

Stock Market Sentiment Analysis

Market Sentiment

News Sources vs Sentiment



Exploratory Data Analysis

Stock Market Sentiment Analysis



Most common words



Interpretation

The method we used in our project to do sentiment analysis and price forecasting includes 2 major modeling approaches:

➤ Sentiment Analysis Prediction

- The two major methods we used to do sentiment analysis includes Recurrent Neural Network (RNN) model constructed with Embedding layer and LSTM bidirectional layer where we initialized with the embedding matrix learned from Gensim Word2Vec pretrained Model.

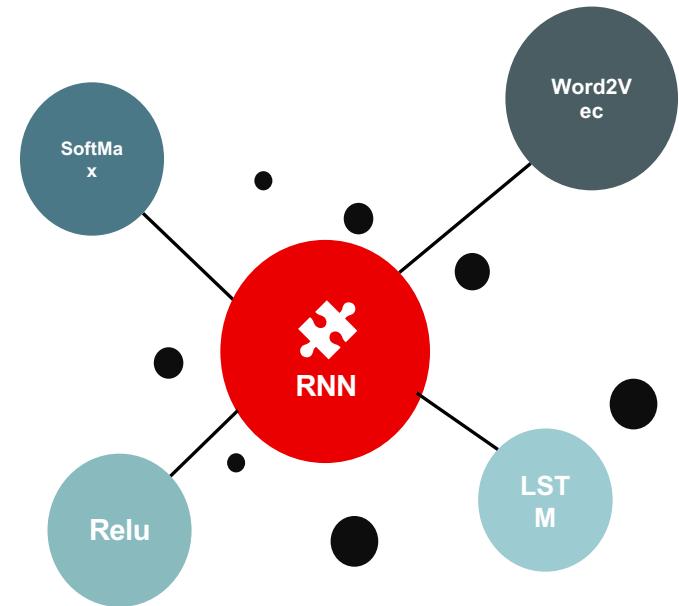
➤ Stock Market Price Prediction

- the second model is focused on statistical approach using SARIMAX model for a short-term time series forecasting and predicting the stock market trend.



Conclusion

- Since our dataset is completely scrapped from various financial news sources, we end up with an unbalanced dataset where the Negative class represent 22% of our data, however the model did pretty good obtaining 78% of the overall Accuracy and 74% for both "True Positive Rate" & "False Positive Rate".
- Similarly, the second dataset we used on predicting stock market price, our data are not stationary and represented an exponential trend, however SARIMAX model are able to predict the future values of the stock price for the upcoming 6 period (30 minutes).



Actionable Insights

Monitor live News

Track economic calendar

Multi asset data Analysis

Access financial reports



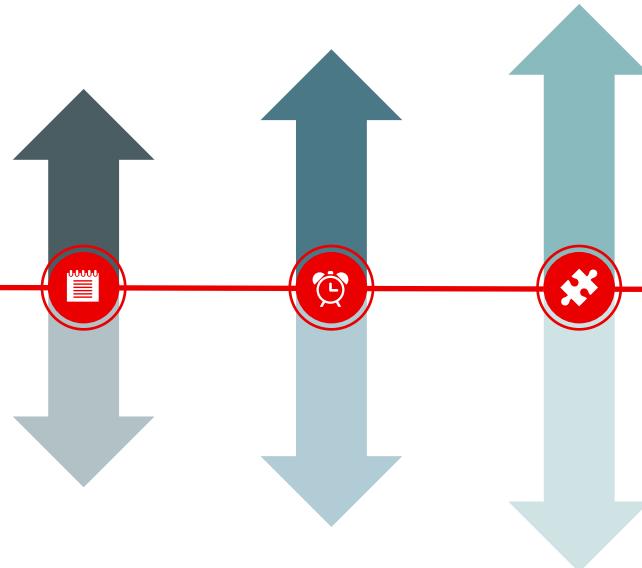
Future Work

Improve web scraping technique
using different API

Use SQL database to improve
the project performance.



Create a real-time Dashboard for
predicting market sentiment and
price forecasting



Stock Market Sentiment Analysis



Thank You

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GITHUB <https://github.com/akladyous/stock-market-sentiment-analysis>

