

Technologies we will use:

Google Trends API via [SERPAPI] (<https://serpapi.com/google-trends-api>) for scraping Google Trends data.

[Alpha Vantage API] (<https://www.alphavantage.co/documentation/>) for fetching daily stock market data.

Bloomberg terminal databases for accessing fundamental and technical data on publicly traded stocks.

Transfer learning to expedite model training.

LSTM (long short-term memory) networks for modeling sequential data.

Markov Model for predicting stock price movements.

Reinforcement learning for trend prediction using historical data.

Residual-CNN-Seq2Seq (RCSNet) model for predicting stock price trends (source: <https://doi.org/10.1108/JABES-05-2021-0061>).

Scope:

This project aims to develop an "Equity Research Report," providing buy, sell, or hold recommendations for stocks based on historical data analysis. Recommendations will be derived from two main datasets:

Technical Data:

stock price movements and trading volume.

LSTM and pretrained models for technical analysis.

Fundamental Data:

Price-to-Book ratio, Price-to-Earnings ratio, Capex, and Liabilities for fundamental analysis.

economic variables such as commodity prices, employment data, and fixed-income yield curves.

Methods:

We'll utilize transfer learning to leverage existing knowledge for faster model training. Algorithms and methods include the Markov model for probability prediction, reinforcement learning for trend analysis, and RCSNet for comprehensive trend prediction.

Data Sources:

Google Trends for sentiment analysis.

Alpha Vantage for daily stock market data.

Bloomberg terminal databases for fundamental and technical stock data.

Limitations and Feasibility:

Challenges include cleaning political disturbances from data and adapting economic variables to specific industries. However, with proper preprocessing and feature engineering, these challenges can be addressed.

User Interface:

Users will receive buy/sell/hold recommendations along with associated probabilities and timelines. The model's decision-making process will be transparently presented to users.

Model Update Frequency:

The model will update periodically, with the frequency yet to be determined based on performance evaluation.

Timeline:

Project completion is targeted for April 5th.

Overview of the Project:

This project entails developing a stock market predictor utilizing various algorithms and data sources to provide actionable recommendations for investors. The scope covers technical and fundamental analysis, leveraging machine learning techniques for prediction accuracy and robustness. Through systematic data extraction, model training, and user feedback integration, the aim is to create a reliable tool for stock market decision-making.