Systems Lab 2025
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WeTrade

Open-Use AI Stock Trading Bot

Introduction

Only 34% of households in the bottom half of the U.S. income distribution hold stocks, representing just 0.6% of the stock market's value. Working-class families often lack resources for financial advisors or time to manage investments. To bridge this gap, WeTrade offers an open-use, automated stock trading bot that combines technical analysis, long-term historical data, and real-time media sentiment. Our goal is to democratize access to profitable investing strategies, empowering users to grow wealth sustainably.

Novelty

Existing tools like StockHero, which relies solely on technical analysis, and EquBot, which uses only NLP-based sentiment, operate in isolation or come with high costs. WeTrade stands out by integrating technical indicators such as MACD and RSI with news sentiment and long-term historical data into a single model. Unlike subscription-based or corporate-focused alternatives, our platform offers a free, personalized website where users can adjust risk tolerance, investment horizons, and strategy weights. By prioritizing long-term profitability over short-term speculation, WeTrade makes stock market participation more inclusive and effective for users of all income levels.

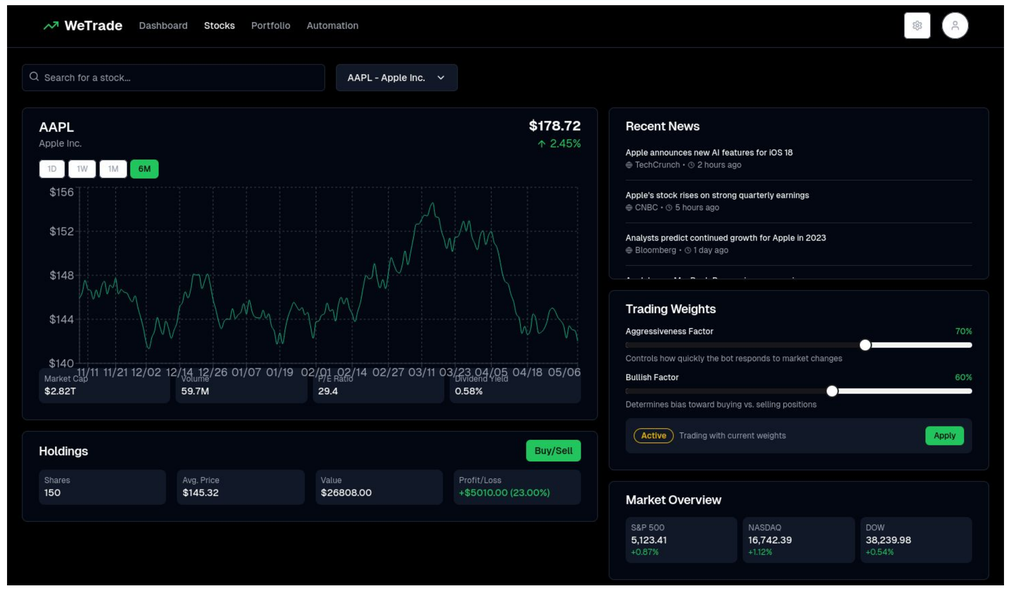

Figure 3: Website

Methods

Scraping & NLP: Chose to scrape Yahoo Finance, which had an archive of every relevant news article going back 12 years. Used tunnelbroker to rotate the requests through 2^{80} IPv6 addresses, which avoided ratelimit, speeding up scraping process. Articles were cleaned up to reduce footprint and irrelevant information. We then fed them through an NLP model that gave the article an overall sentiment score.

Historical Trends & Technical analysis: Got OHLC stock data going back 30+ years. Additionally, built a TA engine to calculate technical indicators like MACD and RSI of stocks to help predict stock movement.

Trade Execution: Final trade decisions are made using a weighted combination of the sentiment scores, long-term historical predictions, and TA signals (Figure 1). Buy/sell signals are sent to a paper trading site to test, with rules in place for stop-loss. Kept backend database of account trades and holdings (Figure 2). This data is then displayed on our website (Figure 3).

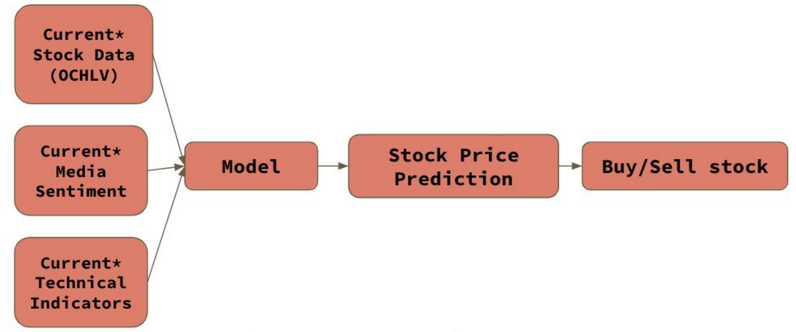

Figure 1: Running Model

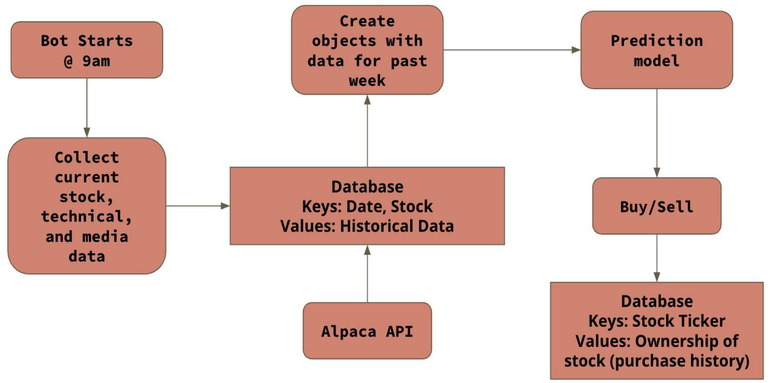

Figure 2: Backend

Results

Currently, we have a working scraper, stock data aggregator, prediction model, and website to facilitate all the interactions. When comparing different models, having sentiment analysis integrated performed better compared to a LSTM predicting with just historical stock data, so we consider that a success.

Impact & Future Work

WeTrade has a lot of potential, especially with some cleaning up. We would start with improving the website functionality, and making it easier to use. We would also like to integrate more time-sensitive media into the bot, dealing with news about sudden events, through scraping social media like X and Reddit.

We would also like to use a lot more historical stock data so the model has more foundation to learn from.