



Stock Screener

(Pattern Recognition, Put-Call Ratio & News Sentiment)

Naomi Tsang | Thomas Wong | Serena Chan

PROJECT SNAPSHOT

PUT-CALL RATIO

**NEWS SENTIMENT
NLP**

**PATTERN
RECOGNITION**
Image Classification

STREAMLIT
Deployment

BUSINESS VALUE

POTENTIAL USAGE

Major Stakeholders

Public Investors

Private Investors

Brokers

Finance Reporter

Potential applications

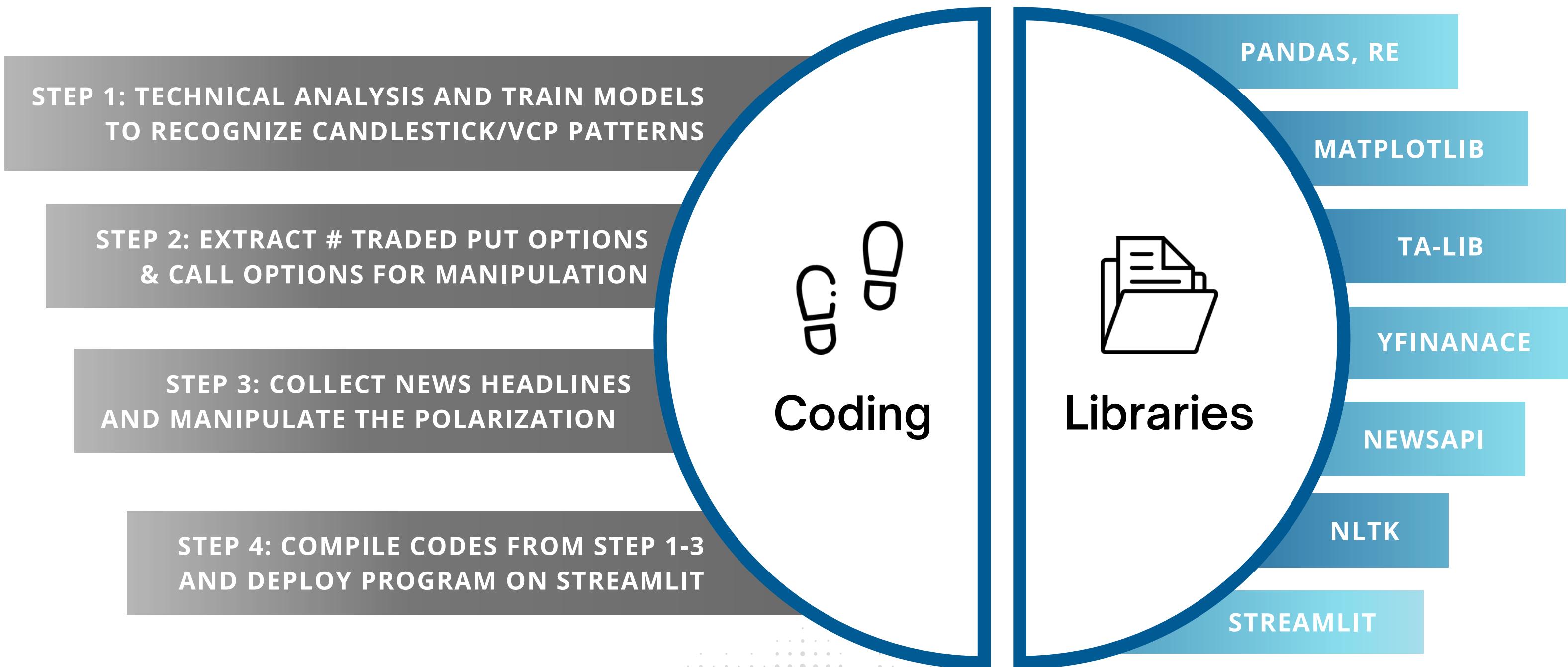
Learn about stock from different aspects in one-go for buy-sell decision

Get to know how the public perceive the market to adjust their action

Analysis stocks all-round including the news sentiments to improve their strategy

Understand the stock details quickly for production and reporting

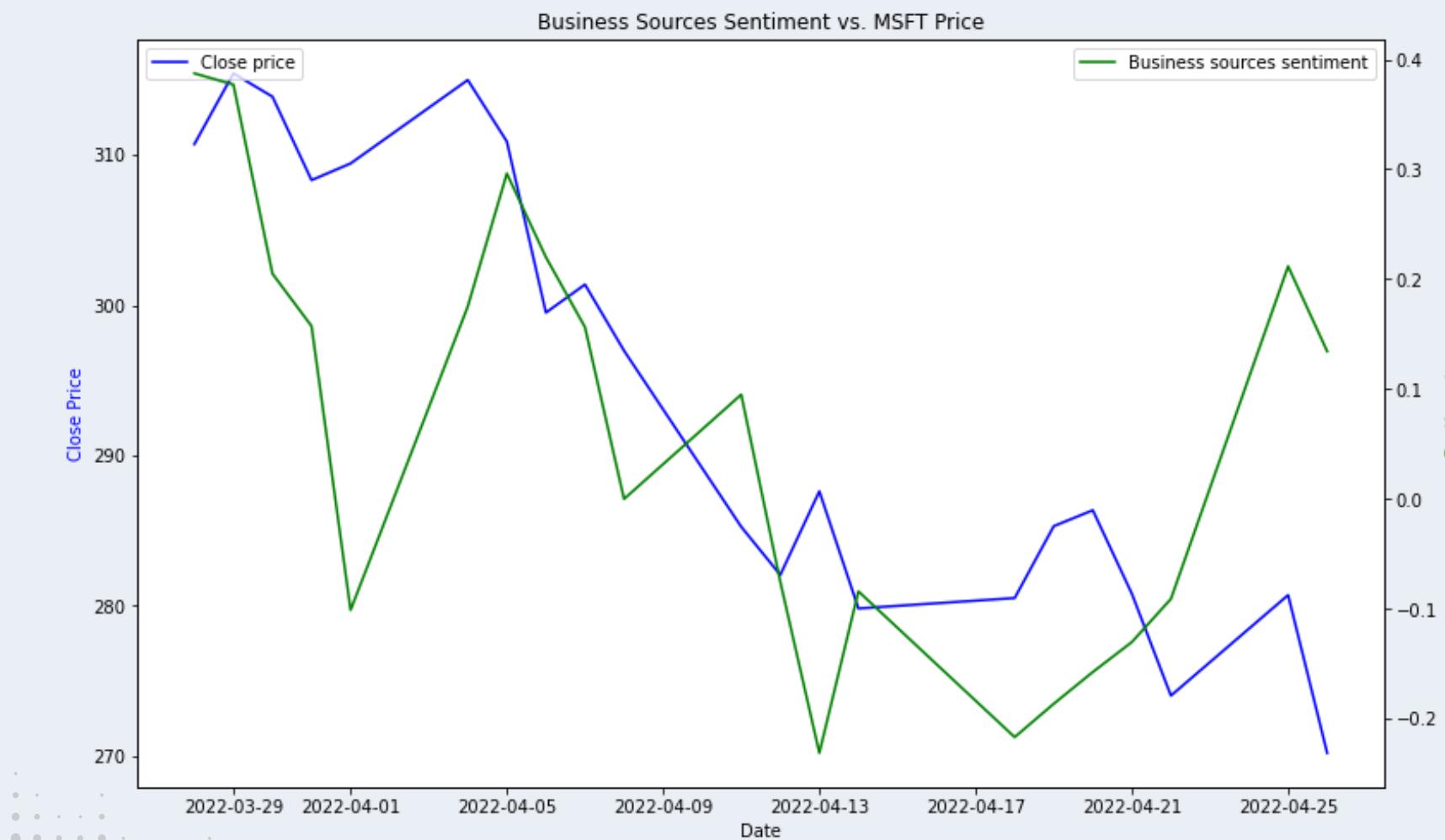
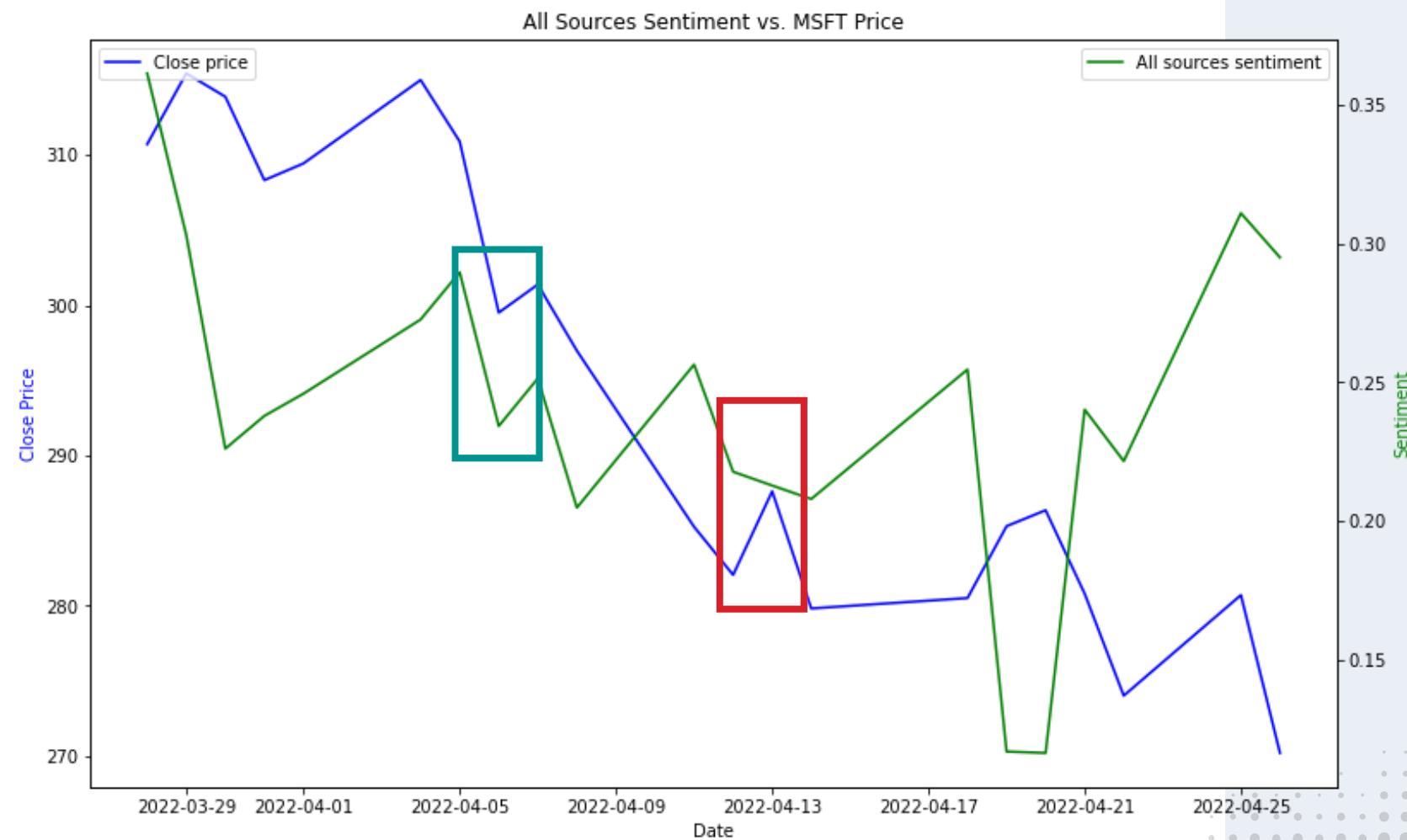
WORKFLOW



NEWS SENTIMENT

NEWS SENTIMENT - ALL / BUSINESS SOURCES ONLY

- Extract news headlines and compute polarization with nltk (ranging from -1 to 1)
- Plot past 1 month graphs of Nasdaq top 20 stocks' price with the sentiment mean of all/business news
- Determine the news sources to go with by evaluating which shares a similar trend with the stock price



Trend Template Check

Mark Minervini's Trend Template

- Mark Minervini proposed 7 criteria for selecting stocks in his book "Trade Like A Stock Market Wizard"
- Stocks that meet the trend template are likely to have a huge increase in stock price
- Checking are done by utilizing pandas library

The screenshot shows a 'Stock Screener' interface. On the left, there's a form to 'Check it now!' with fields for 'Which stock to check?' (set to 'Tsla') and 'Set the consolidating range (in percentage)' (set to 2). On the right, a summary table titled 'Mark Minervini's Trend Template fulfillment: 2/7' lists seven criteria with their current status:

Criteria	Status
Is the current stock price above both the 50-day and 150-day moving average?	No
Is the 50-day moving average above both the 150-day and 200-day moving average?	No
Is the current stock price at least 30% above its 52-week low?	No
Is the 150-day moving average above the 200-day moving average?	Yes
Is the current stock price within at least 25% of its 52-week high?	No
Has the 200-day moving average trending up for at least 1 month?	Yes

Consolidation and Breakout Check

Check for consolidation and breakout

- check if a stock is consolidating in the past 15 trading days
- if a stock breaks out after a consolidating period, it is likely to have a uptrend
- 3 possibilities: not consolidating, consolidating, consolidating and upward breaking out
- users can define the consolidating percentage



Candlestick Pattern Check

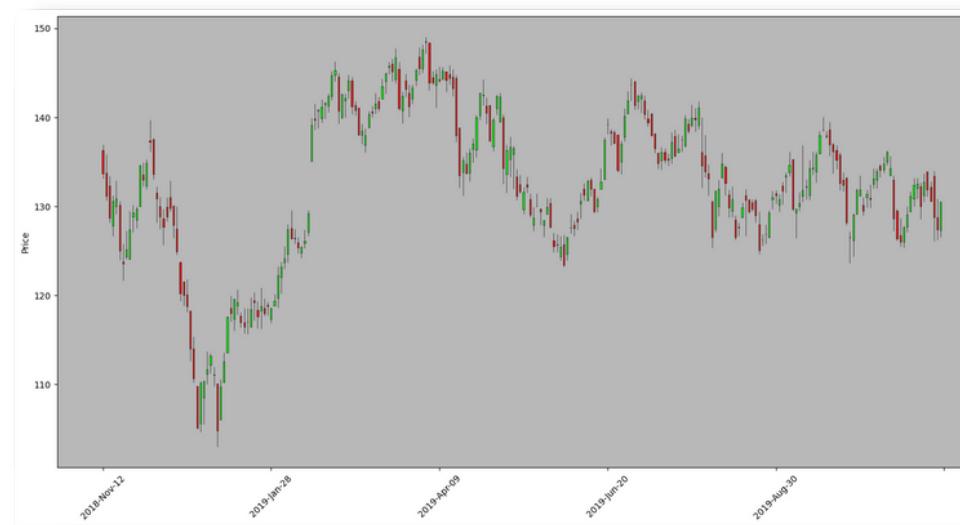
Identify specific candlestick patterns

- Some candlesticks patterns appear more frequently than other patterns before a bullish breakout
(reference: <https://thepatternsite.com/CandleCPBkout.html>)
- The patterns are: Marubozu white, Maruozu closing white, Long White Day, and Southern Doji
- TA-Lib is used to identify those patterns

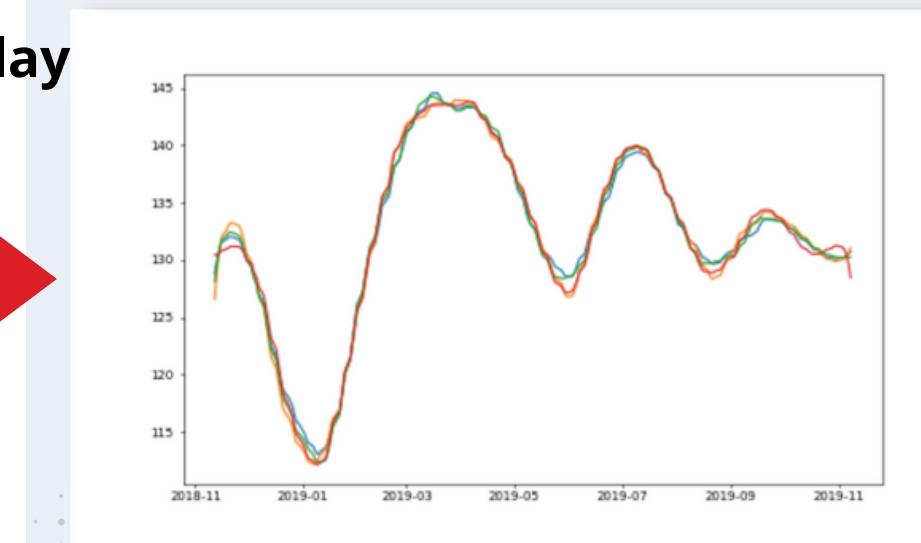
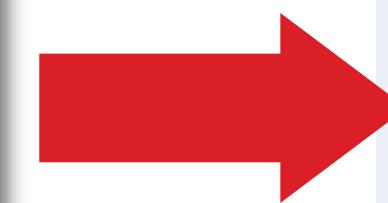
VCP Check

Mark Minervini's Volatility Contraction Pattern

- Volatility Contraction Pattern is usually found in stocks before an explosive share price gain
- Shape of a VCP is subjective: CNN is used to check for VCP
- The stock chart will be converted into a smooth curve. Then CNN is used to check for VCP



Savitzky-Golay
filter

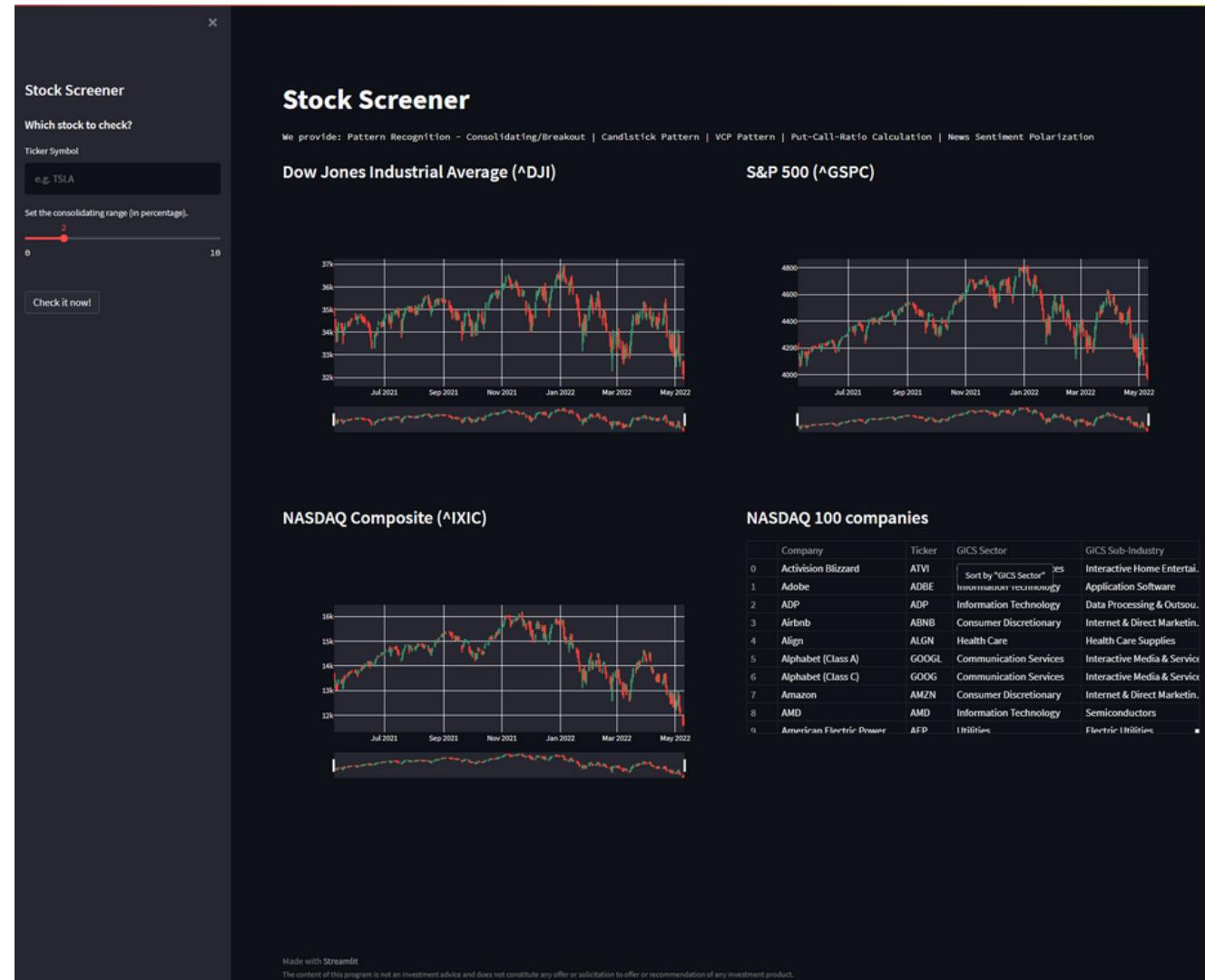


CNN

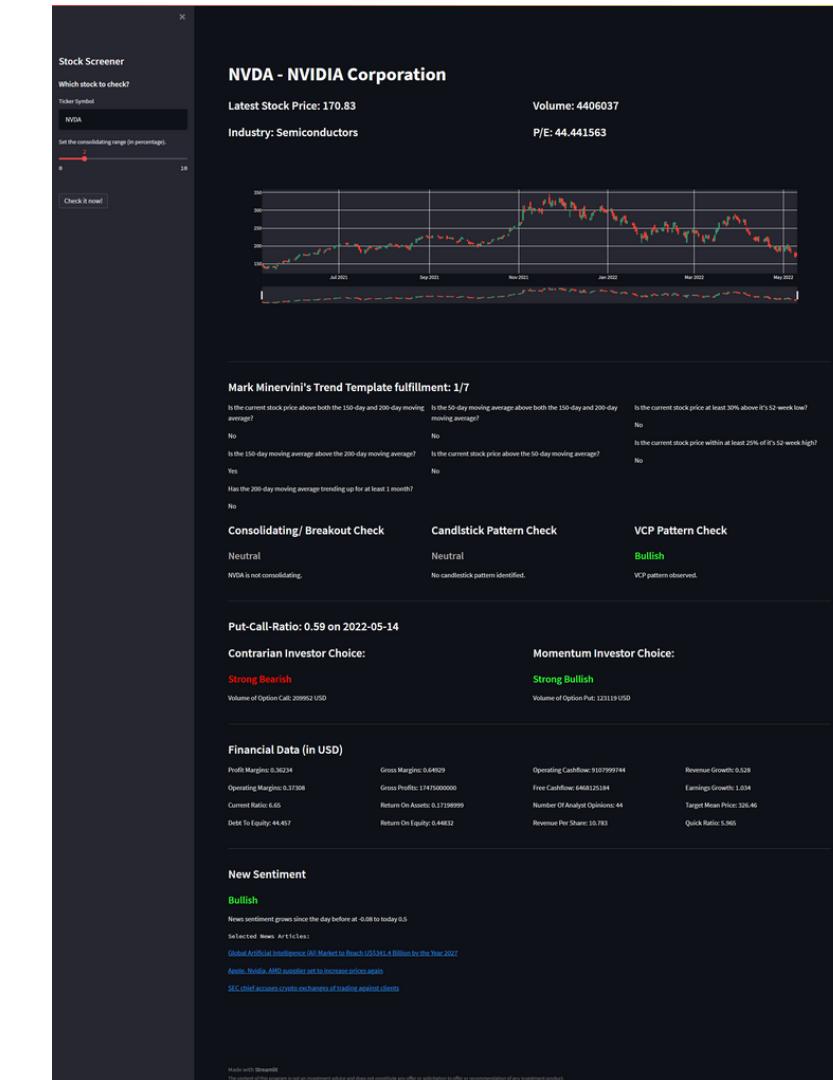


VCP

Streamlit Deployment



FRONT PAGE



STOCK ANALYSIS PAGE

LINK:
https://share.streamlit.io/naomitsang1016/capstone_stockscreener_-pattern-recognition-put-call-ratio-news-sentiment-/main/stock_screener_onlinemodel.py

Limitations & Future Improvement

What's Next

Finance Field Knowledge

Key Ratios and numbers for consideration

e.g. Turnover of Asset, Inventory, Working / Capital

Financial status of a company is also an important factor for long-term investment

Training Data

VCP Pattern Recognition Models

More training data is needed for increasing the accuracy of the models.

News Sources

Industry, General Markets

e.g. Government law, wars

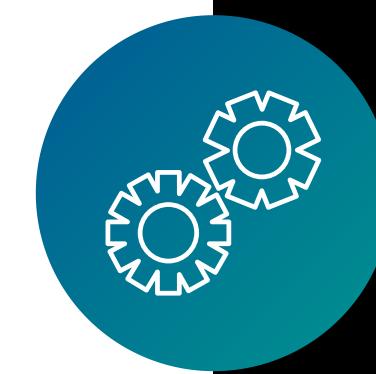
Currently, our news sentiment sources were limited to the company name of the stock only.

Conclusion



Seems none of single patterns, ratio and news can guarantee the trend of stock.

Different stock patterns , ratio and news which were the common factors that the public used to predict stock trend.



Python is a convenient and suitable tool for automatically monitoring the patterns, ratio and news of stock.

Only a few seconds is needed for the monitoring and feedback process.



Free learning resources and promotion of these predicting skills may be a trap from brokers and bankers to the public.

Keeps the money in your wallet may be the best risk management choice.



Thank You!

Q & A