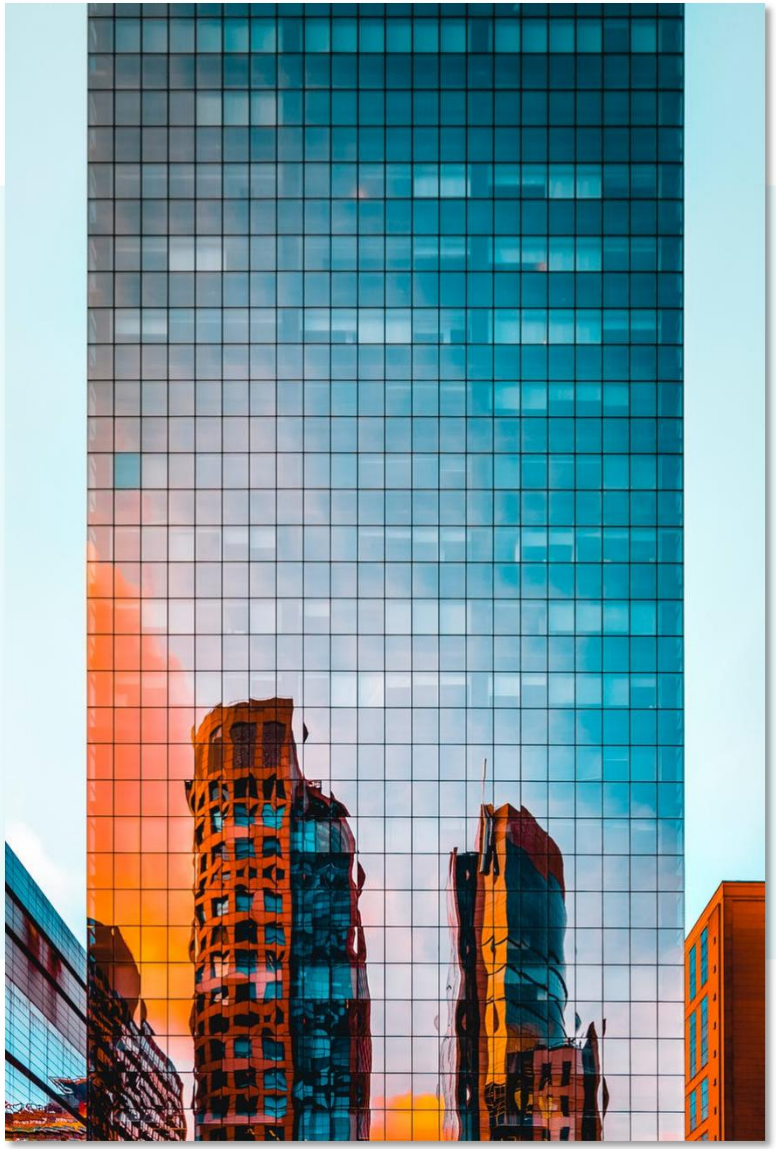

Using ML for Stock Selections

Name： Andy Zhao

Date: 18 Aug, 2021

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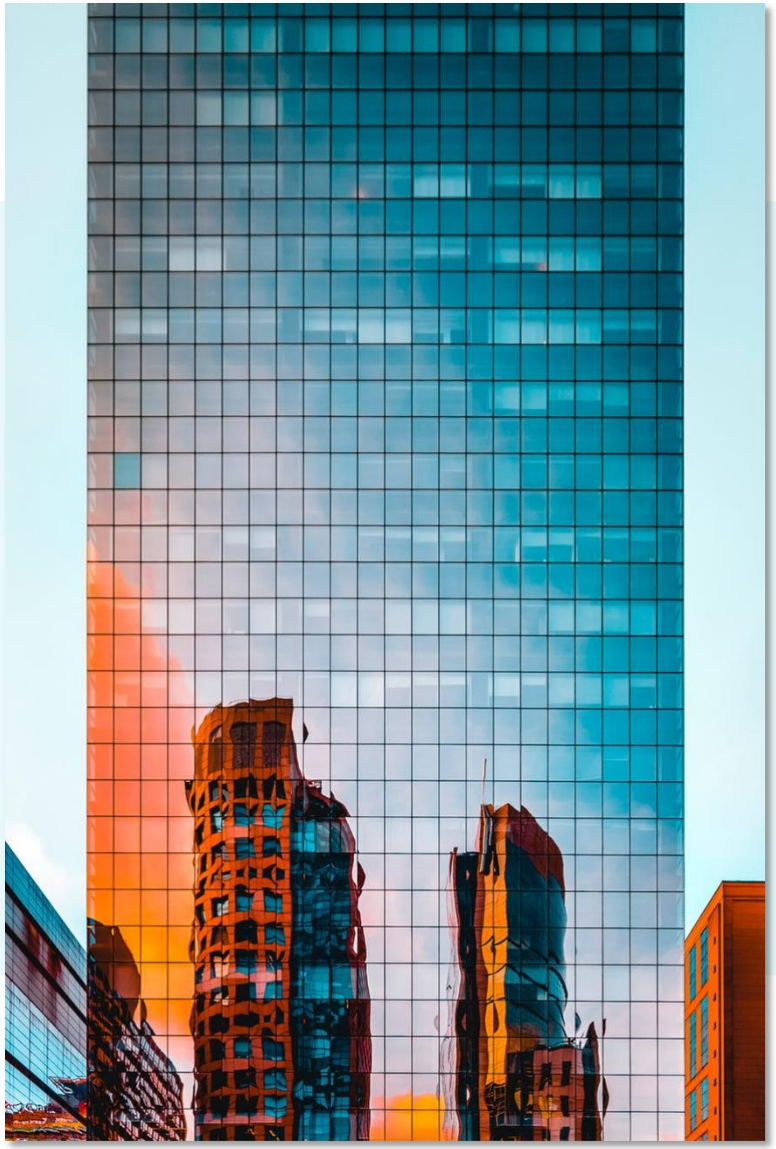
- Objectives
- ML Models
- Results
- Conclusion



01

Objectives

Stock market prices are affected by various information and driving factors. With this knowledge, my goal is to build ML models that incorporate market-based, macro-economic, fundamental and sentiment data using a machine learning model based on the **tree-based** algorithm to predict the directions of stock price changes.

Objectives

Goal

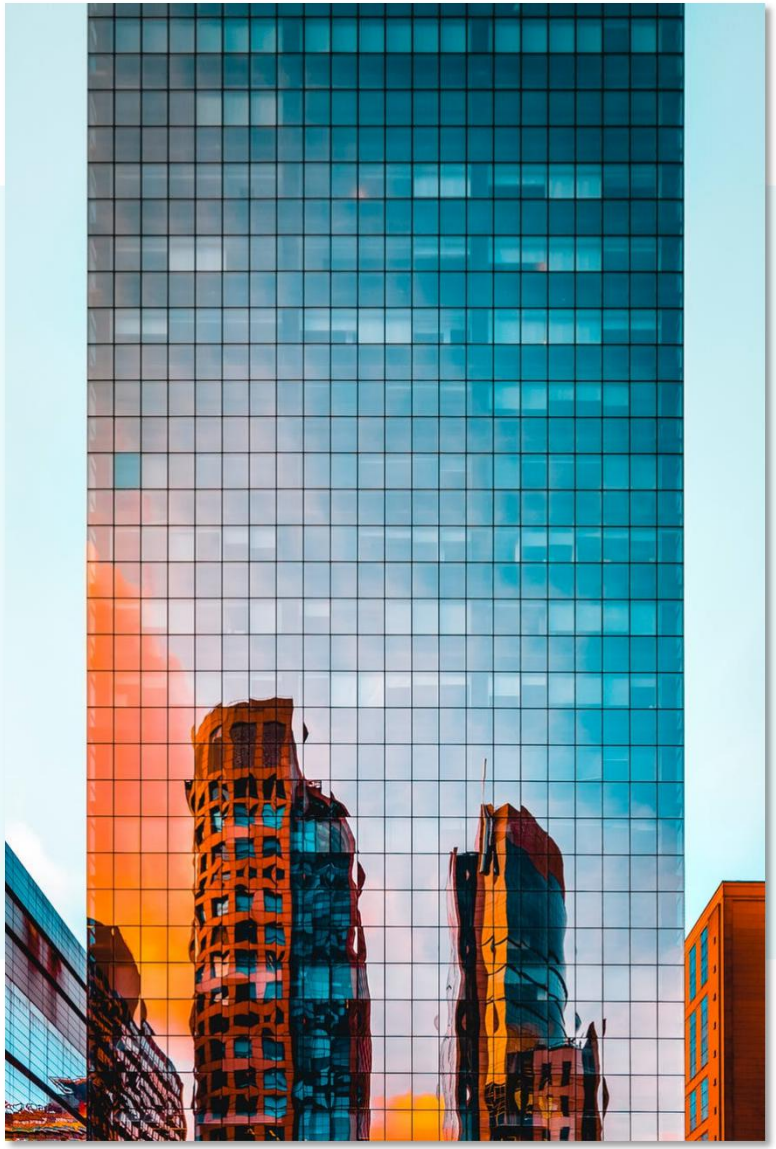
Selecting 5 stocks that will be worth more on Aug 23 than Aug 16

Stock Universe

S&P 500 Components

Investment horizon

Short: 5 trading days



02

Machine Learn Models

- Ingest data/features from various sources
- Tree-based models are leveraged (Decision trees+ Random forest)
- Scores are customized to focus on the performance of top 5 stocks/instances

Macro-economic

Such as CPI, PPI, GDP, Minimum wage data from *Federal Reserve Bank of St. Louis*

Fundemantal

EBITDA/EV, EPS Variability, Operating Margin, Low leverage, Predicted revenue growth, Sectors, etc. obtaining from the *Factset*

Data Feeds

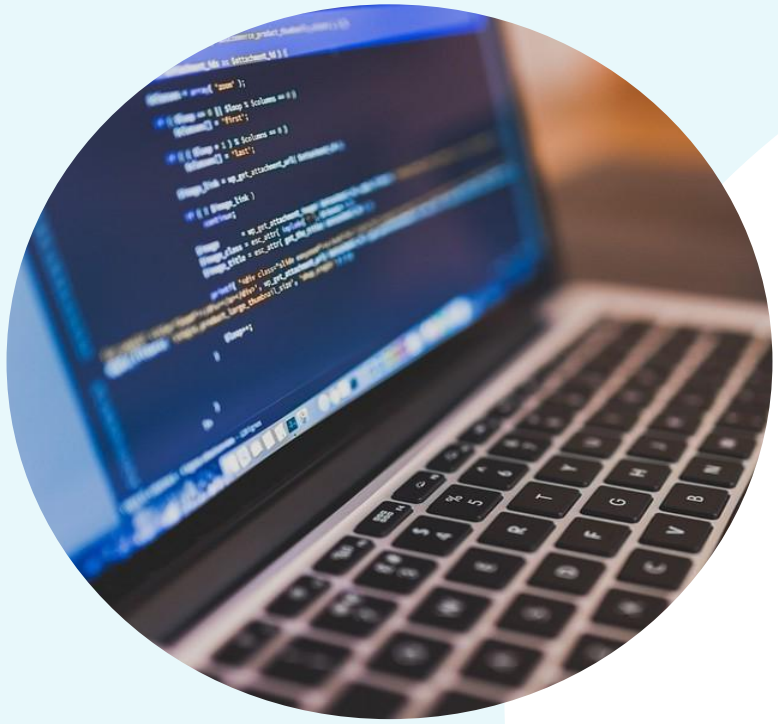
10-years data from end of 2010 (weekly)

Financial-market data

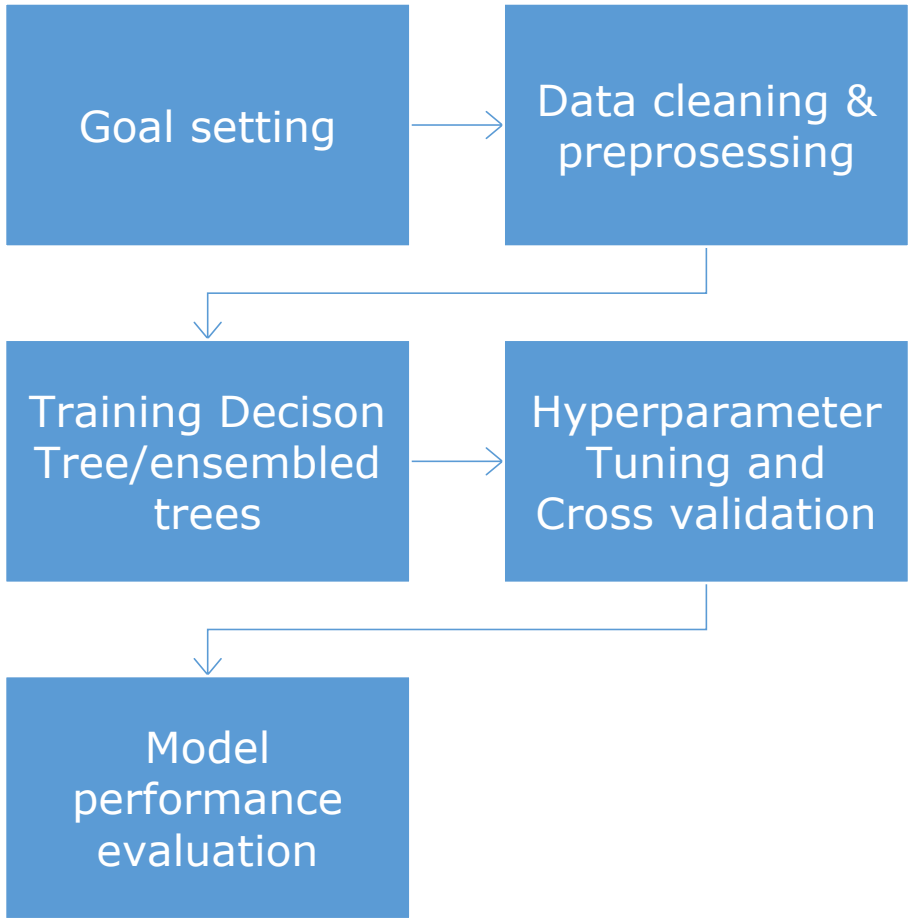
Stock price, Market value of stocks

Google trends data

Popularities of each stock ticker

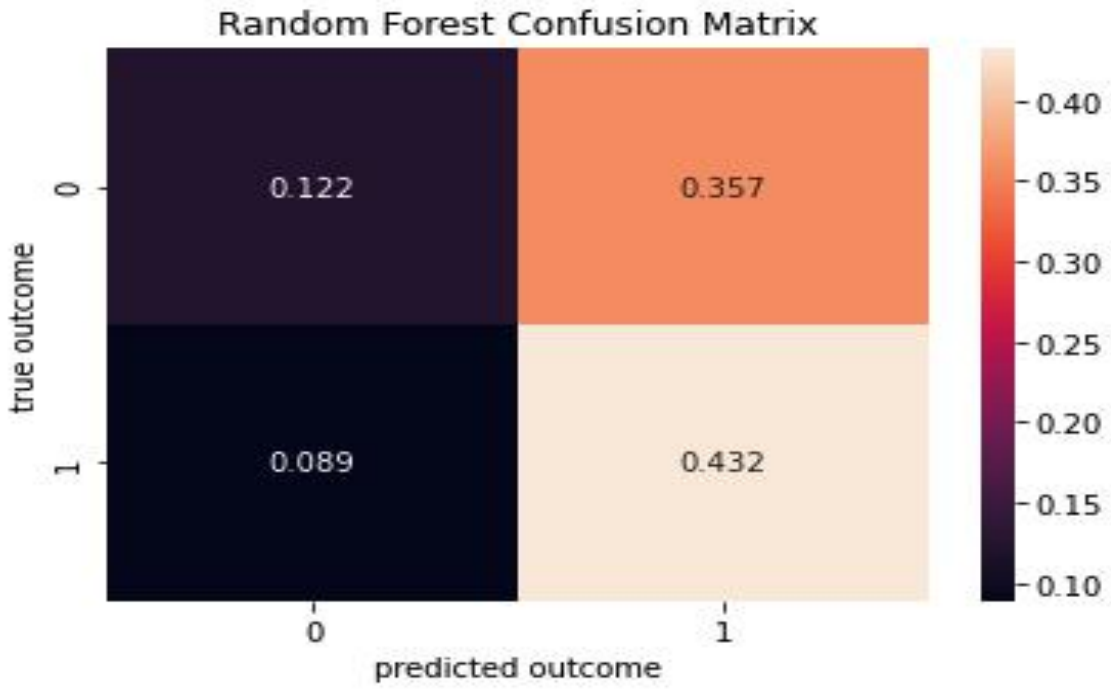


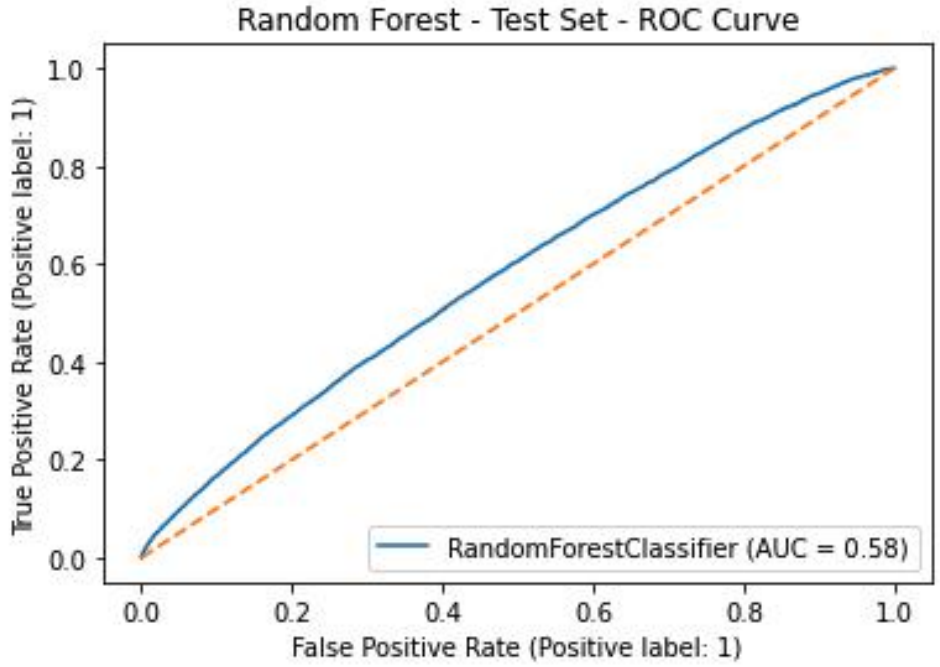
Model Development Process



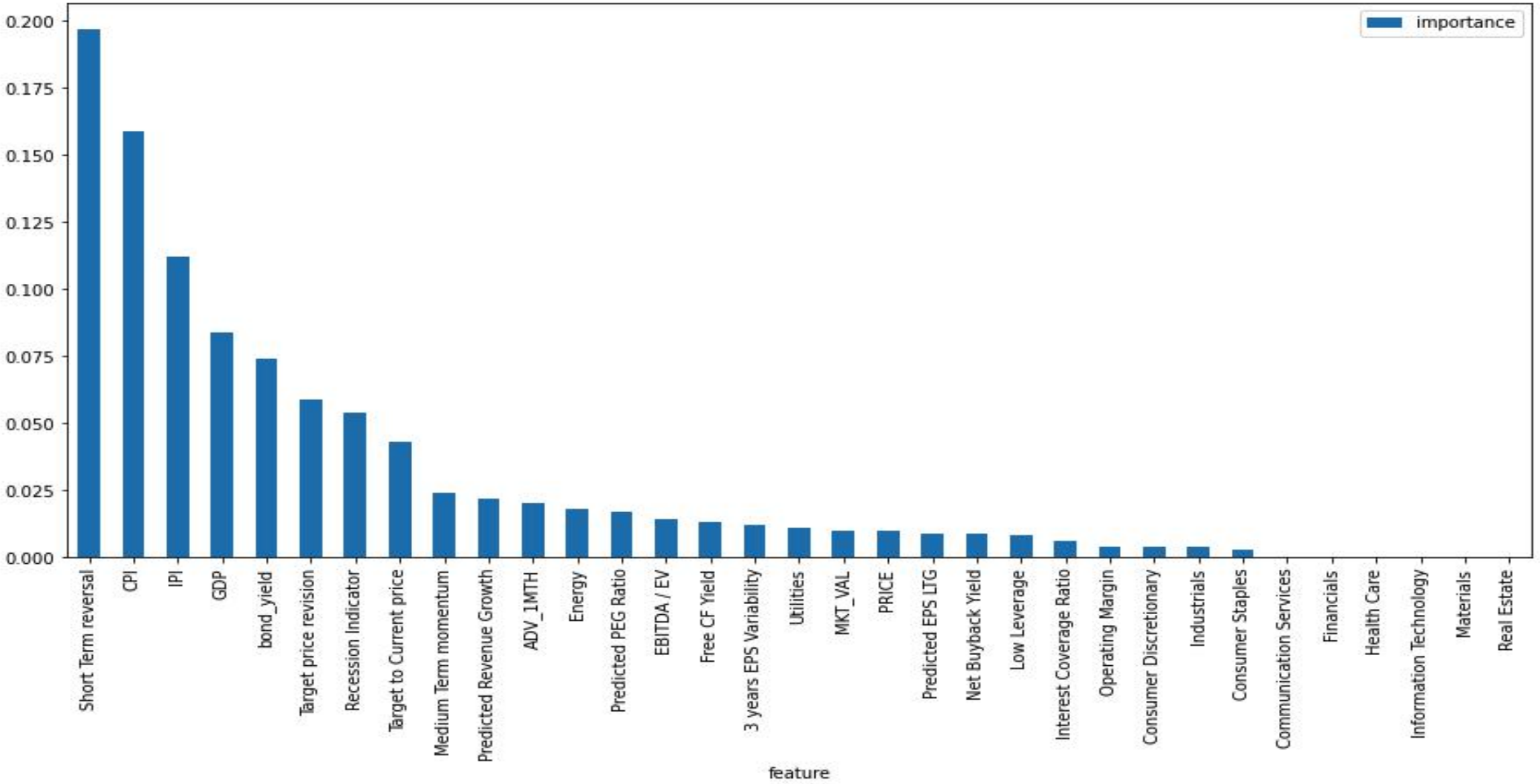
Best model's perfomance (based on the test sample)

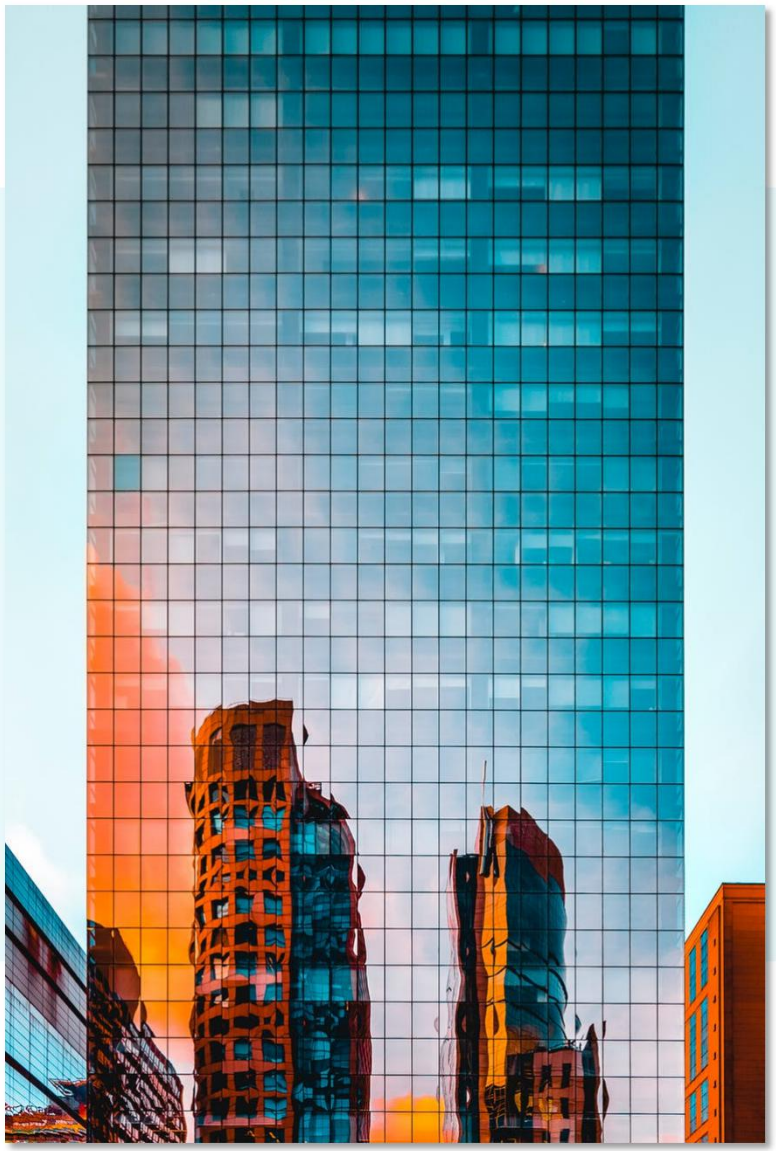
Metrics	Values
Accuracy	0.54177
F1_score	0.50626
Precision_score	0.56272
Recall_rate	0.54177





Feature Importance





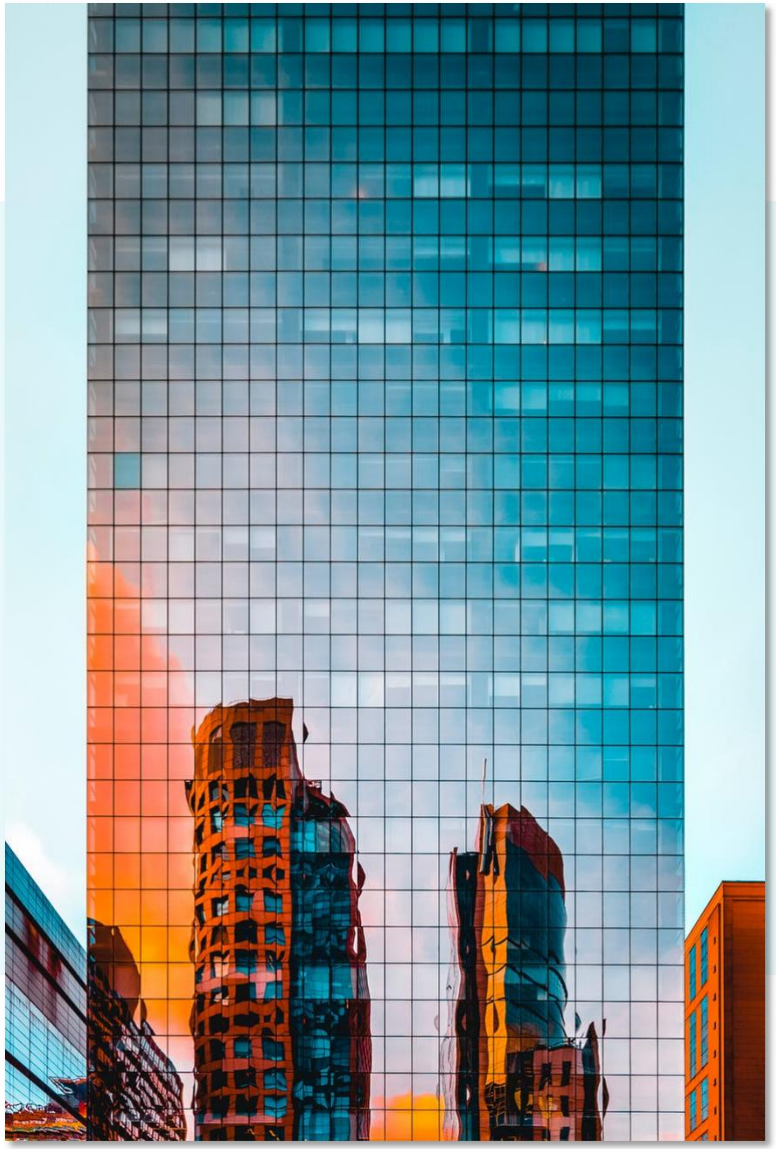
03

Results

- 5 stocks are selected to be outperfoming in a week

5 stocks recommended

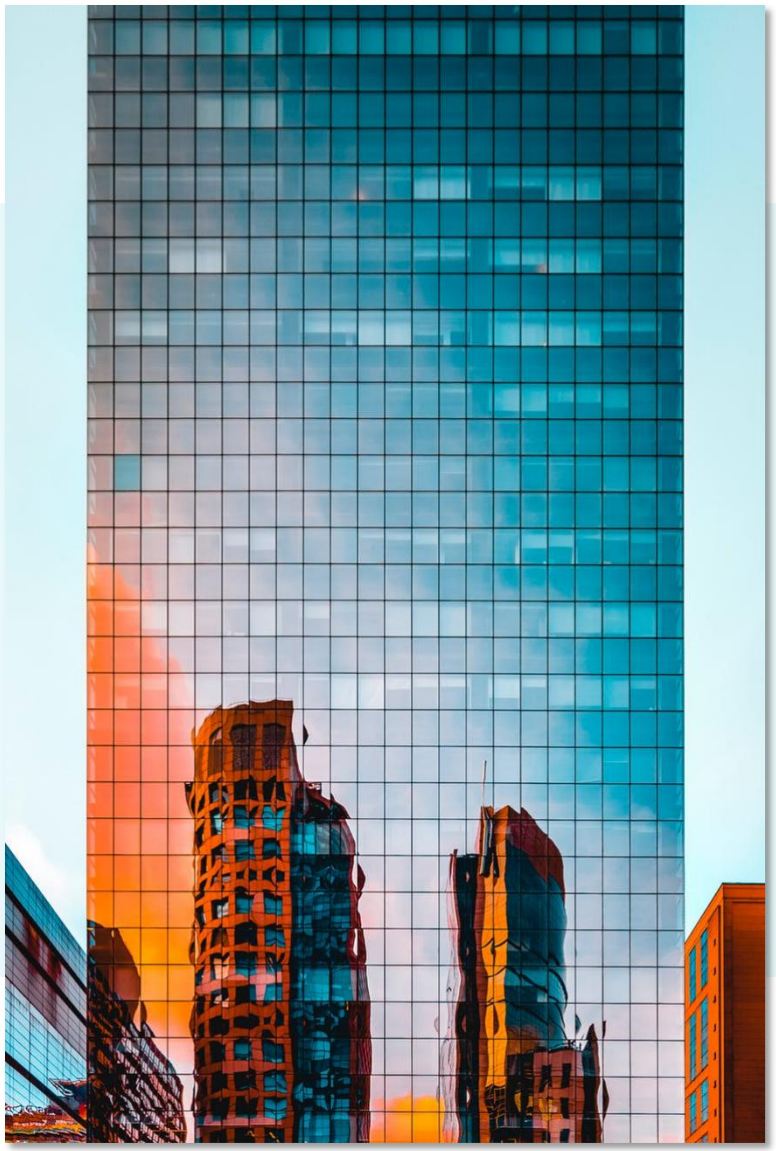
Company	Symbol	Close Price (as of 16 Aug, 2021)	Mkt_v	Sector	Medium Term momentum	Short Term reversal	Target to Current price	EBITDA / EV	3 years EPS Variability
Visa Inc. Class A	V	235.4	500567.6	Information Technology	26.7	-5	0.2	30.4	0.1
Leidos Holdings, Inc.	LDOS	97.9	13857.8	Real Estate	13.6	-7.9	0.2	14.6	0.3
Citrix Systems, Inc.	CTXS	102.2	12692.8	Information Technology	-13.7	-12.1	0.1	20.8	0.3
FMC Corporation	FMC	92.8	11943.3	Utilities	-2.4	-11.7	0.3	13.9	1.4
Lamb Weston Holdings, Inc.	LW	66.5	9643.2	Real Estate	21.2	-14.1	0.3	21.4	0.2



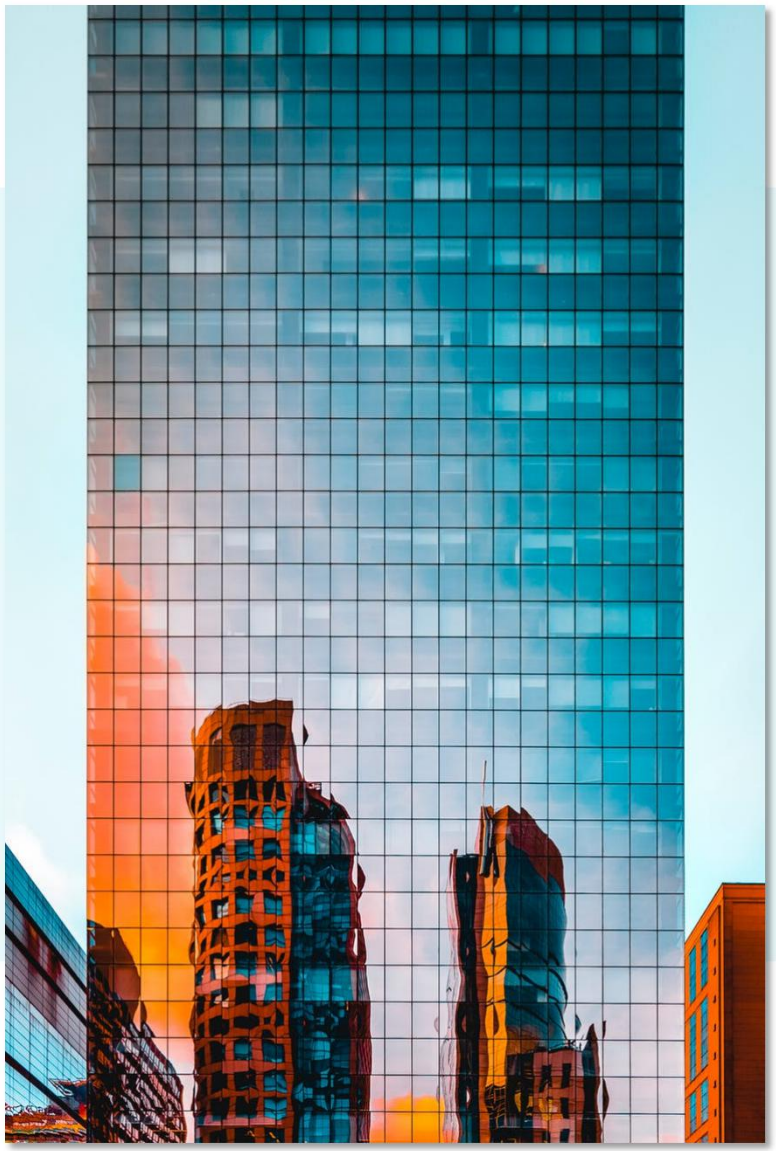
04

Conclusion

- Tree based algorithms are leveraged to select 5 stocks from S&P 500 which will generate a positive return in a week (we consider return > 0.1% as a positive return to incorporate trading cost)
- Given more time and resources, model performance should be increased by using more sentiment data (bull/bearish), and the back-testing should be considered.



THANK YOU



Q & A