



STOCK PREDICTION

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Understanding Stock Metrics

NasdaqGS - Nasdaq Real Time Price • USD

Amazon.com, Inc. (AMZN) ☆ Follow ↕ Compare

181.00 -2.48 (-1.4%) 86.85 -0.11 (-0.1%)

At close: 4:01 PM EDT After hours: 7:42 PM EDT

Valuation Measures

Annual Quarterly Monthly

	Current	6/30/2024	6/30/2023	6/30/2022	6/30/2021	6/30/2020
Market Cap	1.94T	2.01T	1.88T	1.57T	1.31T	1.34T
Enterprise Value	1.63T	2.06T	1.92T	1.61T	1.39T	1.42T
Trailing P/E	44.04	54.13	62.20	79.55	100.89	310.38
Forward P/E	31.25	41.49	42.55	39.53	40.49	82.64
PEG Ratio (5yr expected)	1.75	2.06	2.44	2.47	2.53	5.16
Price/Sales	3.25	3.46	3.29	2.85	2.43	2.54
Price/Book	8.19	9.28	9.30	8.62	7.75	8.70
Enterprise Value/Revenue	3.28	3.49	3.35	2.97	2.58	2.71
Enterprise Value/EBITDA	18.59	20.89	21.54	22.32	22.23	28.42

Screenshot taken from Yahoo Finance Statistics for Amazon stock

Market Cap

The total amount of cash value a company has that is being traded on the stock market

Enterprise Value

The total value of a company, often considered as the theoretical takeover price. It's calculated as the market cap plus debt, minority interest, and preferred shares, minus total cash and cash equivalents.

Trailing P/E (Price-to-Earnings Ratio)

The ratio for valuing a company that measures current share price relative to its trailing earnings over the past 12 months.

Forward P/E (Price-to-Earnings Ratio)

A version of the P/E ratio that uses forecasted earnings for the next 12 months. It gives insight into expected future growth.

PEG Ratio (5yr expected)

The Price/Earnings to Growth ratio compares a company's P/E ratio to its expected earnings growth over five years, used to gauge a stock's value while considering future earnings growth.

Price/Sales

A valuation ratio that compares a company's stock price to its revenues. It's useful for evaluating companies with little to no profits.

Price/Book

A ratio used to compare a company's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share.

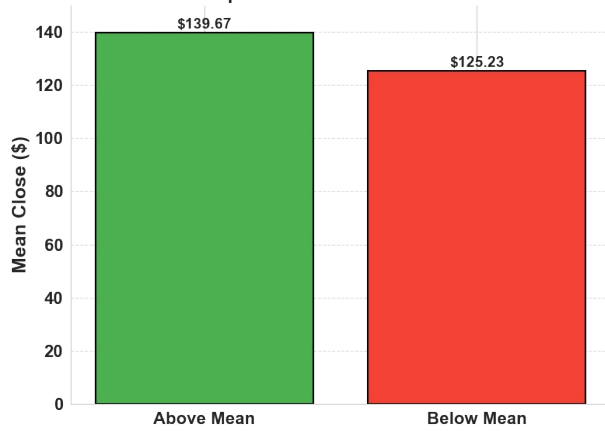
Enterprise Value/Revenue

A valuation measure that compares the total value of a company (enterprise value) to its revenue. This ratio is often used to assess whether a company is over or under-valued in relation to its revenue.

Enterprise Value/EBITDA

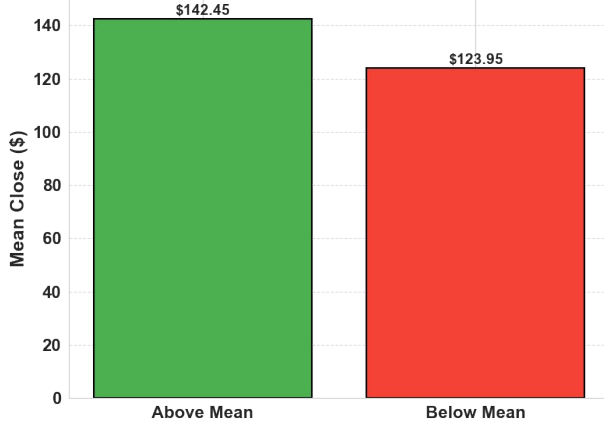
The ratio compares a company's enterprise value to its earnings before interest, taxes, depreciation, and amortization (EBITDA). It is often used as a valuation metric to compare the profitability of similar companies.

Mean Close for enterpriseToRevenue Above and Below Ave

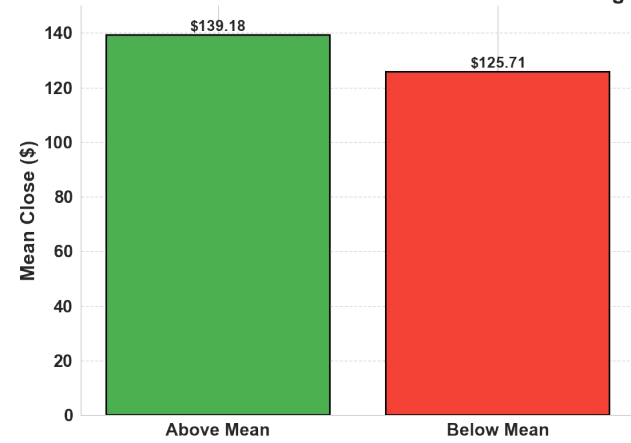


Metrics Causing Significant Difference?

Mean Close for priceToSales Above and Below Average



Mean Close for forwardPE Above and Below Average



Only in **THREE (3)** of the 8 metrics that Yahoo displays do we see a significant difference* when dividing the data by the metric mean.

Only 6 out of the total 20 different metrics I tested

*Hypothesis Tests were performed with a confidence level of 5% (0.05)

The Big 3:

- Enterprise Value/Revenue
- Price/Sales Ratio
- Forward P/E

Others:

- Trailing EPS
- Forward EPS
- Return on Equity

Let's Use Them Anyway! Shotgun Time!

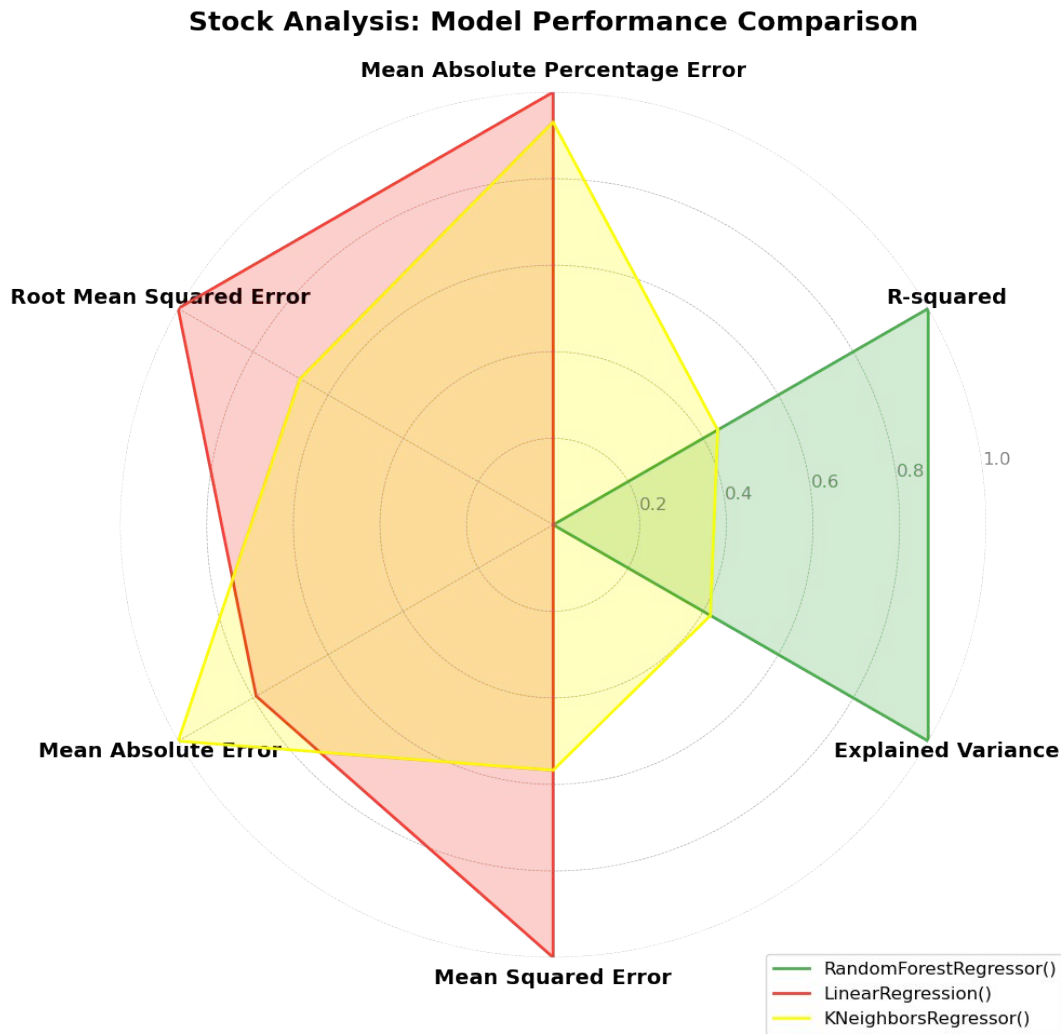
Using the metrics seen earlier (and many many more) along with some basic machine learning models, I was able to get some baseline accuracies

RandomForestRegressor seems to be **REALLY GOOD!!!**

KNeighborsRegressor is so-so

Linear Regression is **BAD!!!**

Issue: The **RandomForestRegressor** model doesn't work so well when trying to predict future stock data



My Sequential Model

GOAL: Build a cheap sequential based model that can be fit and trained on historical data and then used to predict future data

Best Train Loss: 0.43%

Best Val Loss: 0.13%

Test Loss: 0.32%

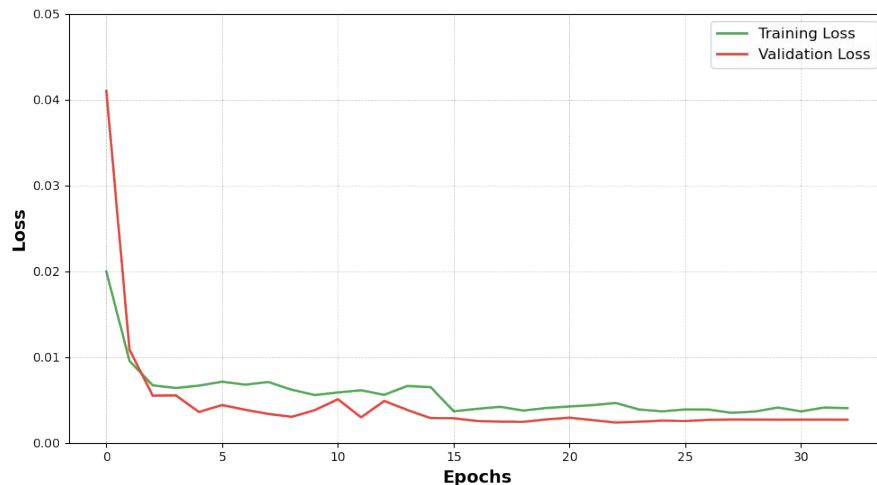
Layer (type)	Output Shape	Param #
=====	=====	=====
lstm_4 (LSTM)	(None, 7, 64)	16896
bidirectional_2 (Bidirectional)	(None, 128)	66048
dense_1 (Dense)	(None, 64)	8256
dropout_4 (Dropout)	(None, 64)	0
dense_2 (Dense)	(None, 1)	65
=====	=====	=====

Total params: 91,265

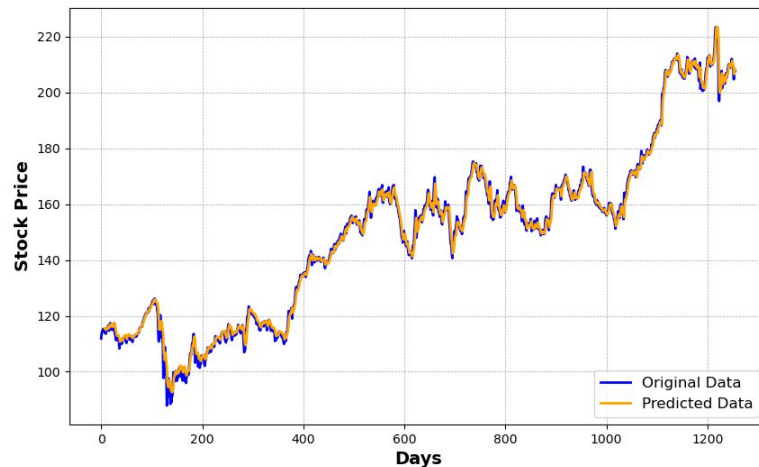
Trainable params: 91,265

Non-trainable params: 0

Training and Validation Loss



Stock Price Prediction for WM

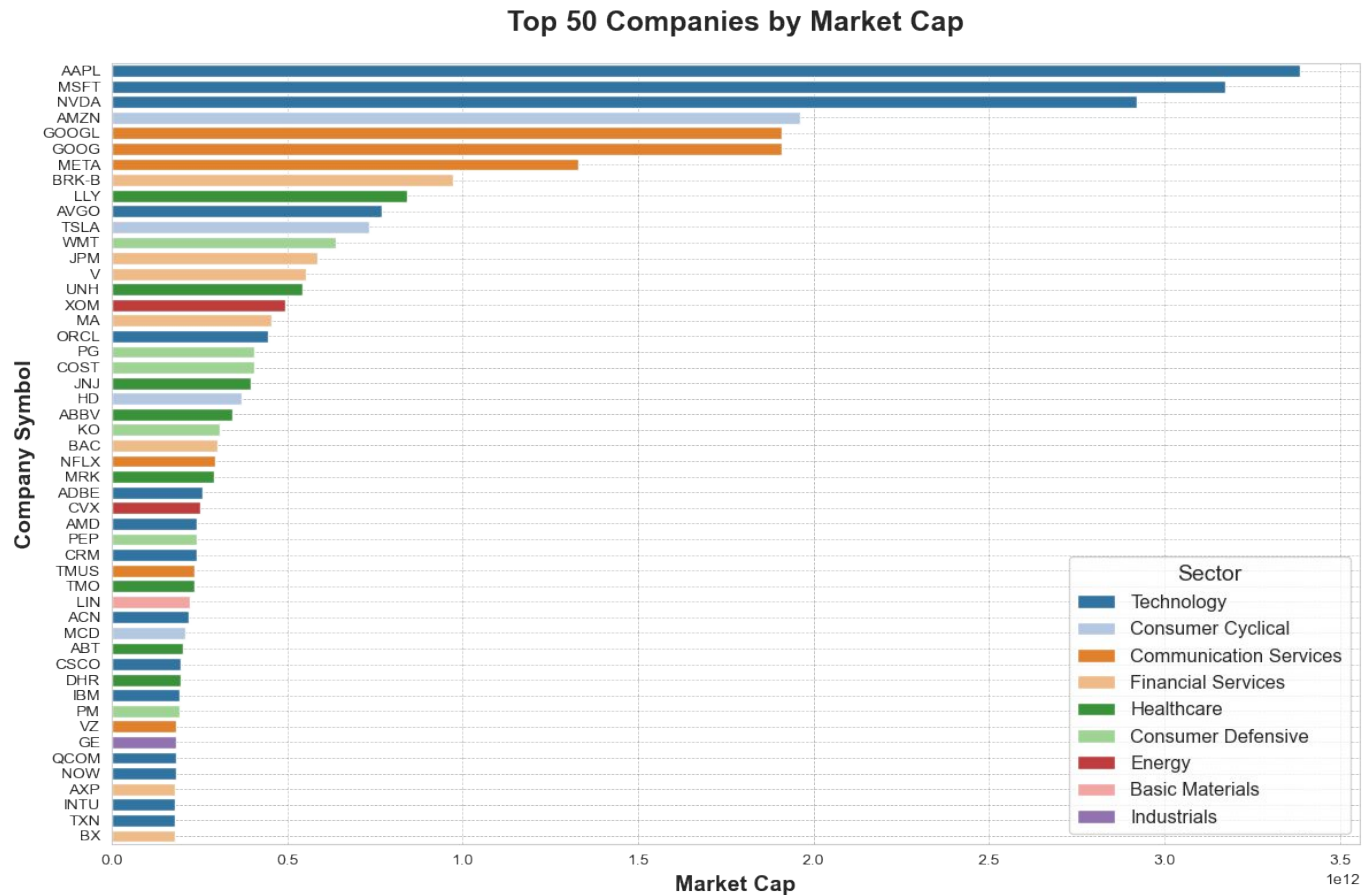


Building a Diversified Portfolio

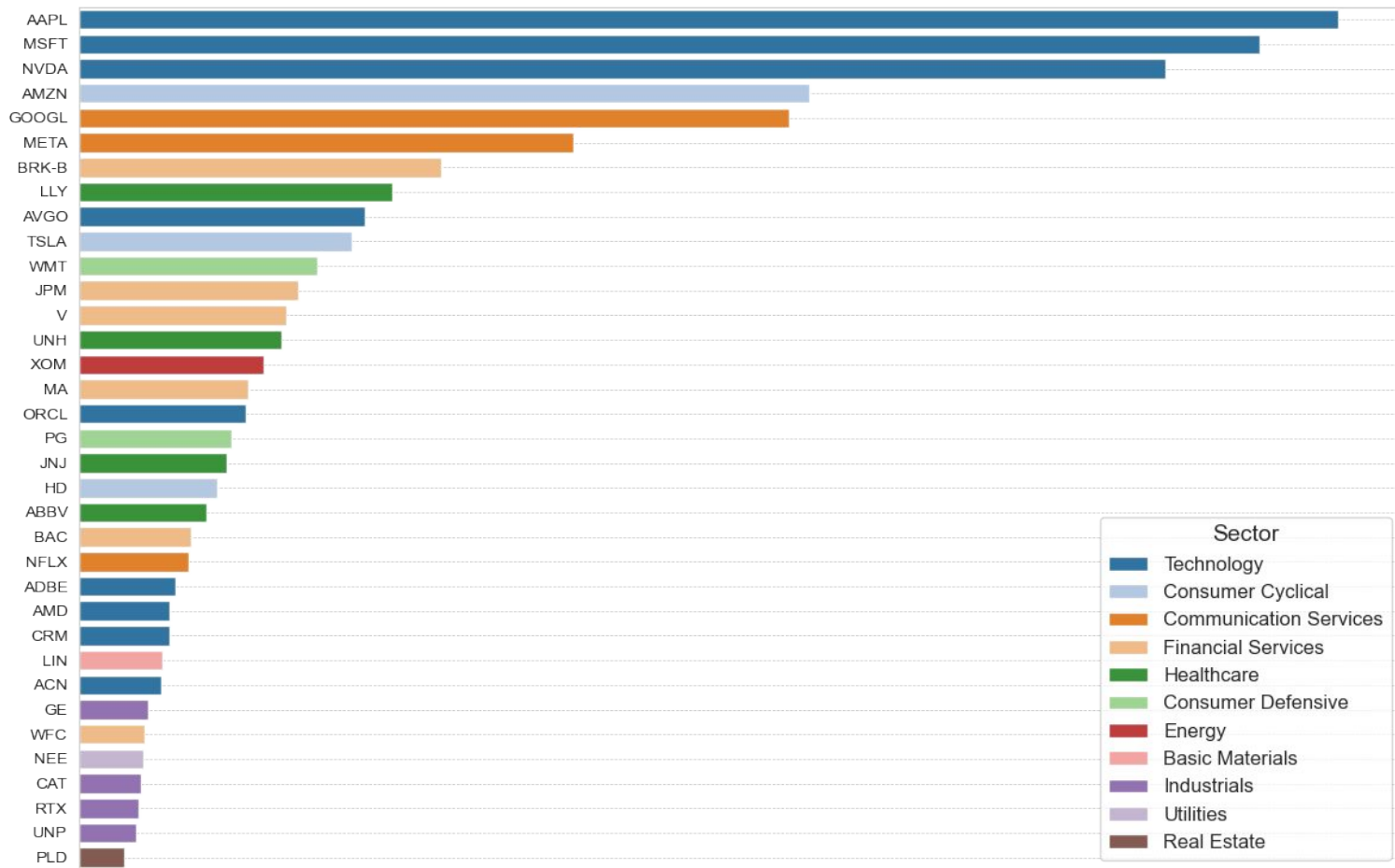
I looked at all the stocks on the S&P 500 and evaluated each of them based on Market Capitalization

I also wanted a good mix of different sectors.

And using that I came up with 35 Stocks that I wanted to create predictions for.



My 35 Companies For a Diversified Portfolio





amazon



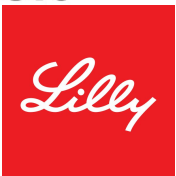
Microsoft



J.P.Morgan



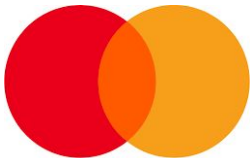
BERKSHIRE
HATHAWAY



VISA



Mobil



mastercard

ORACLE



UnitedHealth Group



RTX

AMD



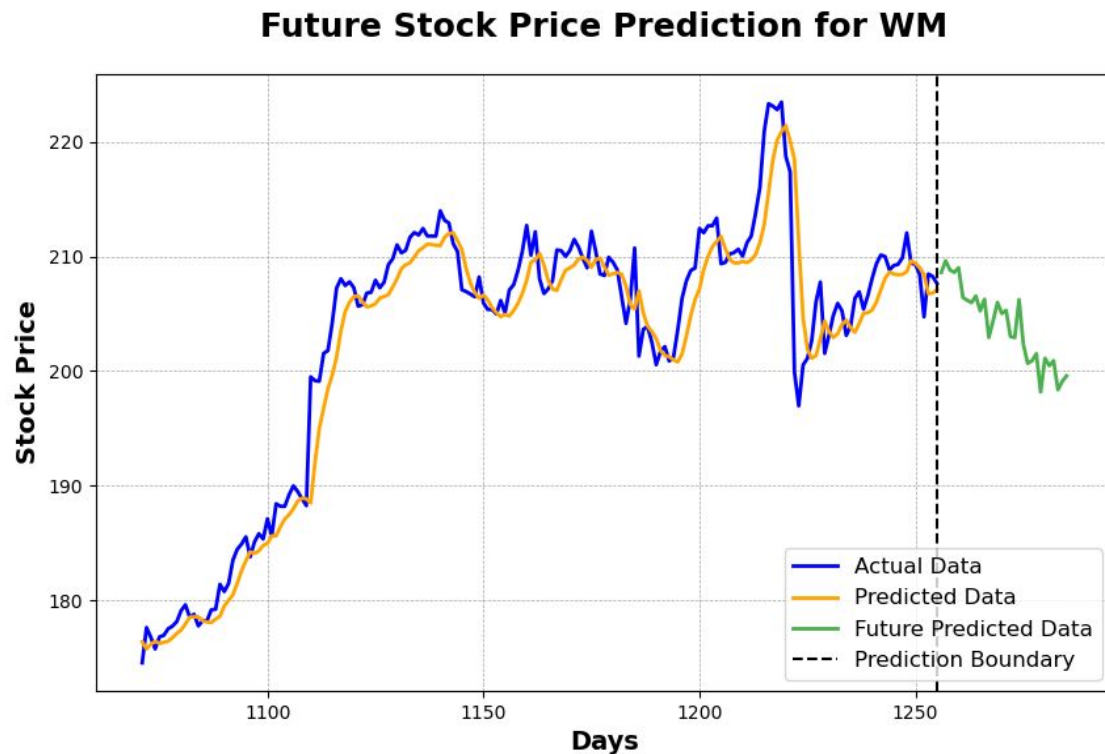
NEXTERA
ENERGY

Outcome and Predictions

Is it 100% accurate? → **NO**

How accurate is it? → **We don't know yet**

So What Do We Do Now?
→ **Let's find out!**



Conclusion - Do's and Don'ts

DO: Research before purchasing any amount of stock.

DO: Analyze my model and attempt to make improvements

DO: Attempt to create your own model with your own parameters

DON'T: Empty your savings and invest in a random stock that my model says will rise

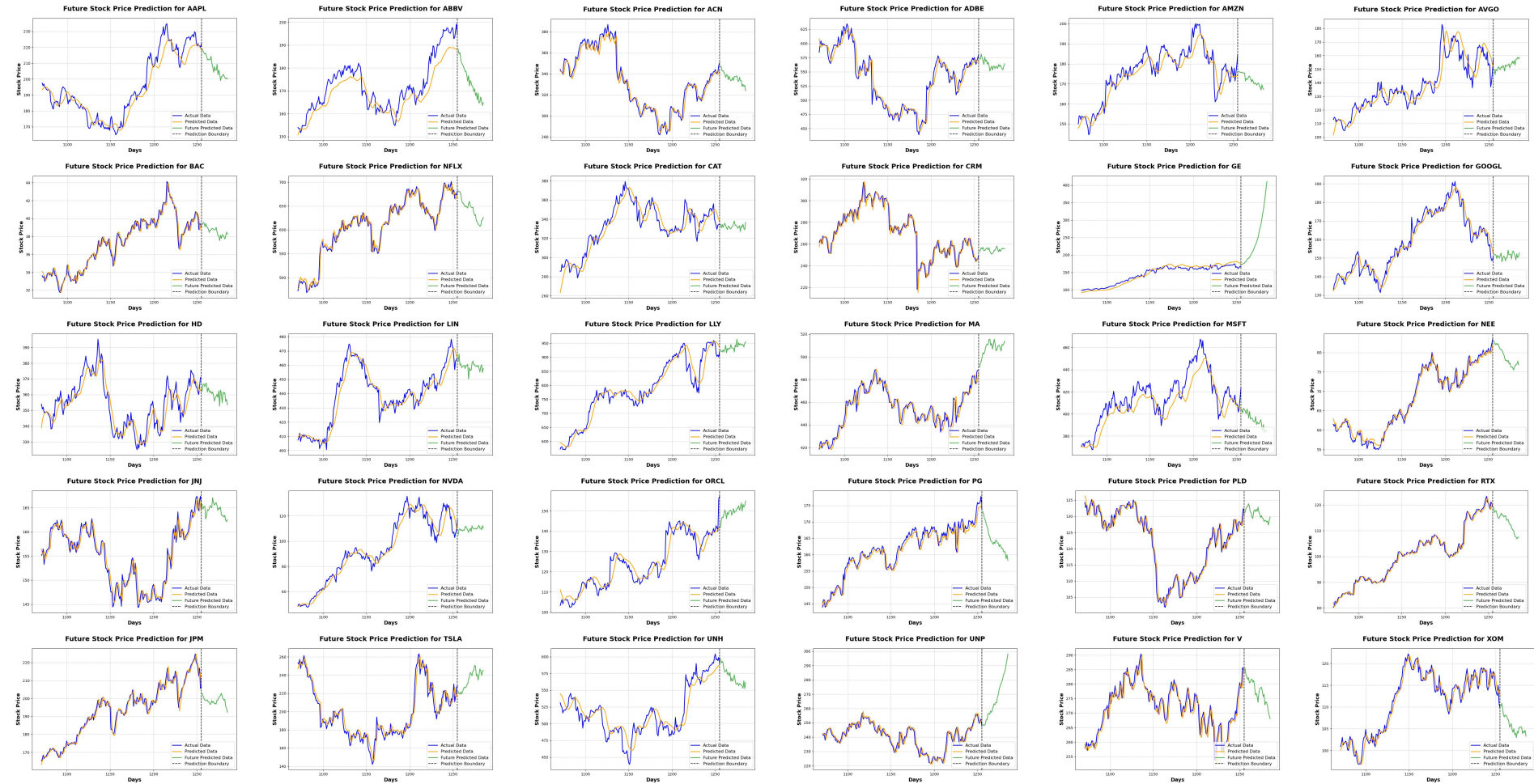
DON'T: Assume my model is the best iteration possible

DON'T: Copy my model and call it your own.



Thank You!





Here are 30 out of the 36 stocks I created predictions for

Links and Resources

<https://annualreport.visa.com/business-overview/default.aspx#:~:text=We%20have%20approximately%2028%2C800%20employees.and%20territories%20around%20the%20world.>

<https://en.wikipedia.org/wiki/Cisco>

<https://money.usnews.com/careers/companies/intuit-60141#:~:text=About%20Intuit&text=This%20large%20company%20employs%2018%2C200.Intuit's%20employee%20benefits%20outlined%20below.>

https://en.wikipedia.org/wiki/Palo_Alto_Networks

https://en.wikipedia.org/wiki/Parker_Hannifin

<https://stockanalysis.com/stocks/smci/employees/>

<https://www.statista.com/statistics/642824/number-of-employees-worldwide-campbell-s-soup-company/#:~:text=As%20of%20August%202%2C%202023.employed%20about%2014%2C500%20people%20globally.>

<https://en.wikipedia.org/wiki/Solventum>

<https://www.bankrate.com/investing/important-financial-ratios/>

<https://www.investopedia.com/articles/fundamental-analysis/09/five-must-have-metrics-value-investors.asp>

<https://finance.yahoo.com/sectors/>

<https://finance.yahoo.com/sectors/technology/>

https://finance.yahoo.com/screener/predefined/sec-ind_sec-largest-equities_technology/

<https://www.schwab.com/learn/story/five-key-financial-ratios-stock-analysis#:~:text=Learn%20how%20these%20five%20key,understand%20a%20stock's%20true%20value>

<https://finance.yahoo.com/>