Stock Predictions vs Actual Price

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Project Intro

Searching for data

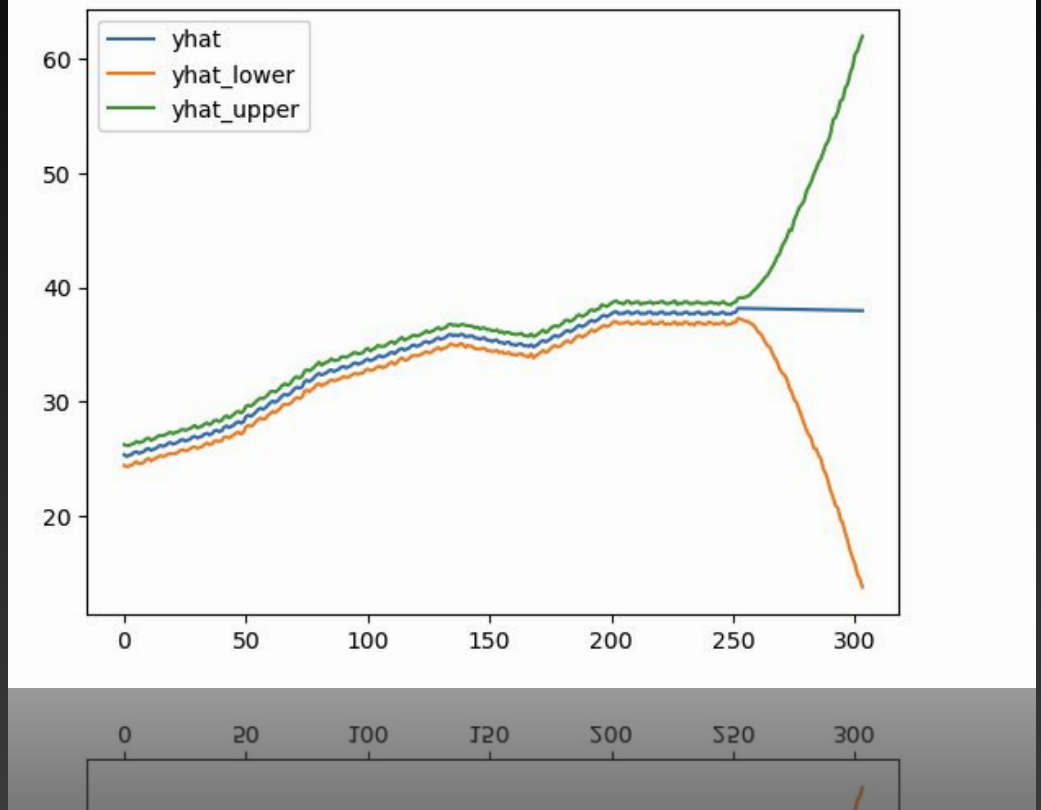
- Searched on Kaggle for datasets to work with, we knew we wanted to work in stocks or finances. (https://www.kaggle.com/)
- Created a repository and added each member as a collaborator
- Found Google stock and Apple stock data on kaggle and imported it into our repo to review the data
- Decided to pull predictions from the Google and Apple datasets
- Filtered the data to exclude already known data to complete predictions on
- Compared prediction data to the known data to visualize prediction accuracy

Apple Stock Predictions
2016 - 2017 year data

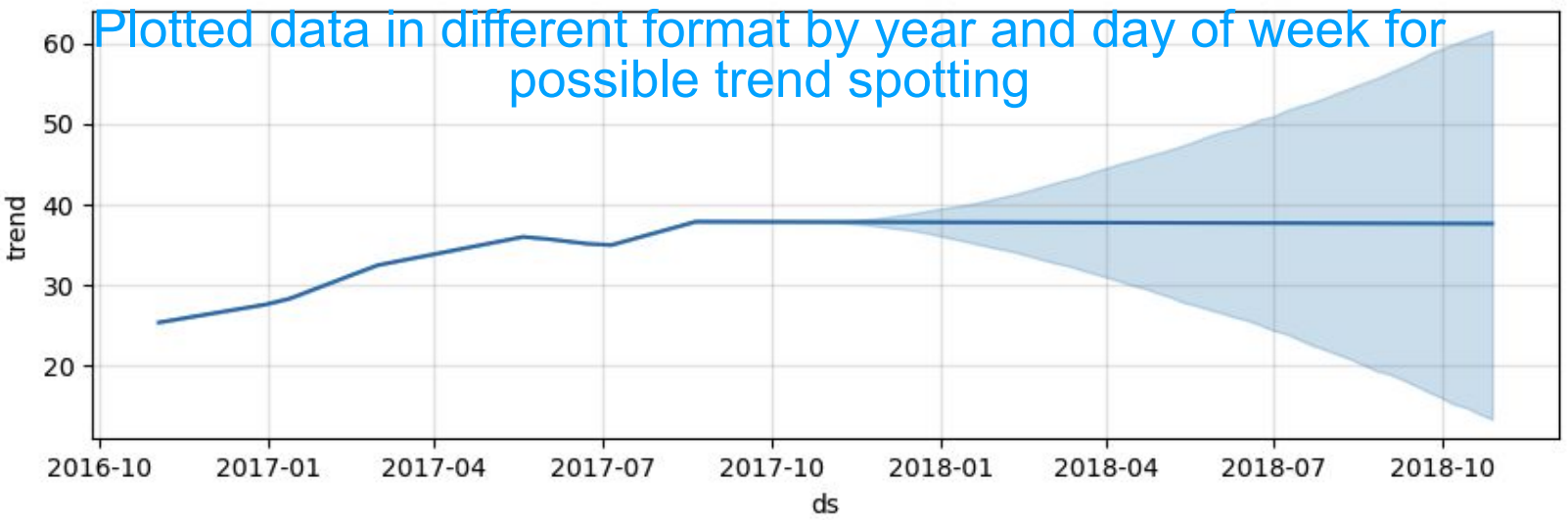
- import Apple_stock_history.csv
- Checked/cleaned the data
- filtered data to necessary columns
- Placed filtered data frame into a Prophet model for predictions
- Plotted predictions

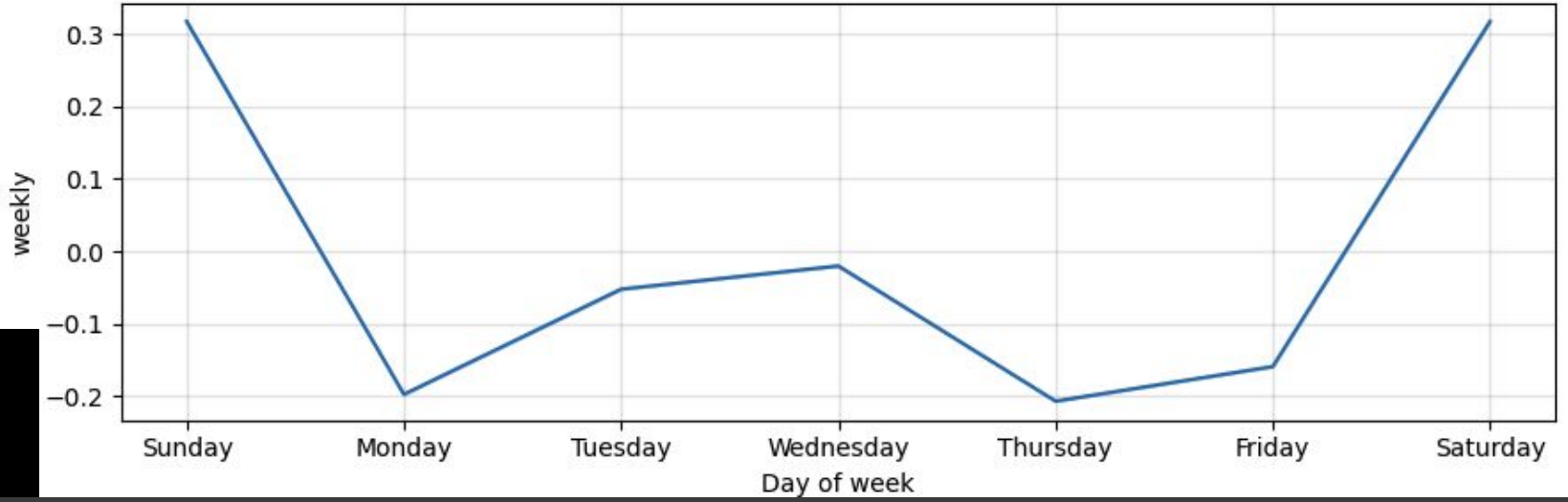
```
# Plotting the data from the filtered prediction df
apple_plot_future[['yhat', 'yhat_lower', 'yhat_upper']].iloc[-720:,:].plot()
```

```
<Axes: >
```



Plotted data in different format by year and day of week for possible trend spotting

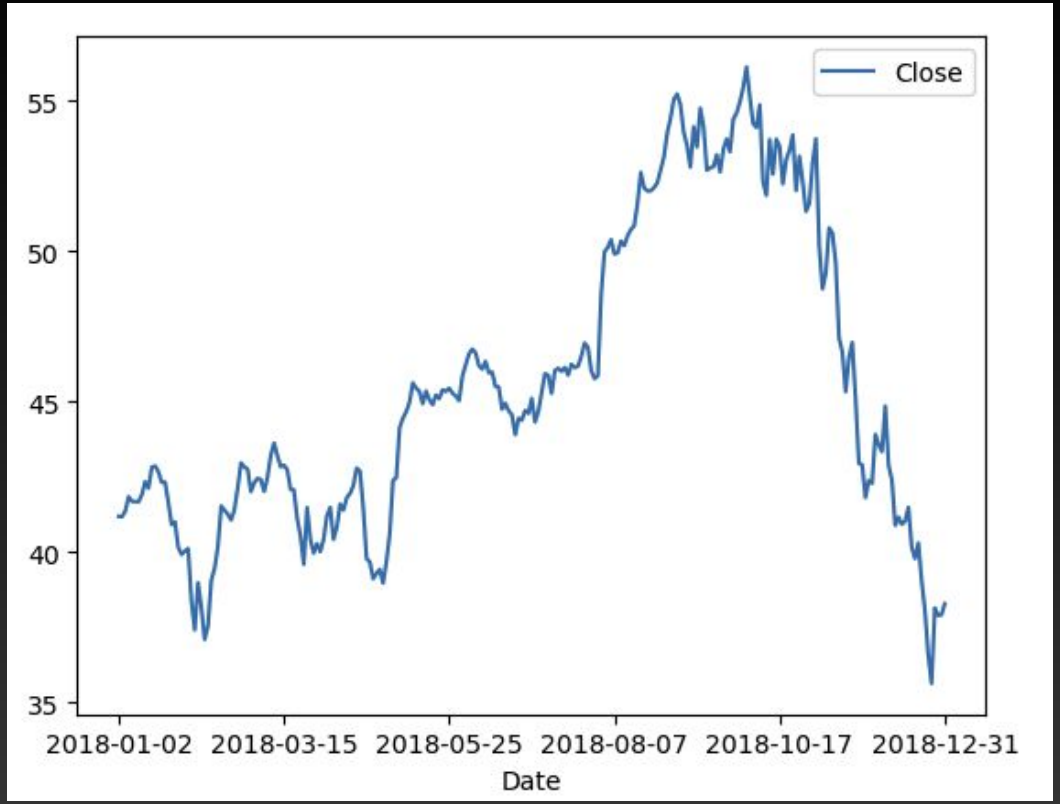




Actual Apple Stock

Filtered 2018 Data

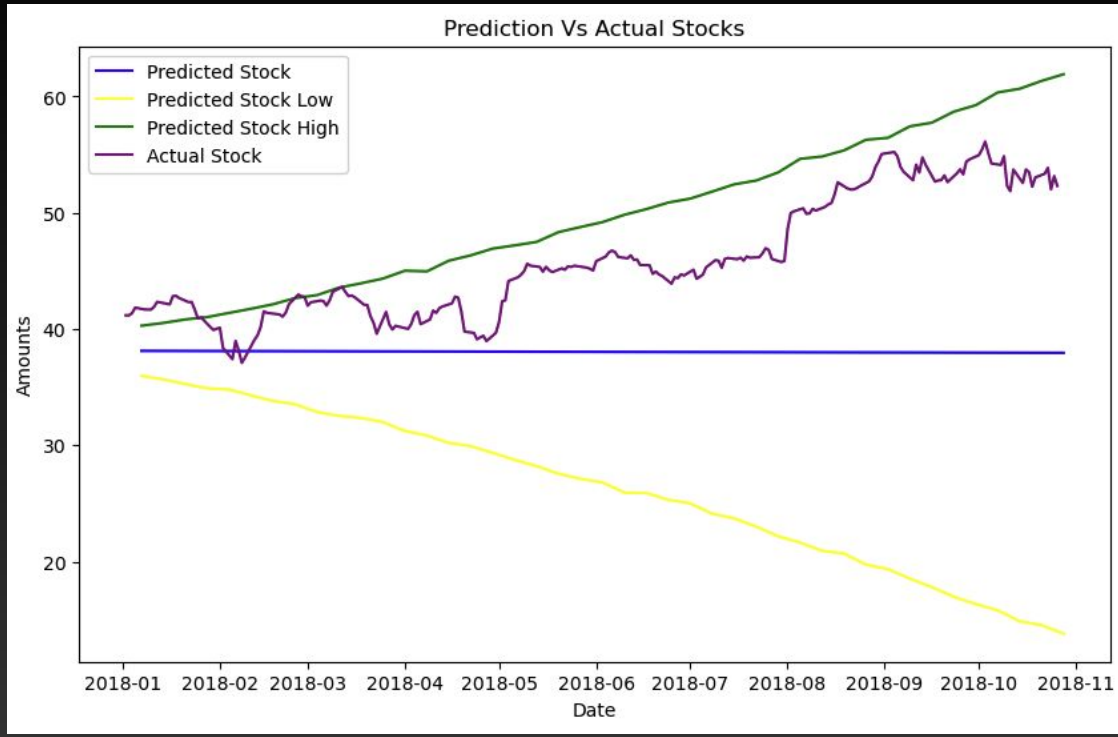
- Filtered the original data frame to only the year 2018 for actual stock prices
  Plotted the data by year to view
- Prepared this data to be compared to the predicted data for 2018



Actual vs Prediction

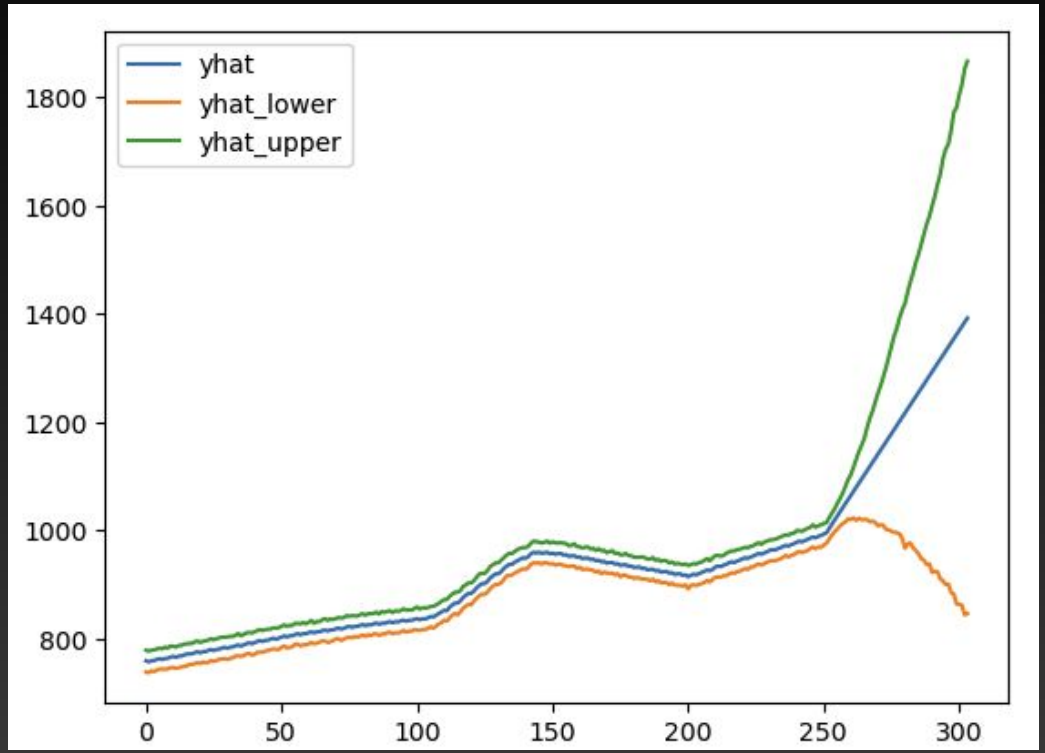
Apple Prediction accuracy

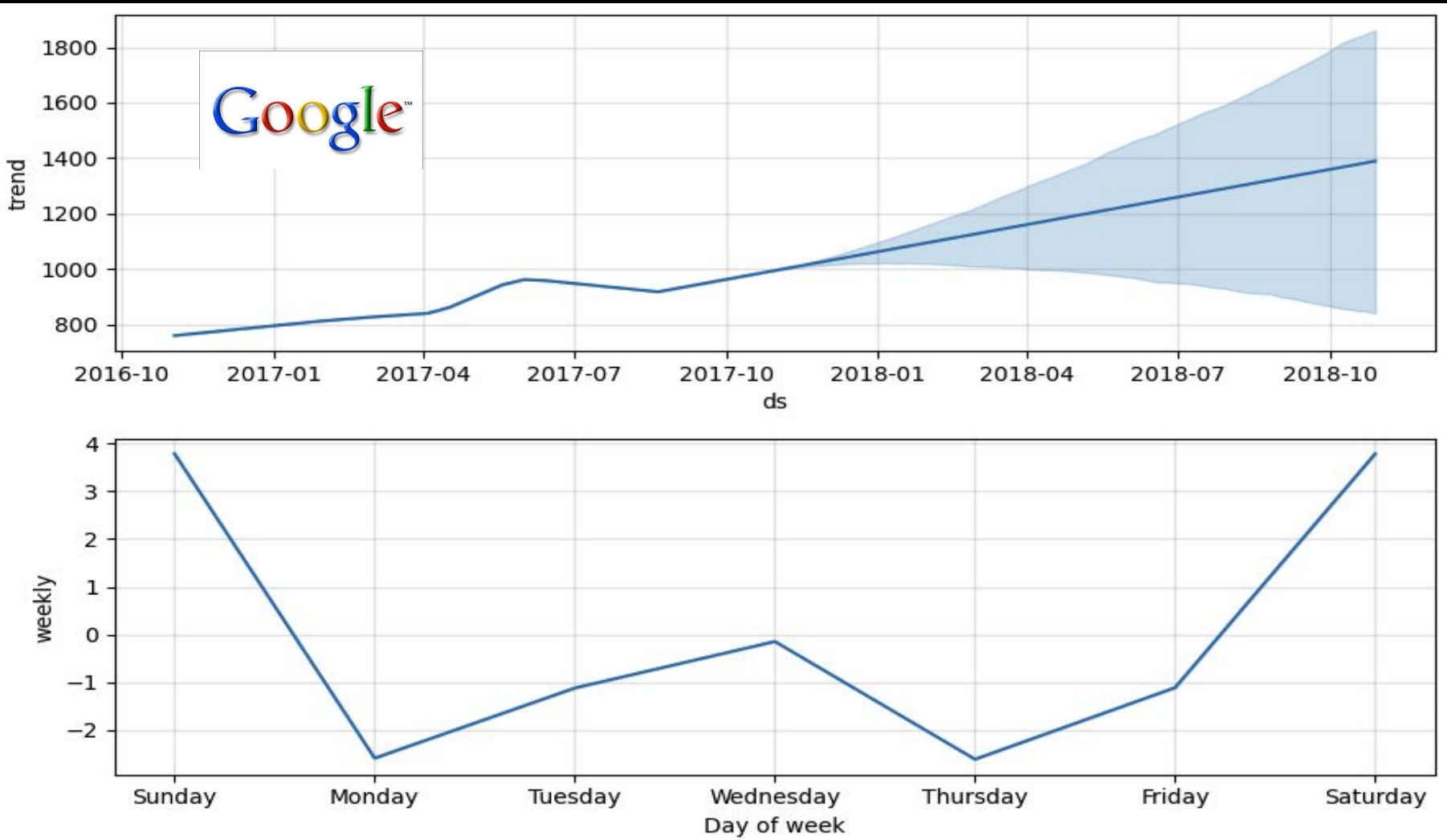
- Plotted the Apple stock predictions and the actual stock price from 2018
- Our figure showed that in this instance the prediction model was accurate



Google Stock Predictions
2016 - 2017 Data

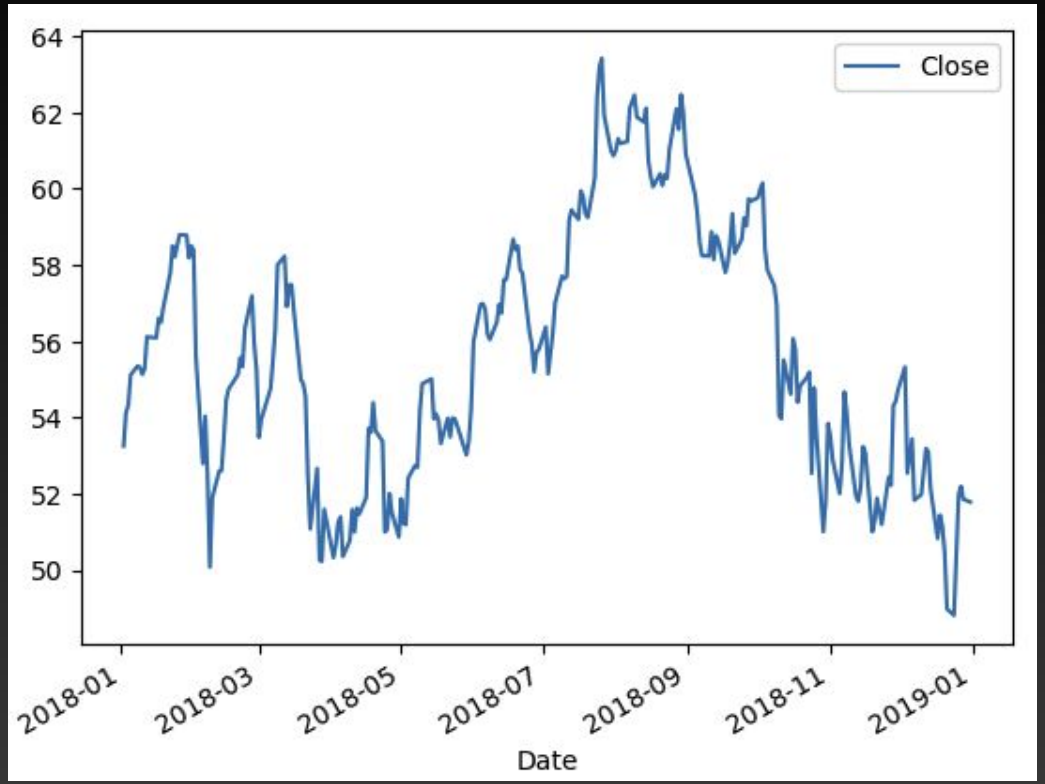
- import GOOG-year.csv
- Checked/cleaned the data
- filtered data to necessary columns
- Placed filtered data frame into a Prophet model for predictions
- Plotted predictions




Google
trend
1800
1600
1400
1200
1000
800
2016-10
2017-01
2017-04
2017-07
2017-10
2018-01
2018-04
2018-07
2018-10
ds
weekly
4
3
2
1
0
−1
−2
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Day of week

Actual Google Stock

- Filtered the original data frame to only the year 2018 for actual stock prices.
  Plotted the data by year for viewing
- Prepared this data to be compared to the predicted data for 2018

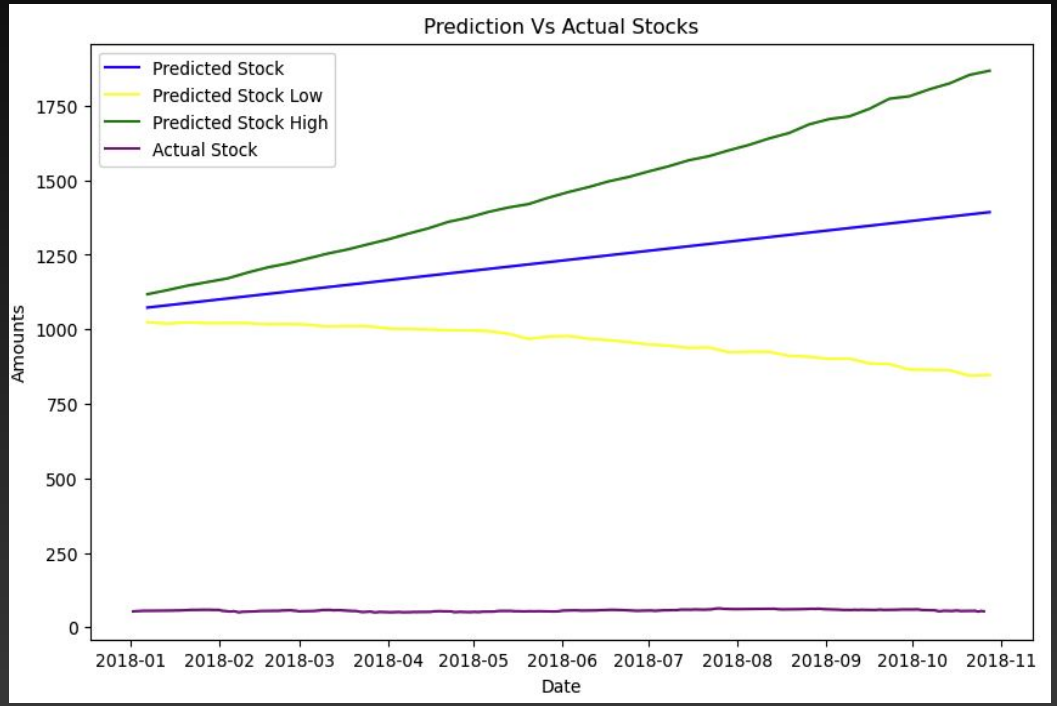


Actual vs Prediction

Google prediction accuracy

- Plotted the Google stock predictions and the actual stock price from 2018
- Our figure showed that in this instance the prediction model was not accurate.

  After some searching online we found that Google had split their stocks in 2014 2:1 and 20:1 in 2022. This was the reason the predictions were inaccurate.



Individual Feature Forecasts

For each feature (Spot, Orders, Volume, Premiums):

- Plot: Each subplot shows the forecast for a specific stock symbol over the next 7 days.
- Lines and Shaded Areas:

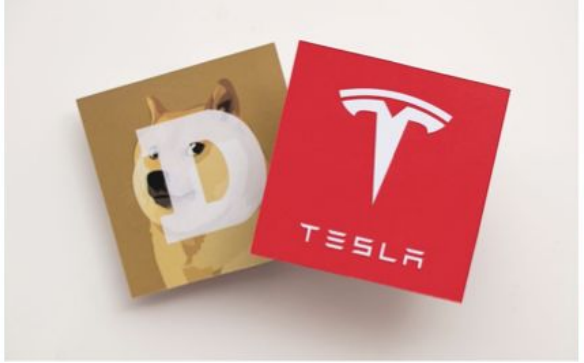
1. Predicted Line (yhat): The central prediction line.
2. Shaded Area (yhat_lower and yhat_upper): The uncertainty interval, representing the range within which the actual value is expected to fall with a certain probability

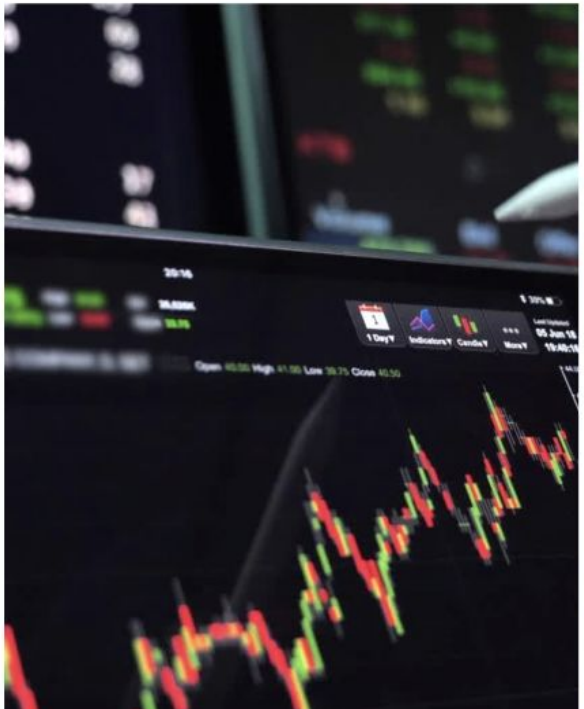
Identifying the Best Stock for Each Feature

The best stock for each feature is determined by the highest predicted value on the last day of the forecast period. Here's how you interpret it:

Detailed Interpretation:

1. Spot Price:
   - TSLA is expected to have the highest future spot price, suggesting it may increase the most in value.
2. Orders:
   - AAPL is predicted to have the highest number of orders, indicating strong market interest.
3. Volume:
   - AMZN is expected to have the highest trading volume, suggesting high liquidity.
4. Premiums:
   - GOOGL has the highest predicted premiums, indicating significant financial investment.



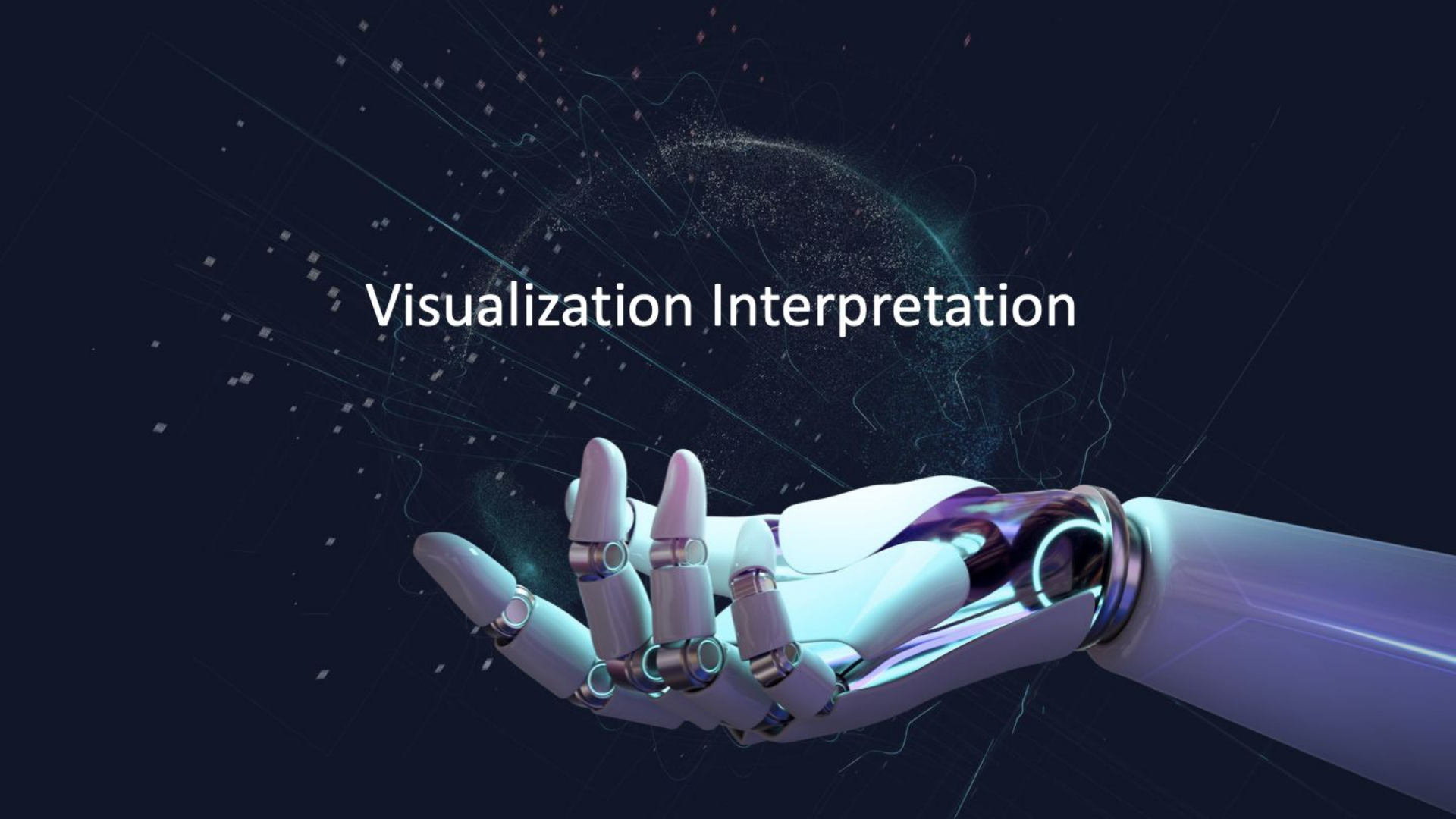


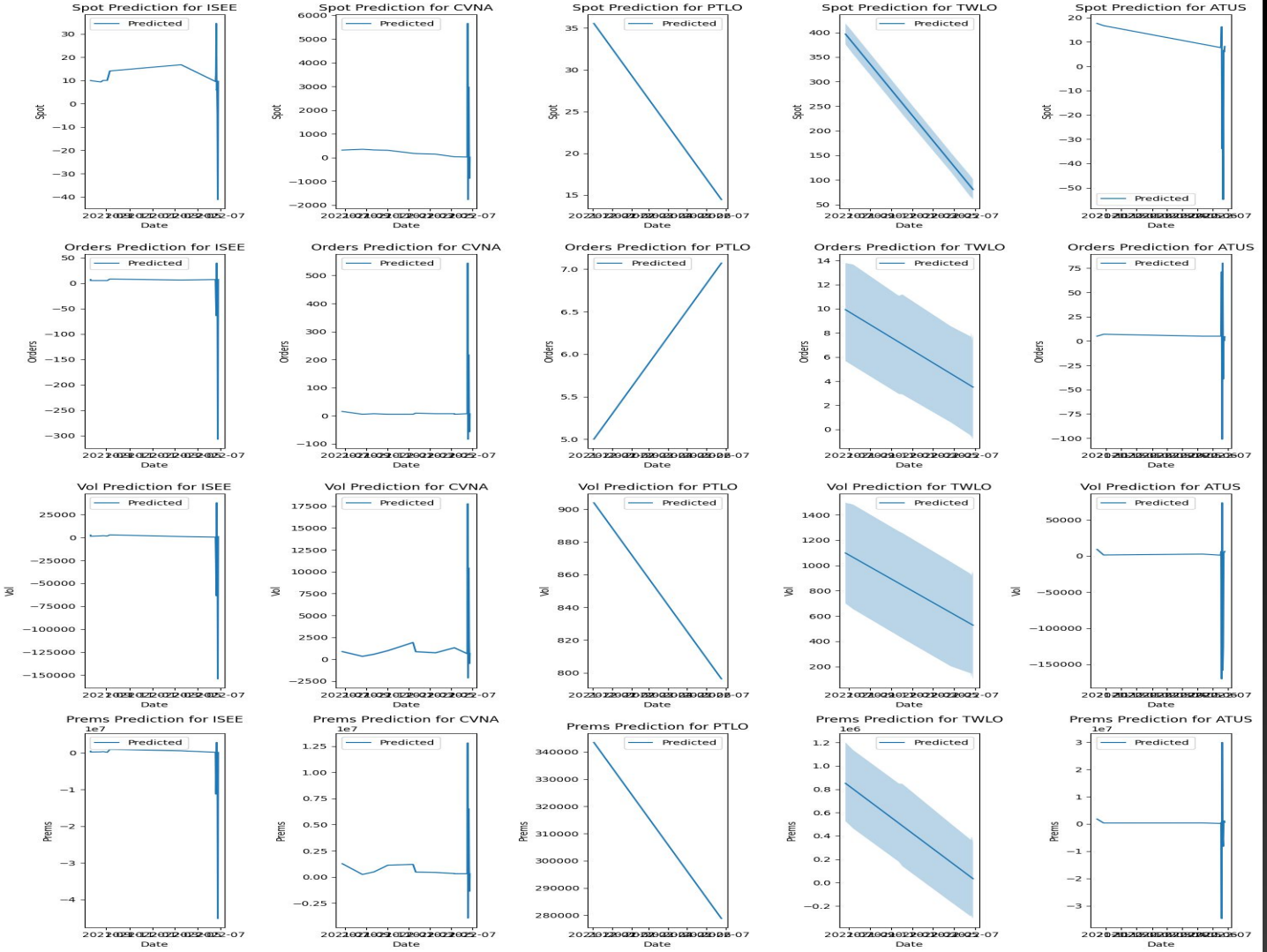
Final Composite Decision:

You might decide to combine these factors. For example:

TSLA might be the best if it appears consistently strong across multiple features.
Alternatively, you could assign weights to each feature based on your investment strategy and calculate a combined score for each stock.

Visualization Interpretation




Spot Prediction for ISEE
Spot Prediction for CVNA
Spot Prediction for PTLO
Spot Prediction for TWLO
Spot Prediction for ATUS
Orders Prediction for ISEE
Orders Prediction for CVNA
Orders Prediction for PTLO
Orders Prediction for TWLO
Orders Prediction for ATUS
Vol Prediction for ISEE
Vol Prediction for CVNA
Vol Prediction for PTLO
Vol Prediction for TWLO
Vol Prediction for ATUS
Prems Prediction for ISEE
Prems Prediction for CVNA
Prems Prediction for PTLO
Prems Prediction for TWLO
Prems Prediction for ATUS
Predicted
Spot
Orders
Vol
Prems
Date

Project Recap

Checking the accuracy of Prophet Analysis

We began this project searching for stock data and what we should do with the data. We came to the conclusion to check and clean the data and then include the Prophet model to predict future stock prices.

After playing with the data and receiving the future stock predictions we decided to compare them to the actual prices in the “real world” datasets. We imported the “real world” data and filtered the datasets to the predicted dates from our Prophet model.

After completing this we plotted all the data and compared predictions against the “real world” data to see the accuracy of the Prophet model.

Conclusion:

After completing our project we have found that the Prophet model is accurate in its predictions, except that it does not account for stock splits.