Stock Prediction Capstone-Sprint 3

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Purpose/Problem

Problem: How can we use data science to predict future stock prices?

Solutions: We can use machine learning to help us predict stock prices such as linear regression.

Datasets/Preprocessing

- 4 Datasets in Total
- S&P 500
- S&P Companies
- S&P Stocks
- GOOG.csv

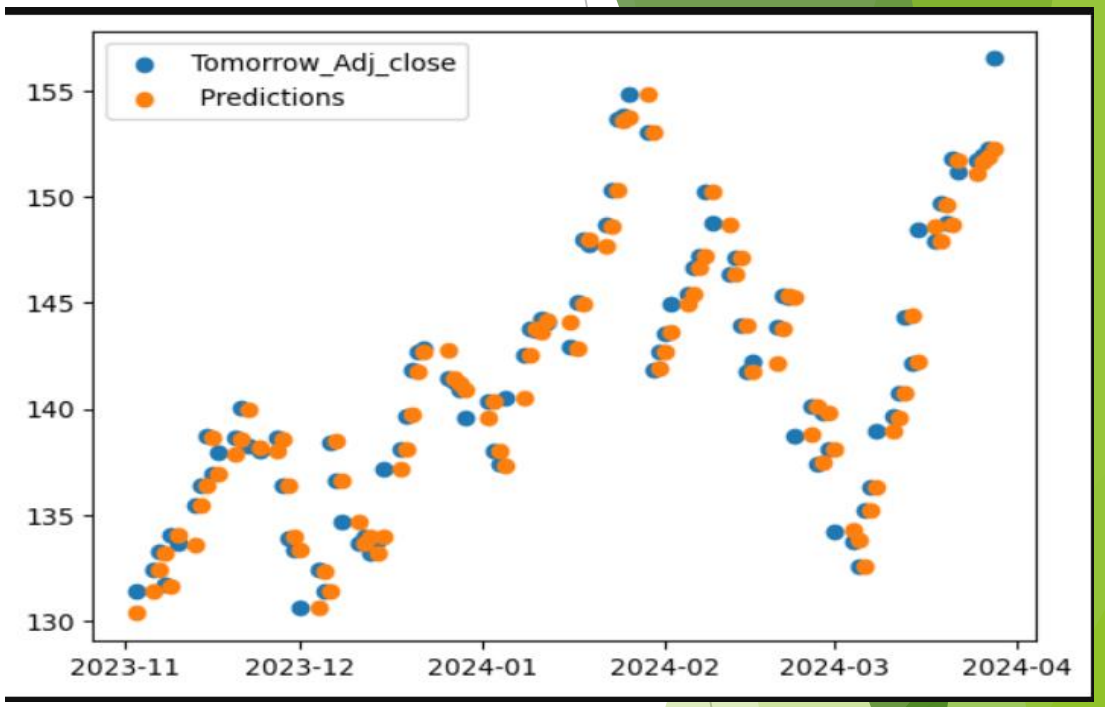
- Focusing on GOOG.csv for modelling

Google Stock/Google Company

- World's Leading technology company
- Stock is integrated into the S&P 500
- One of the largest companies in the world by market capitalization

Linear Regression Model

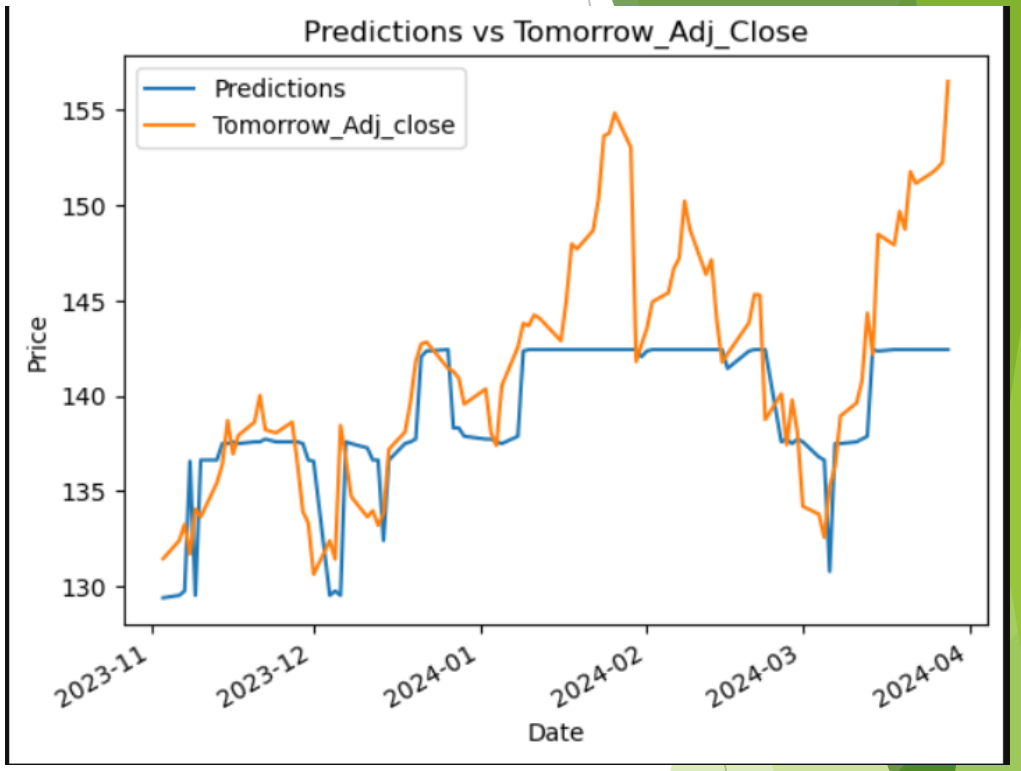
- Results look pretty good
- The errors are very minimal
- Intuition tells me that the results are too good to be true
- Possible overfit



	Model	Metrics	Result
0	Linear Regression	MAE	1.686762
1	Linear Regression	MSE	5.440945
2	Linear Regression	MAPE	0.011938

Random Forest Regressor

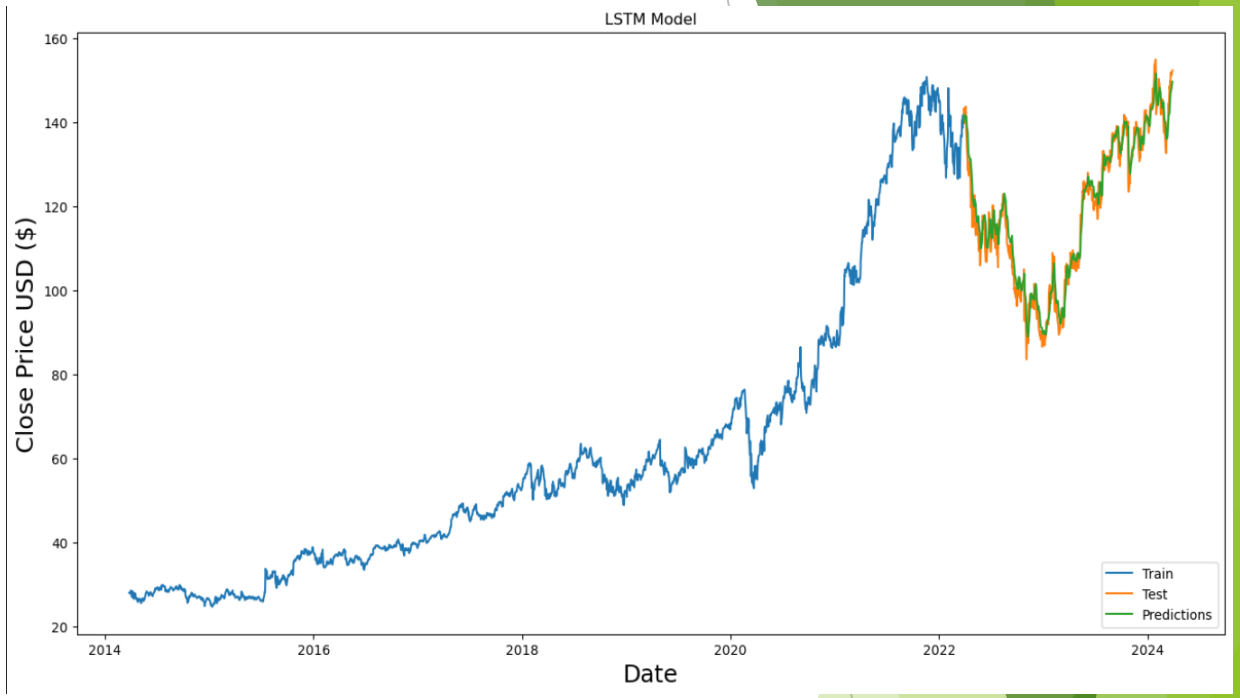
- Performed worse than the Linear Regression model
- Predictions follow the overall trend but it cannot catch the sudden spikes or drops well
- The model may potentially perform better when I add more technical indicators(features) E.g. Moving averages



3	Random Forest Regressor	MAE	3.550635
4	Random Forest Regressor	MSE	22.188249
5	Random Forest Regressor	MAPE	0.024555

LSTM with Time Series

- LSTM performed well
- It followed the trend and the noise pretty well
- Despite having higher errors than linear regression, would probably be my best model
- Look into tuning my model for better performance



6	LSTM	MAE	2.715222
7	LSTM	MSE	12.009594
8	LSTM	MAPE	0.023790

Final Metrics Table

	Model	Metrics	Result
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6	LSTM	MAE	2.715222
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Next Steps

- Check models for overfitting/underfitting(Plotting)
- Tuning my models (GridSearch for my Models)
- Putting models onto Streamlit for Product Demo