

Alphabet Inc Stock Prediction Using TensorFlow and Keras

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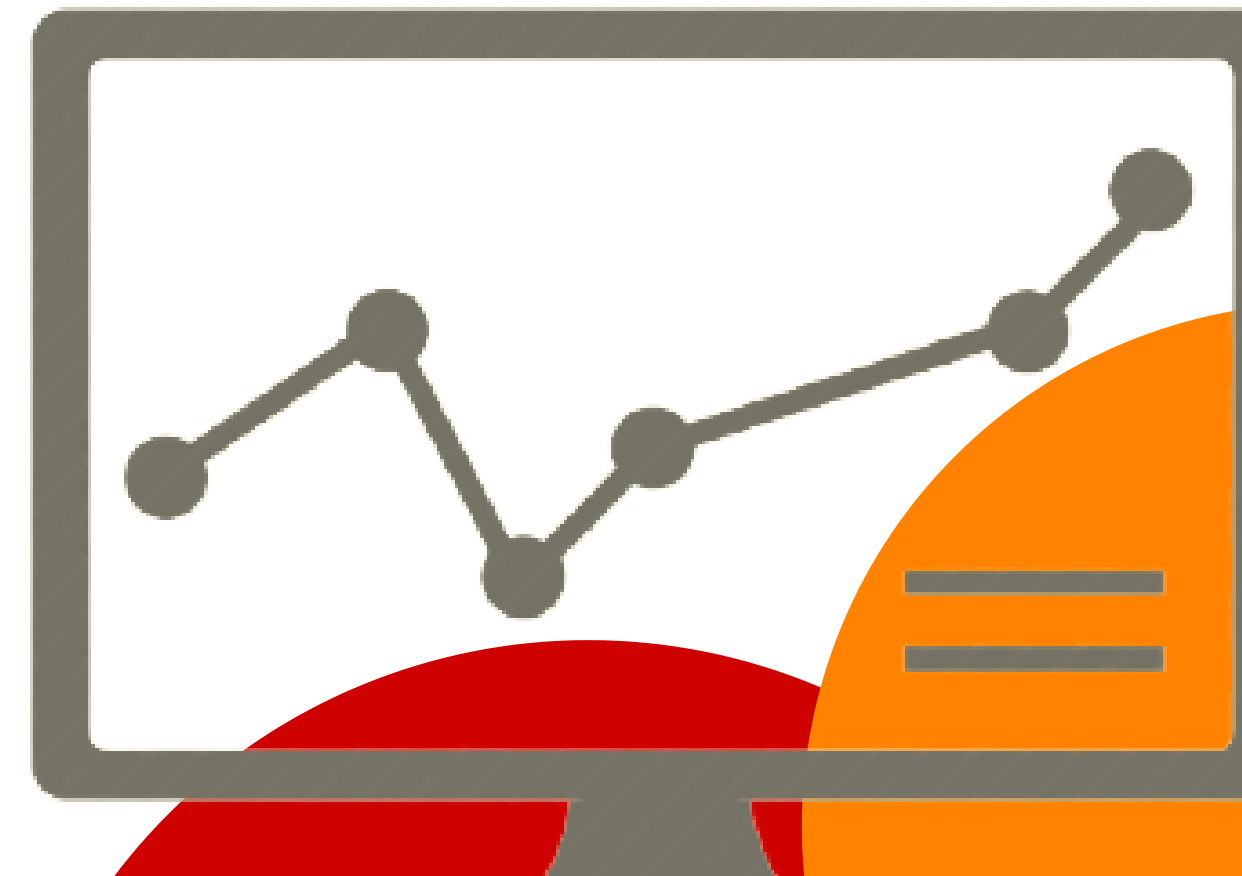
Background

Nowadays stock market are getting more popular in a young generation "Figures from the non-profit foundation AksjeNorge show that more young small investors have entered the stock market in the past year than ever before". This leads into a lot of people getting burned, Knüpfer notes that sharp stock market declines are a reality that happens at fairly regular intervals. This is when investors really lose money.

<https://sciencenorway.no/ageing-demography-economics/young-people-make-the-least-money-on-stocks/1873733>

Objective

- Construct a model that can predict stock market
- Apply TensorFlow and Keras to process a model
- Calculate loss using MAE



Dataset

source : <https://finance.yahoo.com/quote/GOOG/history?p=GOOG>

	open	high	low	close	adjclose	volume	ticker	date
2004-08-19	49.813290	51.835709	47.800831	49.982655	49.982655	44871361	GOOG	2004-08-19
2004-08-20	50.316402	54.336334	50.062355	53.952770	53.952770	22942874	GOOG	2004-08-20
2004-08-23	55.168217	56.528118	54.321388	54.495735	54.495735	18342897	GOOG	2004-08-23
2004-08-24	55.412300	55.591629	51.591621	52.239197	52.239197	15319808	GOOG	2004-08-24
2004-08-25	52.284027	53.798351	51.746044	52.802086	52.802086	9232276	GOOG	2004-08-25
...
2021-09-08	2907.870117	2911.020020	2884.000000	2897.669922	2897.669922	774300	GOOG	2021-09-08
2021-09-09	2897.669922	2913.389893	2888.679932	2898.270020	2898.270020	739900	GOOG	2021-09-09
2021-09-10	2908.870117	2920.379883	2834.830078	2838.419922	2838.419922	1643500	GOOG	2021-09-10
2021-09-13	2864.020020	2883.820068	2845.649902	2869.300049	2869.300049	1008800	GOOG	2021-09-13
2021-09-14	2883.219971	2894.550049	2858.110107	2868.120117	2868.120117	945800	GOOG	2021-09-14

4298 rows × 8 columns

TensorFlow & Keras

TensorFlow

TensorFlow is an end-to-end open source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML powered applications.



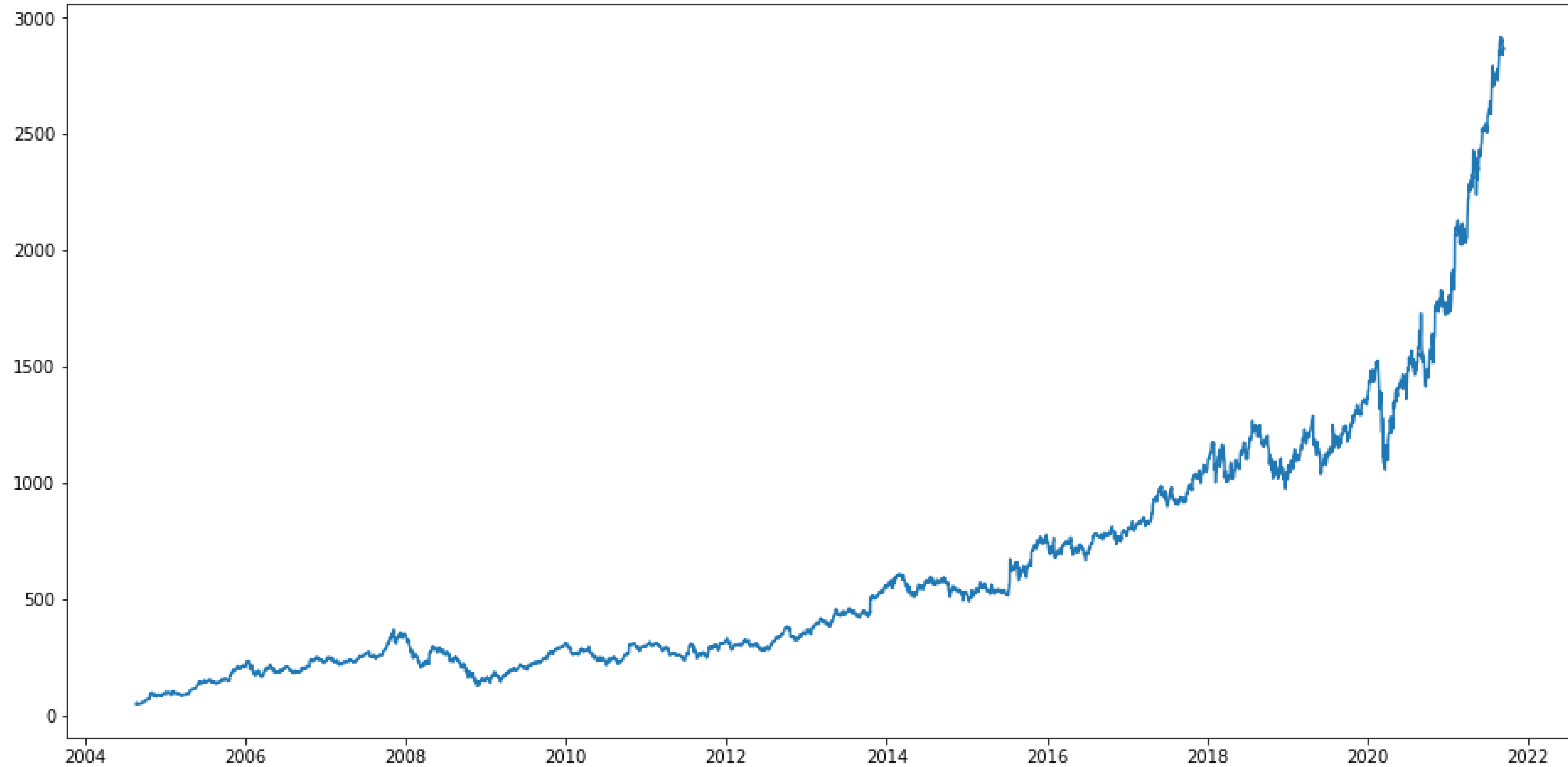
Keras

Keras is an API designed for human beings, not machines. Keras follows best practices for reducing cognitive load: it offers consistent & simple APIs, it minimizes the number of user actions required for common use cases, and it provides clear & actionable error messages. It also has extensive documentation and developer guides.

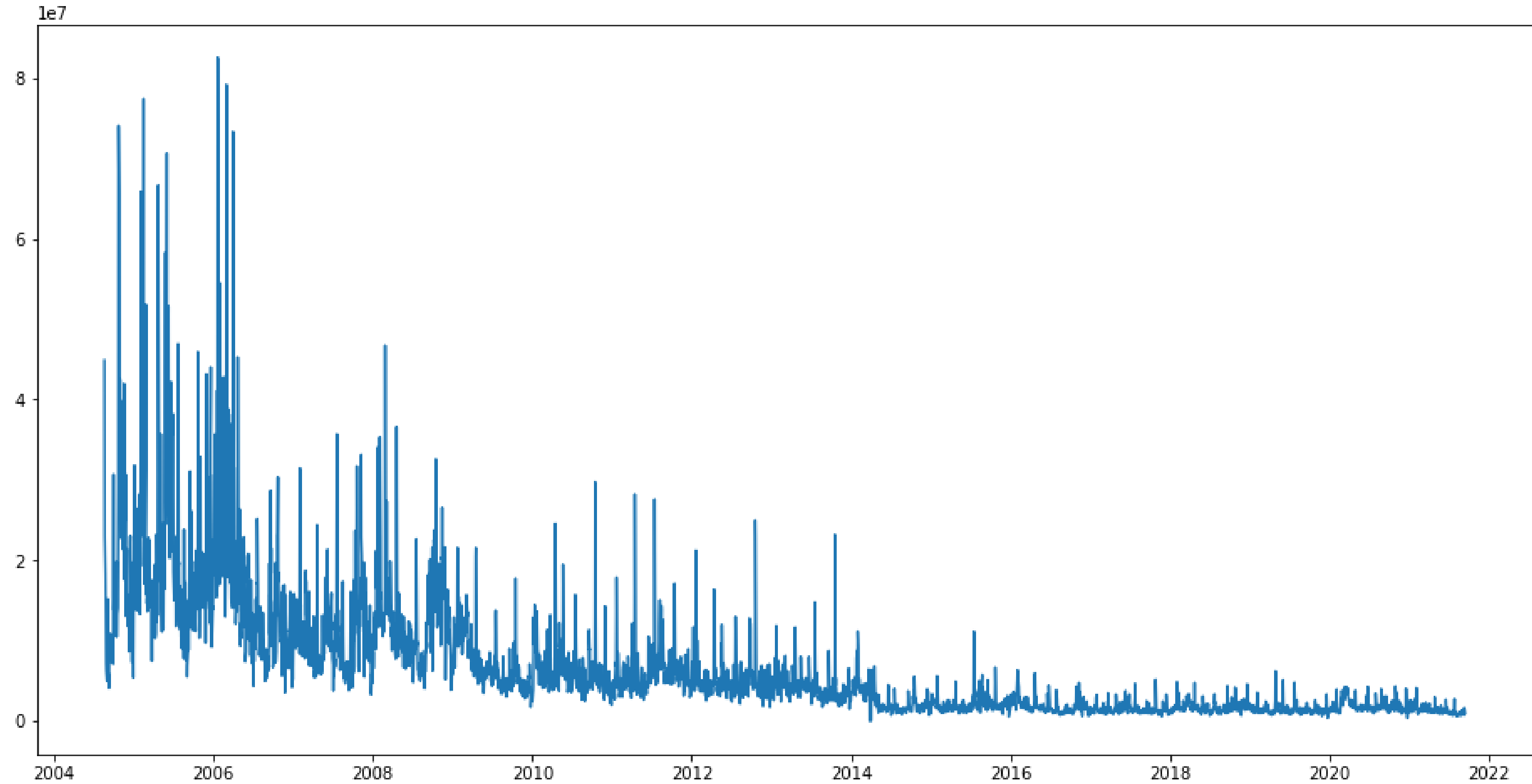


Analysis

Alphabet Inc close price history



Alphabet Inc volume history



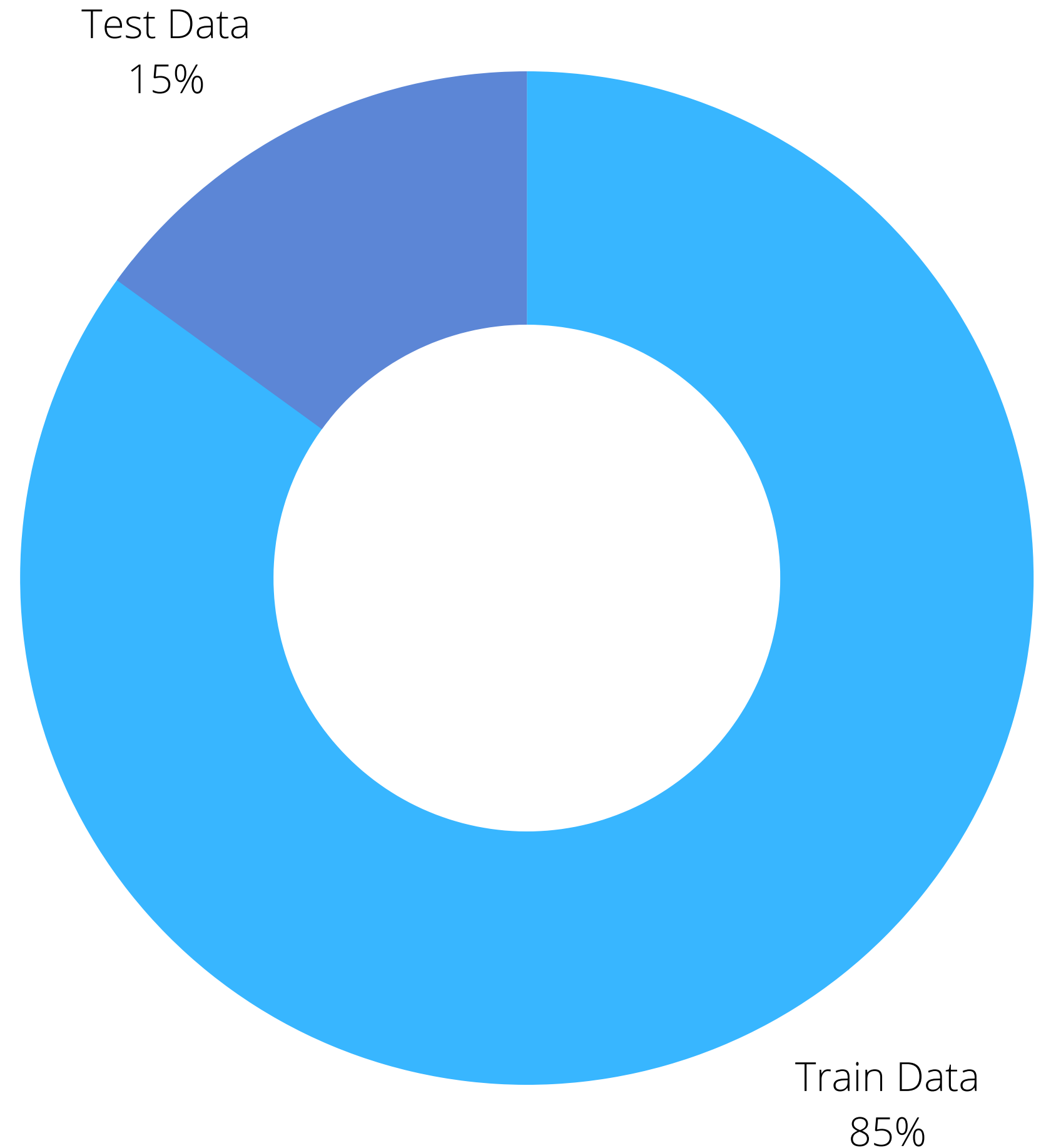
Modelling

Model Parameter

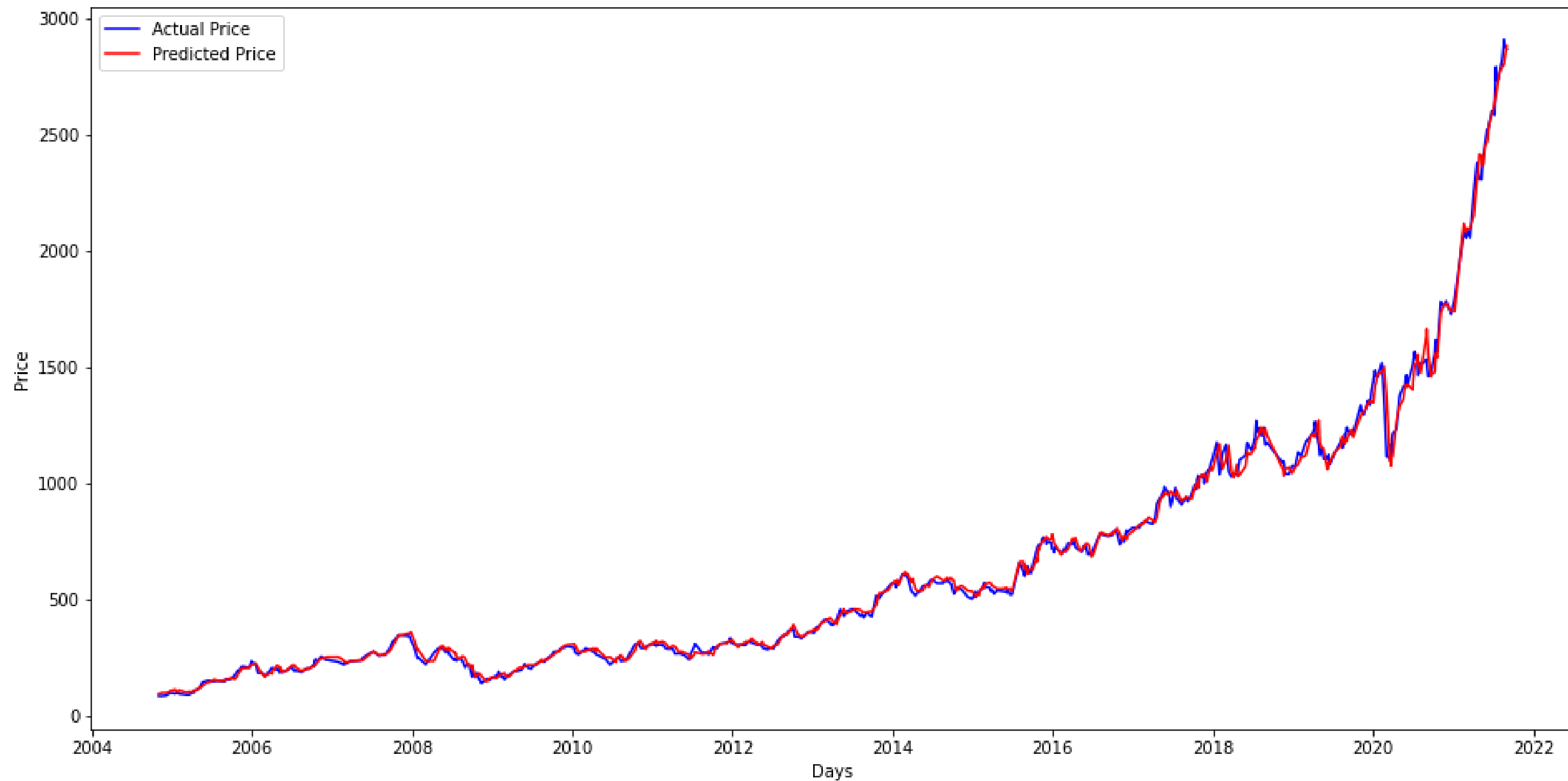
- RNN Layer : 3
- Cell : LSTM
- Unit : 256
- Dropout : 50%
- Bidirectional : False

Training Parameter

- Loss : hubber_loss
- Optimizer : adam
- Batch size : 64
- Epoch : 500
- Ticker : GOOG



Evaluation

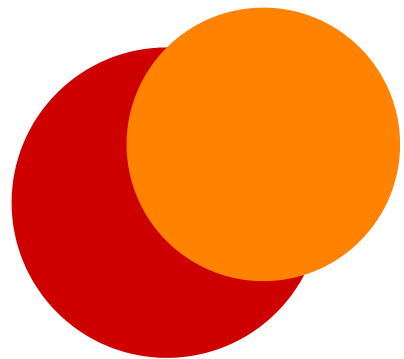


Metrics

- Future price after 7 days is 2890.03\$
- huber_loss loss: 6.141766789369285e-05
- Mean Absolute Error: 70.53619010471128
- Accuracy score: 0.5777080062794349
- Total buy profit: 3041.3683166503915
- Total sell profit: 263.1854934692393
- Total profit: 3304.5538101196307
- Profit per trade: 5.1876825904546795

Summary

- Predicted future price after 1 week is \$2890
- Model has accuracy of 57.7%
- Profit per trade about \$5





Thank You

Project Detail on

https://github.com/raka-raprast/google_stock_prediction_tensorflow_keras