Time Series Analysis of the SPY ETF

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Purpose of Experiment

Business Use Case

Algorithmic driven trading strategy to improve ROI

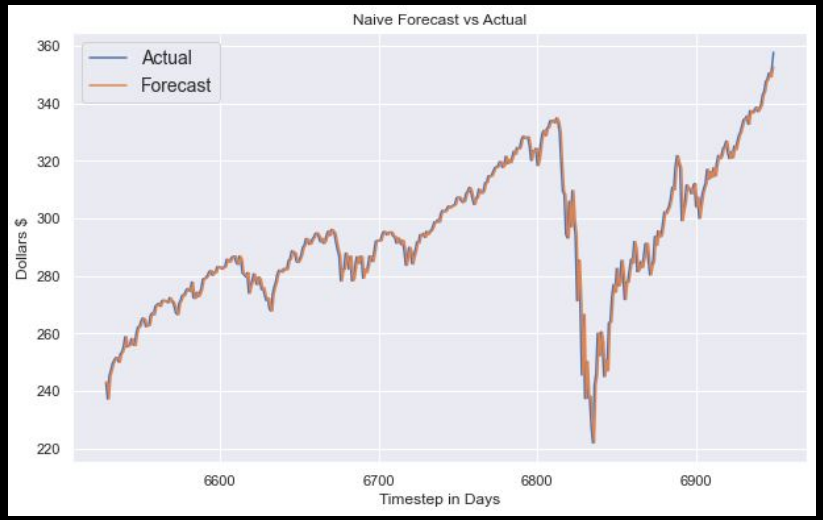
Experiment Goal

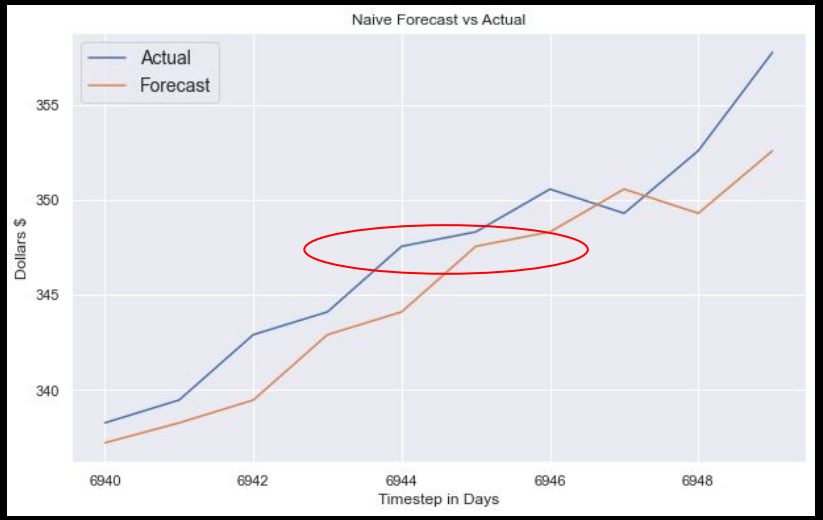
Test if more complex state of the art models outperform simple models

Value Add

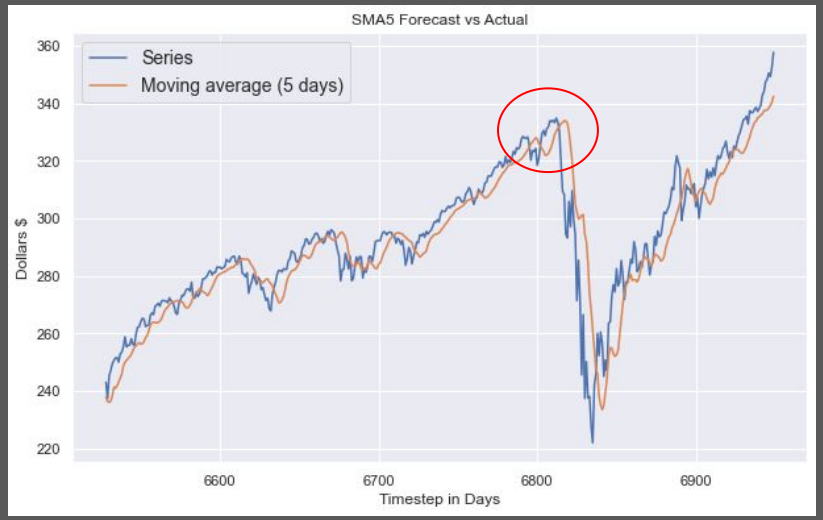
Outperform passive investing returns by actively trading the market autonomously

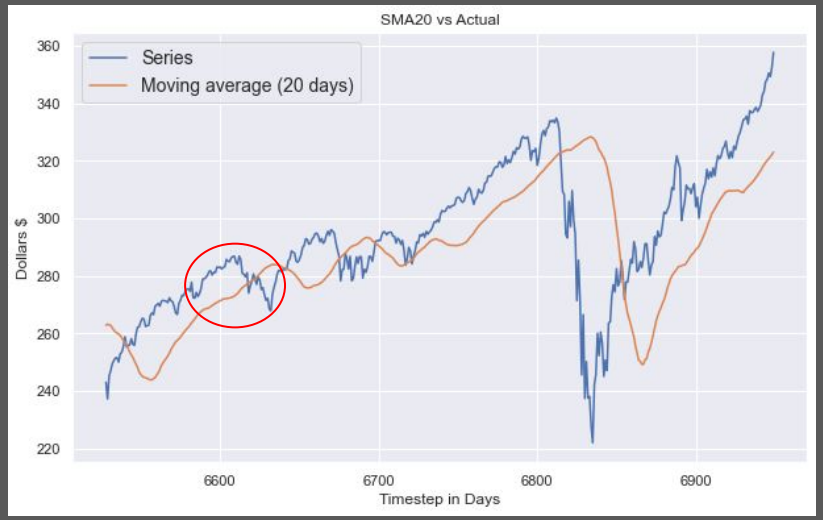
Naive Forecast





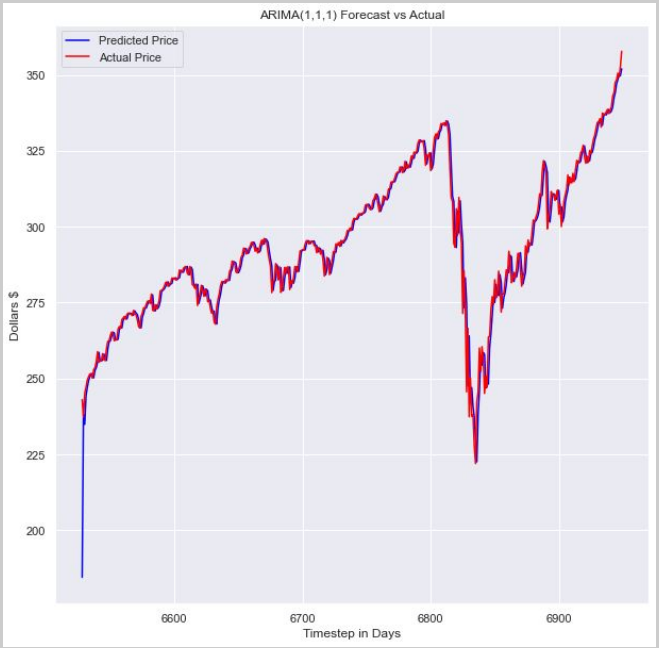
Simple Moving Average
(SMA 5 and SMA 20)

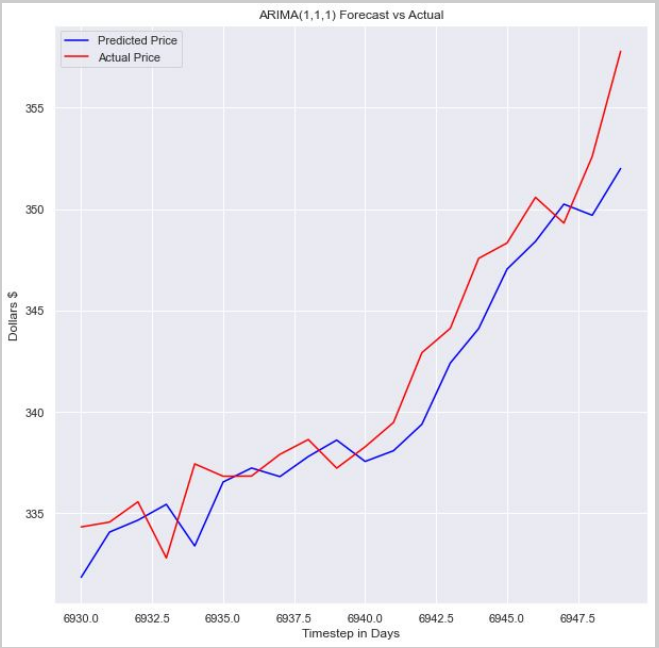




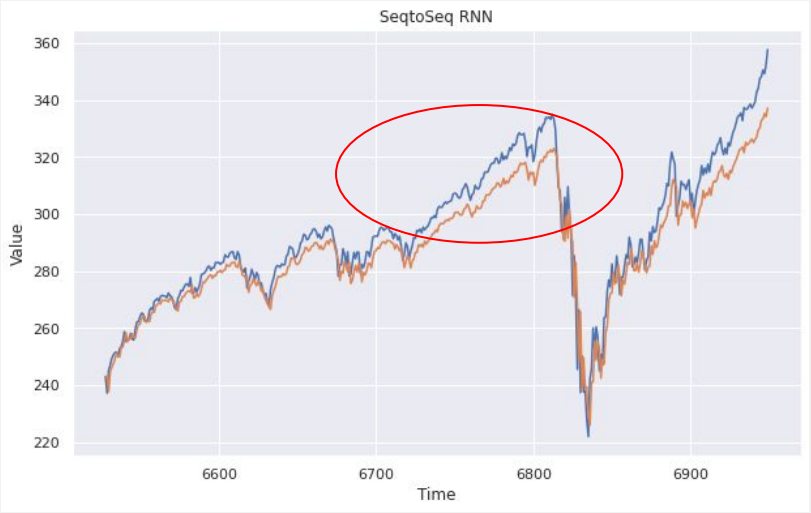
ARIMA Model

AR(1), I(1), MA(1)

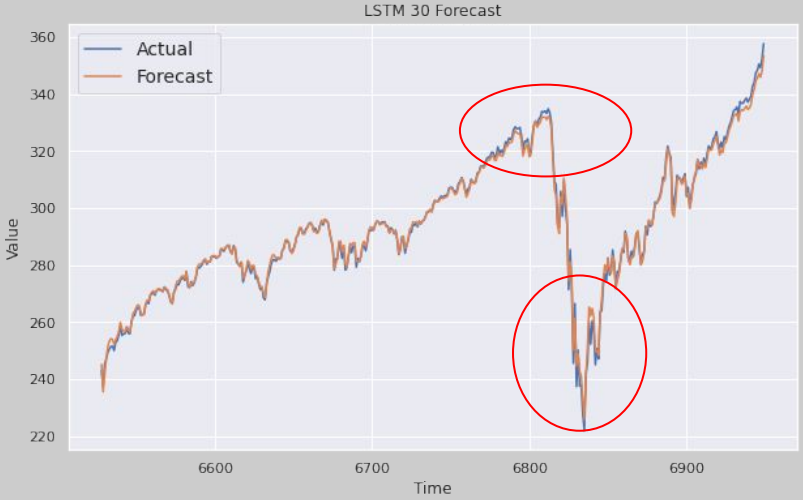




Recurrent Neural Network Model

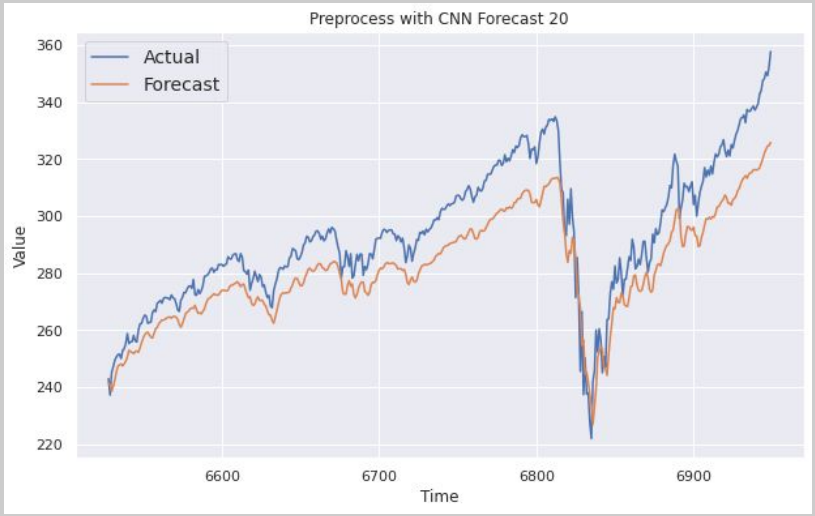


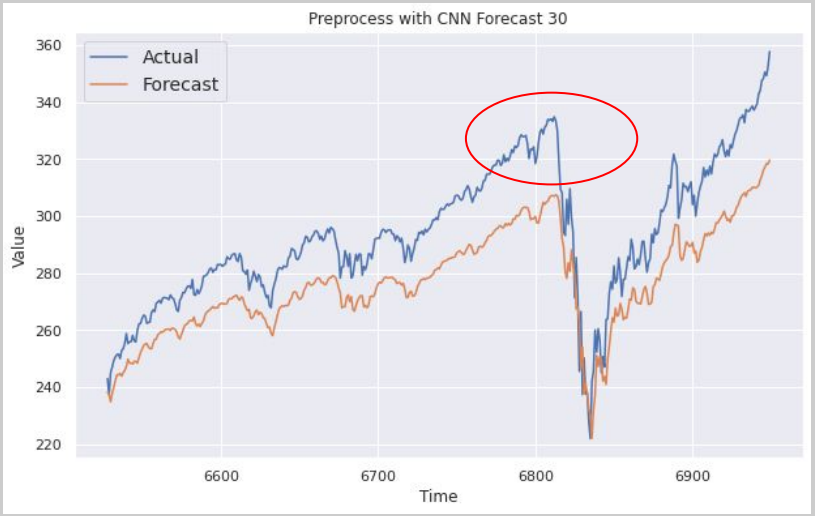
Long Short Term Memory Model



Preprocessing with CNN

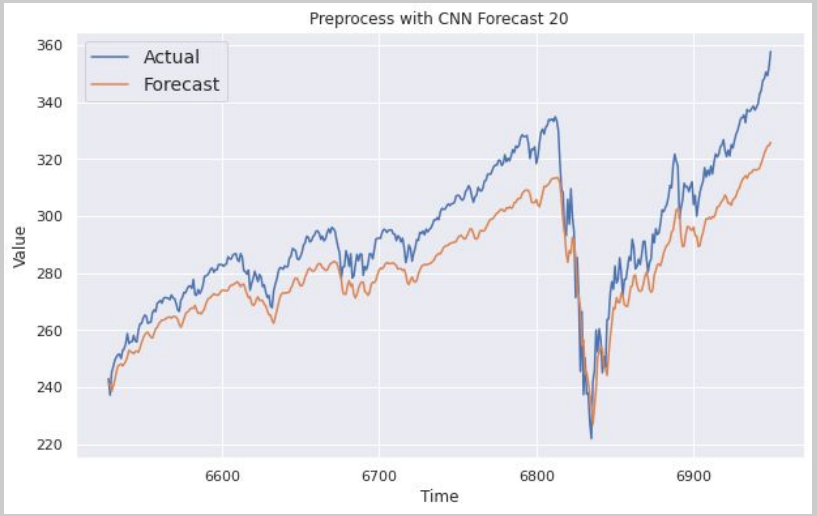
(Convolutional Neural Network)

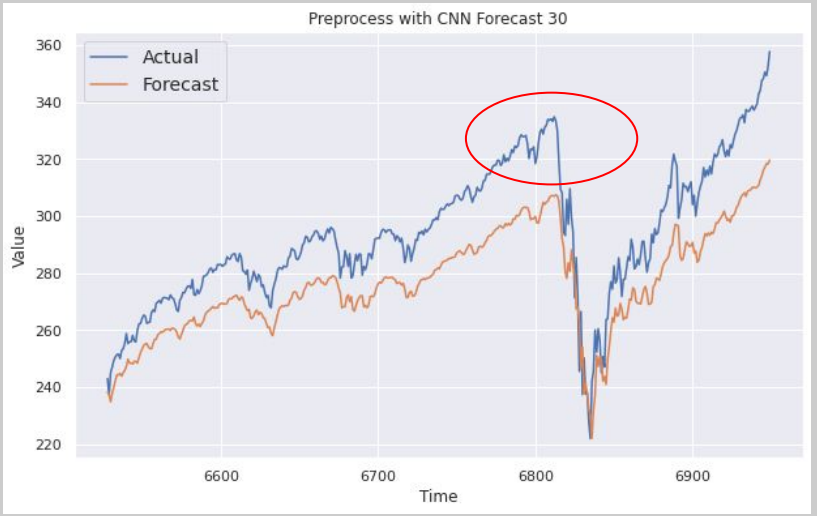




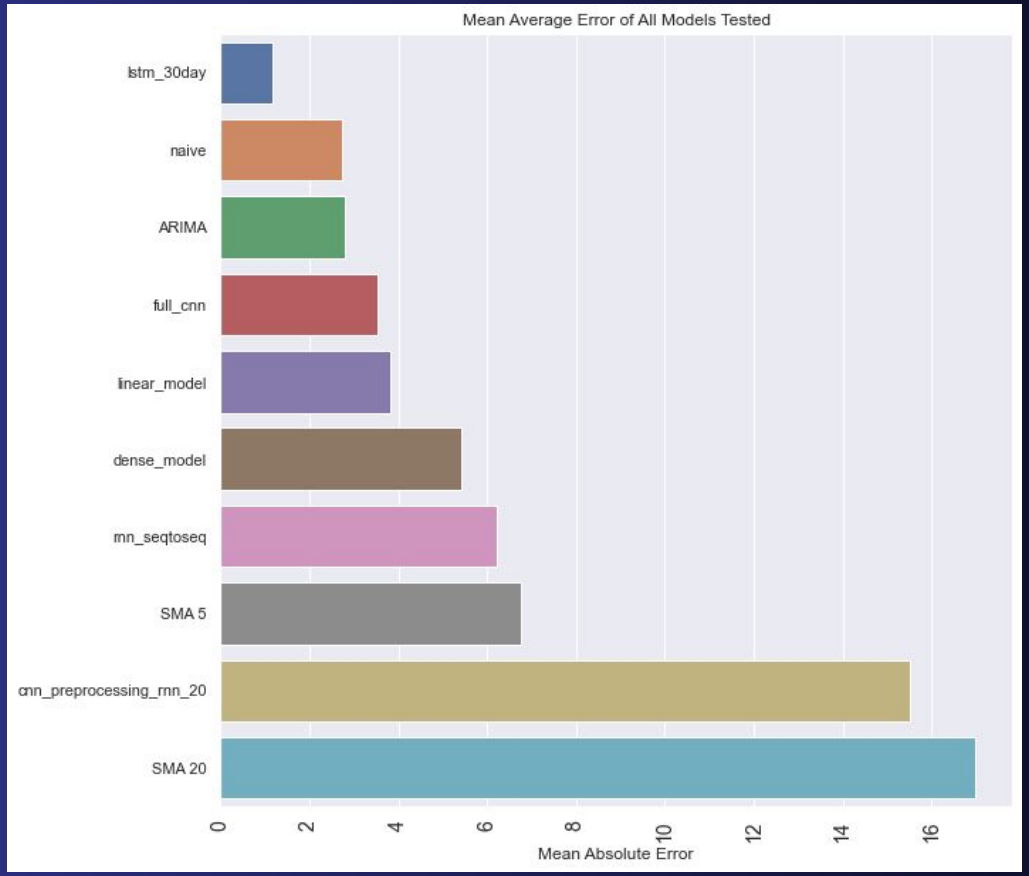
Full CNN

(Convolutional Neural Network)





Full Model Results



Next Steps:

1. Generate Trading Signals from model forecasts
2. Backtest signals to see if it is profitable
3. Iterate through Steps 1 & 2
    a. Potentially integrate multiple models
4. Use API to execute trade orders based on signal triggers from brokerage account

Thanks!

If you have questions:

GitHub

LinkedIn

Email