Initial analysis revealed correlation between SPX and VIX Futures: r = -.75

Question: Can we design a profitable model that will weight “Decreasing VIX (decreasing volatility)” as a signal to “BUY STOCK”?

Linear Regression Model (scikit-learn):

Input = 5-Day Moving Avg of SPX

R2 = 93.8 %

Profit Function: If model predicts ‘Tomorrow’s Price’ > ‘Today’s Price’, then BUY 1 Share of SPX. Hold stock until model predicts ‘Tomorrow’s Price’ < ‘Today’s Price’, then SELL 1 Share of SPX.

Note: All trades are based off the particular day’s closing price.

Initial investment = $2430.01

Profit = $139.45

Percent Yield = +5.7

“Neural networks like Long Short-Term Memory (LSTM) recurrent neural networks are able to almost seamlessly model problems with multiple input variables. This is a great benefit in time series forecasting, where classical linear methods can be difficult to adapt to multivariate or multiple input forecasting problems”

--Jason Brownlee, “Deep Learning for Time Series”

Long Short-Term Model, LSTM (tensorflow.keras):

Inputs: Today’s SPX Price, VIX Futures Price (1-8), 1/STD\_DEV of VIX, SPX Volume, SPX 5-Day Moving Avg

R2 = 87.3 %

Initial investment = $2578.87

Profit = $321.82

Percent Yield = +12.47%



