Stock Market Prediction

- Overview

- Business Understanding

- Data Understanding

- Data Preparation

- Modeling

- Evaluation

Overview

Accurate prediction of stock market asset is a significant and challenging task due to complicated nature of the financial stock markets. Considering the increasing availability and affordability of powerful computational engines, deep learning methods of prediction have proved its efficiency in finance.

Business Understanding

My capstone project is Stock market Prediction. I'm going to build a time series regression model using NN or other advanced techniques to predict the stock market. Stock market prediction aims to determine the future movement of the stock value of a financial exchange. My project is helpful for Stock investors and investment banks to have a better understanding in developing economical Strategy and in making financial decisions.

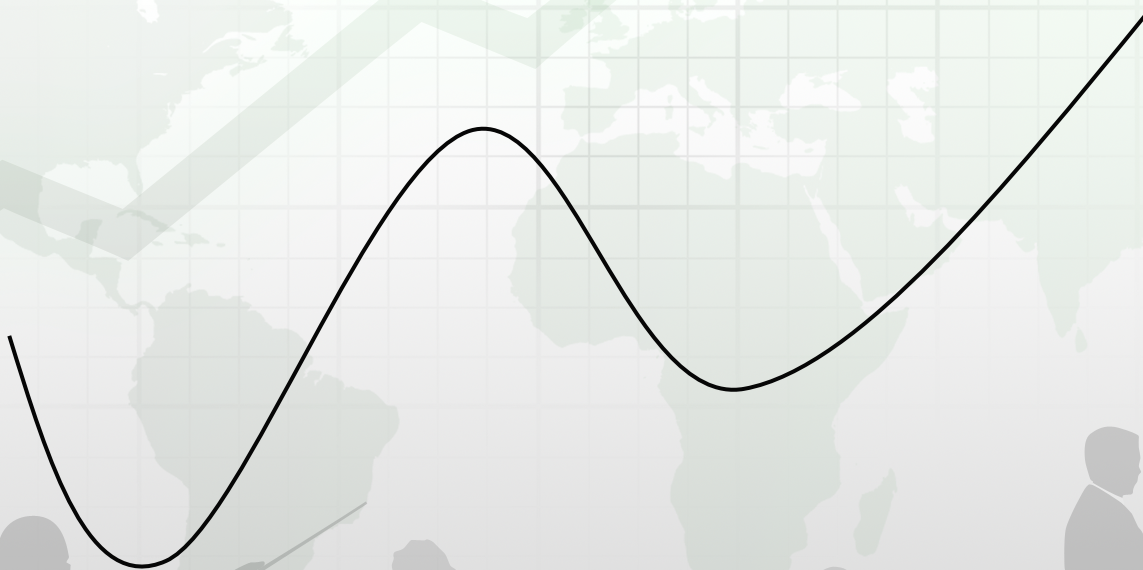# Data Understanding

IEX API and Yahoo Finance

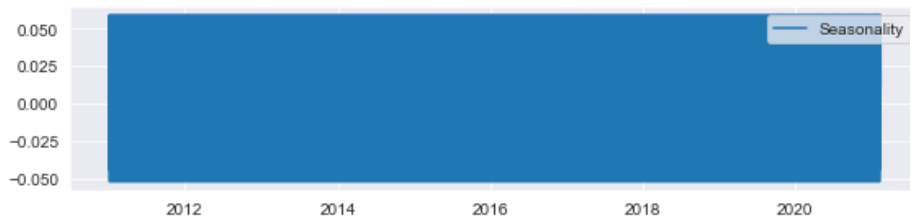| Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
2017-01-03	27.377192	27.502493	27.131317	27.459938	115127600	0.0	0.0
2017-01-04	27.389012	27.545049	27.365371	27.429203	84472400	0.0	0.0
2017-01-05	27.405562	27.627796	27.379556	27.568691	88774400	0.0	0.0
2017-01-06	27.608877	27.935134	27.535588	27.876030	127007600	0.0	0.0
2017-01-09	27.885486	28.235385	27.883123	28.131361	134247600	0.0	0.0

Data Understanding

Trade Strategy
local minimum to buy, local maximum to sell, other time to hold.

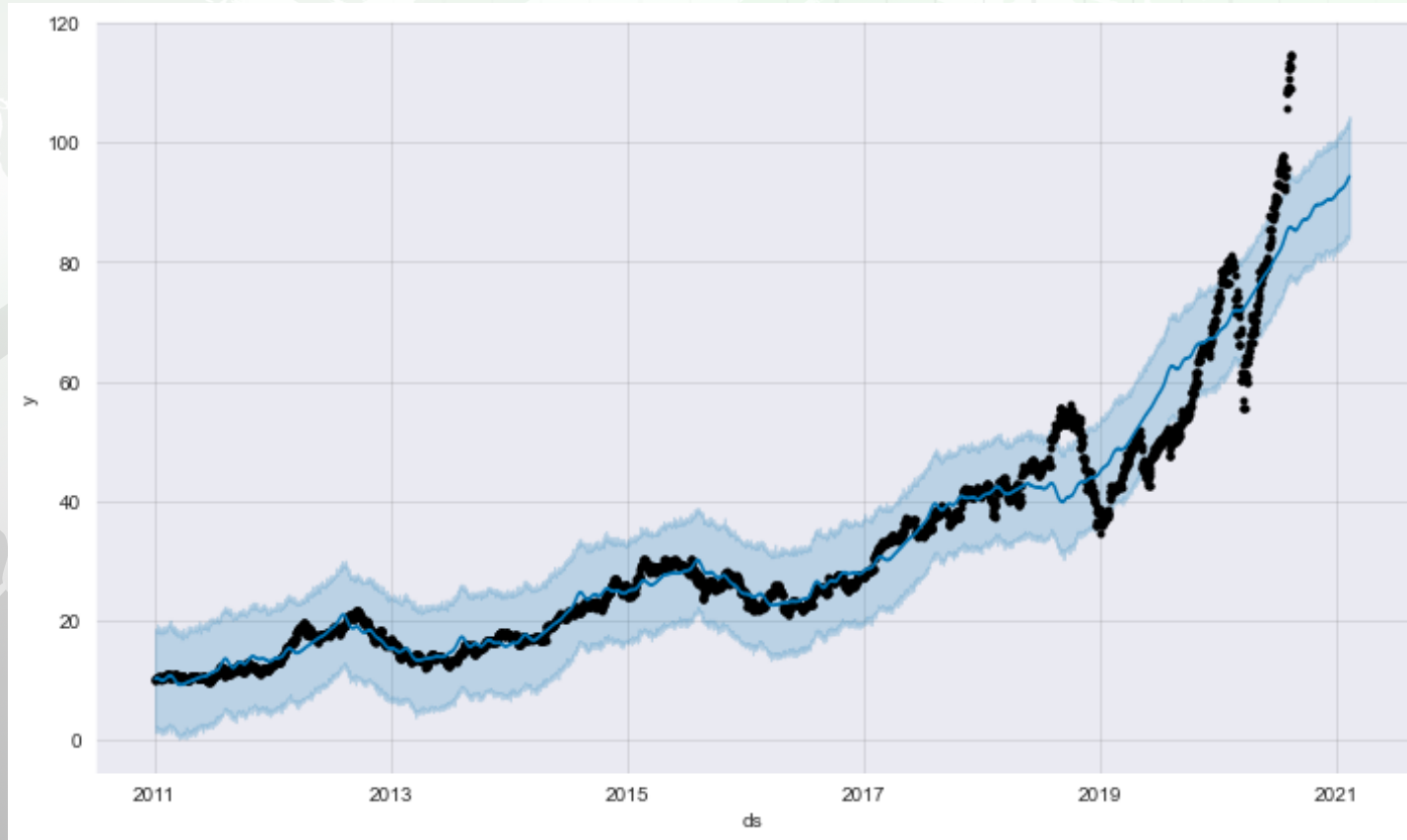# Data Preparation

Modeling

SARIMAX Model with exogenous features

Modeling

Facebook Prophet

Modeling

LSTM

Evaluation

```
SARIMAX RMSE of close price: 1.15
SARIMAX MAE of close price: 0.82
```

```
Facebook Prophet close price train RMSE: 4.34
Facebook Prophet close price test RMSE: 33.89
Facebook Prophet close price train MAE: 2.59
Facebook Prophet close price test MAE: 33.05
```

```
LSTM Networks close price train RMSE: 0.70
LSTM Networks close price test RMSE: 3.28
LSTM Networks close price train MAE: 0.37
LSTM Networks close price test MAE: 2.61
```