

Predicting Stock Prices

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The Problem

Can we use Machine Learning to predict stock prices?

- Stock market is volatile and unpredictable
- Can we create a model that predicts its behavior?

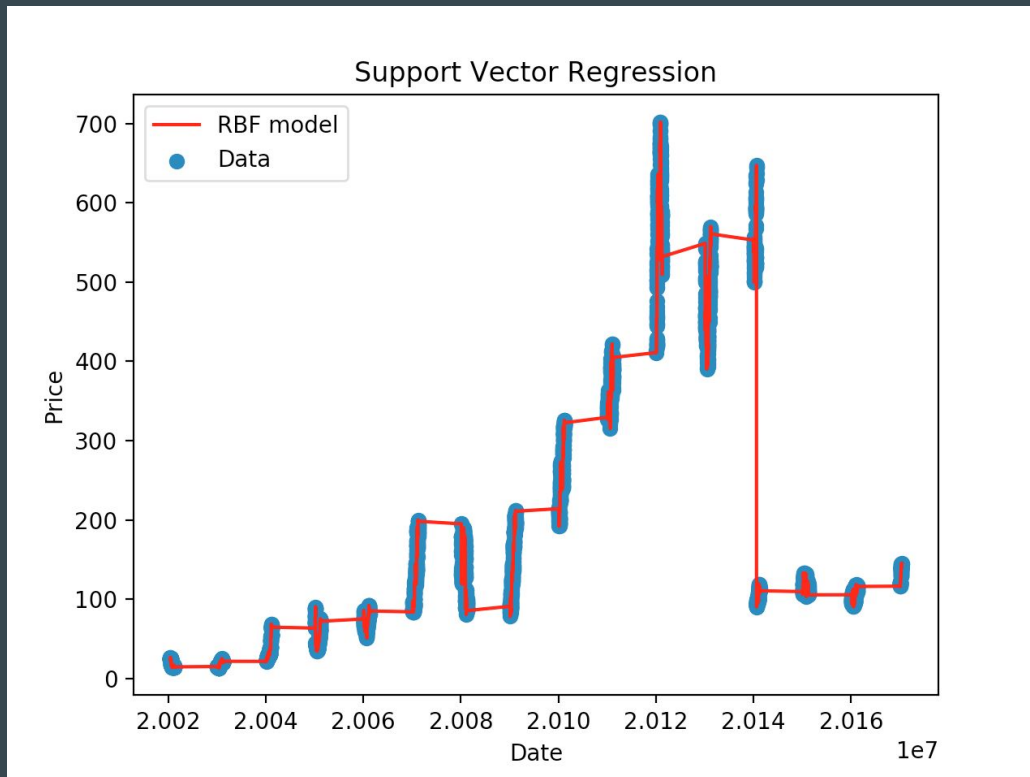
The Process

- Gather the data
 - Use the Yahoo Finance API to get price history for various stocks
- Machine Learning
 - Use machine learning methods to generate a model to predict new stock prices based on the old ones
- Analysis
 - Compare the predicted stock prices to the actual stock prices on certain days

Support Vector Regression

- Plotted our data points, and used Support Vector Regression in SciKit-Learn to generate models.
 - Generated Linear Model, Polynomial Model, and RBF model. RBF model fit the best, so that's what we went with.
- Use the generated model to see what the predicted stock prices on a certain day are

SVR Model for AAPL



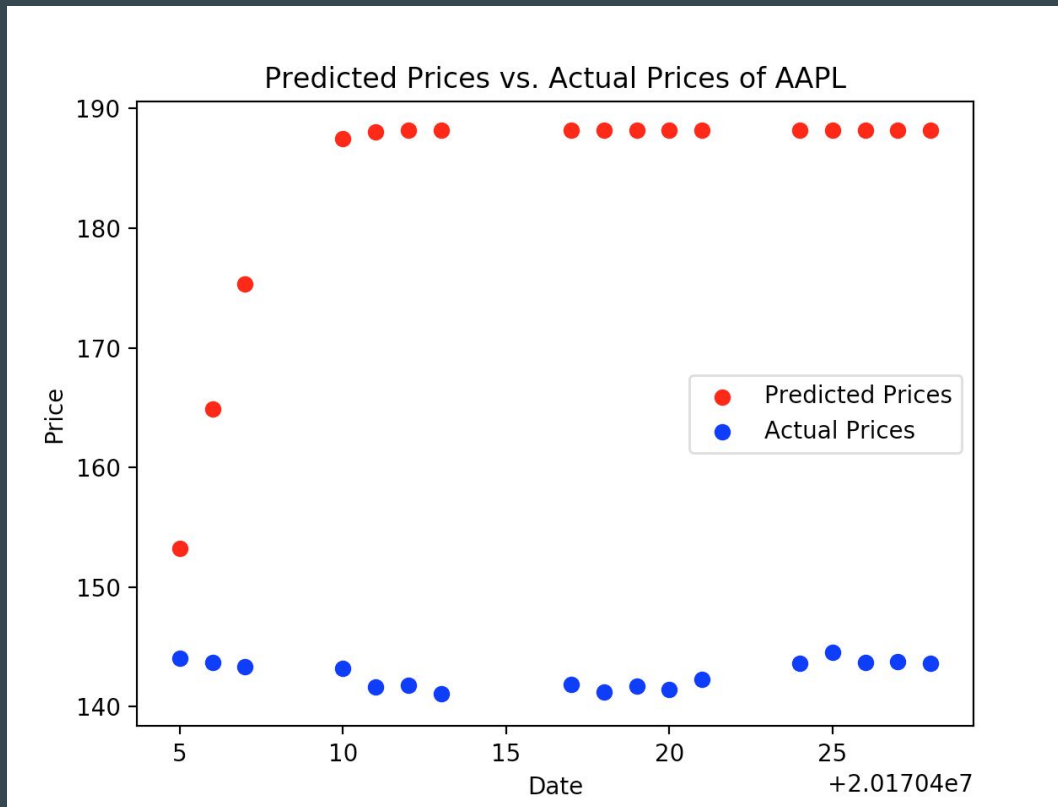
Console Output of Predicted Prices

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The predicted price on 2017-04-05 is 153.245313003
The predicted price on 2017-04-06 is 164.882718812
The predicted price on 2017-04-07 is 175.336304217
The predicted price on 2017-04-10 is 187.506859127
The predicted price on 2017-04-11 is 188.018500349
The predicted price on 2017-04-12 is 188.158078234
The predicted price on 2017-04-13 is 188.1891061
The predicted price on 2017-04-17 is 188.195688106
The predicted price on 2017-04-18 is 188.195688932
The predicted price on 2017-04-19 is 188.195688987
The predicted price on 2017-04-20 is 188.19568899
The predicted price on 2017-04-21 is 188.19568899
The predicted price on 2017-04-24 is 188.19568899
The predicted price on 2017-04-25 is 188.19568899
The predicted price on 2017-04-26 is 188.19568899
The predicted price on 2017-04-27 is 188.19568899
The predicted price on 2017-04-28 is 188.19568899
```

Analysis

- Use the model to predict prices for a range of dates, output them to a csv
- Get actual stock prices for those dates
- Display how our predicted stock prices compare to the actual ones
- More detailed analysis to be done in the report

Predicted AAPL Prices VS Actual AAPL Prices



How to make this better?

- Use Neural Networks to predict prices
- Use sentiment analysis as a factor when predicting price
- Search for more patterns rather than just previous prices
- Factor in outside influences