Stock Prediction

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Problem Statement

- In today's environment, investing can be anxiety-inducing for the inexperienced or beginner investor
  - Uncertainty
  - Lack of confidence
  - Limited Market Knowledge
  - Market Volatility
- Investors need a way to have confidence in their choices

Problem Analysis

- Our solution needs to be able to provide information to investors to improve their stock purchases
- Our model must be able to predict, with reasonable accuracy, whether a stock will increase or decrease in price
  - Must take into account historical trends
- The inherent volatility of the stock market, as well as the many factors that determine a stock's price, make prediction complicated
- Many market trends come about as a result of events that are difficult to predict

Use Cases

- Investors:
  - Whether a particular stock should be bought or sold
  - Informing them about the state of their current investments
  - Granting more confidence in investors' decisions
- Companies
  - View trends in their own stock price
  - Inform company policy and decisions
  - Alert executives to potential issues in performance
  - Gauge public confidence in company stock

AI Algorithm & Model

- Yahoo Finance API
  - Enables retrieval of historic stock performance as well as a number of valuable features, including opening price, daily high/low price, and the volume of shares traded that day.
- Random Forest Classifier
  - Trains many decision trees with random parameters, and then averages the results
  - Assists in avoiding overfitting to training data
  - Useful for identifying nonlinear trends

Results & Demo

Lessons Learned

- The stock market in particular is difficult to predict
  - Many many factors to take into account
  - Stocks can drop almost overnight as technology, market trends, political environment changes
  - Extraordinary events (COVID, Dot Com Bubble, etc.) can introduce extreme volatility
- Improving the accuracy of our model usually implied a tradeoff between bias and variance
  - Had to avoid overfitting our model to the training data

Q&A

Sources

- https://caltech-prod.s3.amazonaws.com/main/images/CollinCamerer-ShortSelling-0.2e16d0ba.fill-1600x810-c100.jpg
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