Predicting and Visualizing Stock Market Data
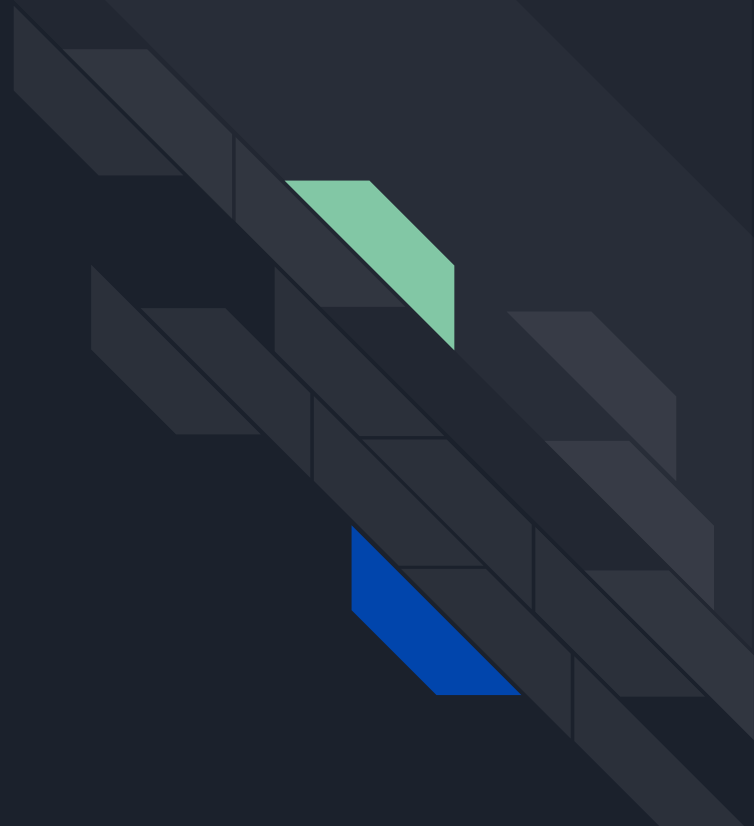
Derek VanBriesen

Business Case

Create a tool that can visualize stock data

- Must be interactive
- Must use machine learning models
- Must be simple to use

The Data

- Stock symbol lists - NYSE and NASDAQ

- Stock price history - Yahoo Finance

- Daily Yield Data - US Treasury

Data Preparation

Data Filtering

- Mid-cap and larger
- No recent IPOs

New Features

- Moving average
- Yield Spreads

New DataFrame

- Sector Indices

Modeling

ARIMA model

- Used Box-Jenkins Method
- Sector Averages

LTSM

- Neural net
- Able to remember values
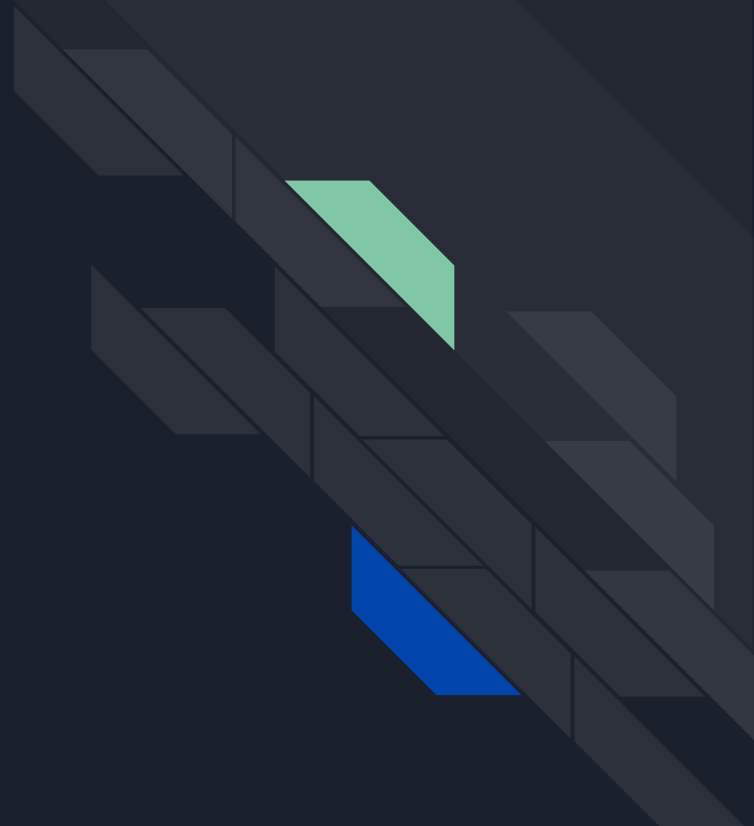
Evaluation

ARIMA

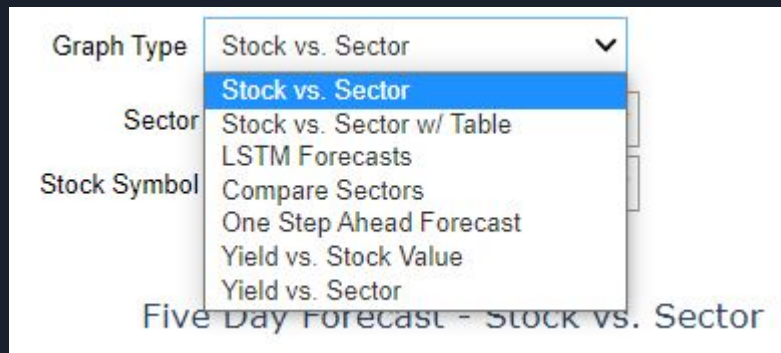- Akaike information criterion
- MSE

LTSM

- MSE

Interface

- Does it meet the criteria?

Deployment

- Operated using only drop-down boxes
- Multiple Chart Options
- Includes Predictions and two ML models

Deployment

Sector Indices

	value
106.3995	Health Care
103.6345	Technology
103.4913	Miscellaneous
102.5869	Basic Indust...
102.2993	Finance
101.7269	Capital Goods
101.5818	Energy
101.1749	Transportation
100.4754	Consumer Non...
100.3971	Consumer Ser...
100.3943	Consumer Dur...
97.9332	Public Utili...

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variable
- Basic Industries
- Capital Goods
- Consumer Durables
- Consumer Non-Durables
- Consumer Services
- Energy
- Finance
- Health Care
- Miscellaneous
- Public Utilities
- Technology
- Transportation

date

Yield Curve vs. Sector Index

Future Work

- Additional plots

- Continue Tuning LTSM

- Longer time series

- Use LTSM on sector indices

Citations

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Thank you for listening!

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