

Stock Price Prediction

Using a Recurrent Neural Network



Disclaimer

The results of this project and any 'recommendations' or insights provided herein are for educational and informational purposes only. They do not constitute financial advice or recommendations. Please consult a qualified financial advisor before making any investment decisions. The author is not responsible for any financial losses or consequences resulting from the use of this information.



Summary

Goal: To provide actionable insights that can help retail investors make more informed investment decisions.

1. QQQ CAGR is 6.29%
2. Best returns in Oct
3. Poor performance in Feb, June, and, Sept



Outline

- 1 **Business Problem**
- 2 **Data & Methods**
- 3 **Results**
- 4 **Machine Learning**
- 5 **Conclusions**

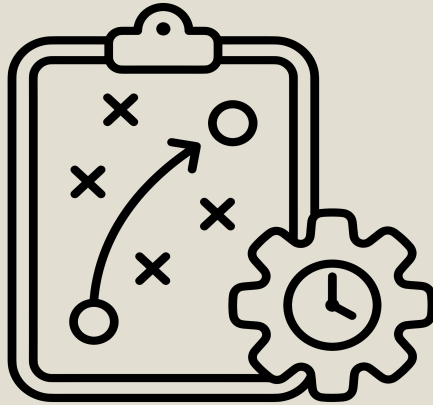


Business Problem

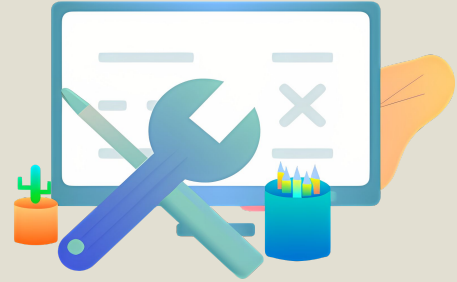
Retail investors lack:



Knowledge



Strategy



Tools

Data & Methods

Sources:

- Yahoo Finance - QQQ stock
- Federal Reserve Economic Data - Economic

Contents:

- 6,037 trading days from 1/3/2000 - 12/29/2023
- 11 numeric features
- Positive skew
- High correlation



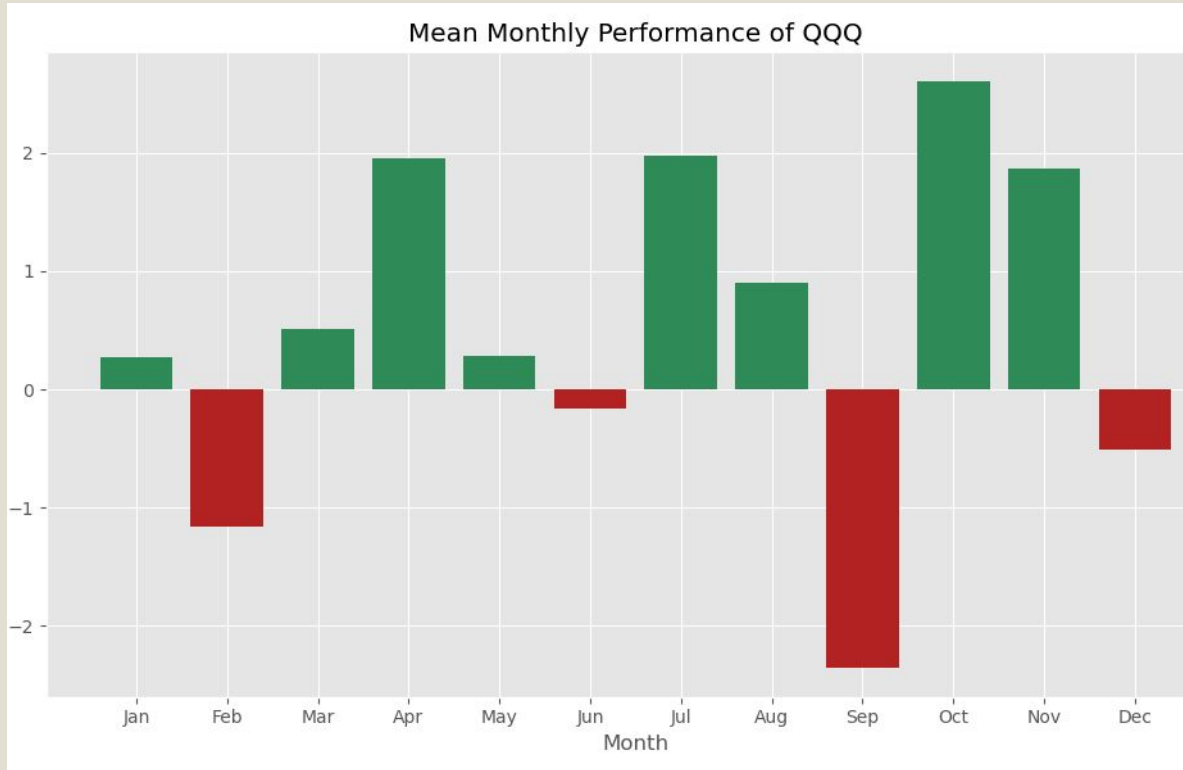
Results



Insights:

- CAGR: 6.29%
- \$1,000 in Jan. 1, 2000 worth over \$4300 by year end 2023

Results

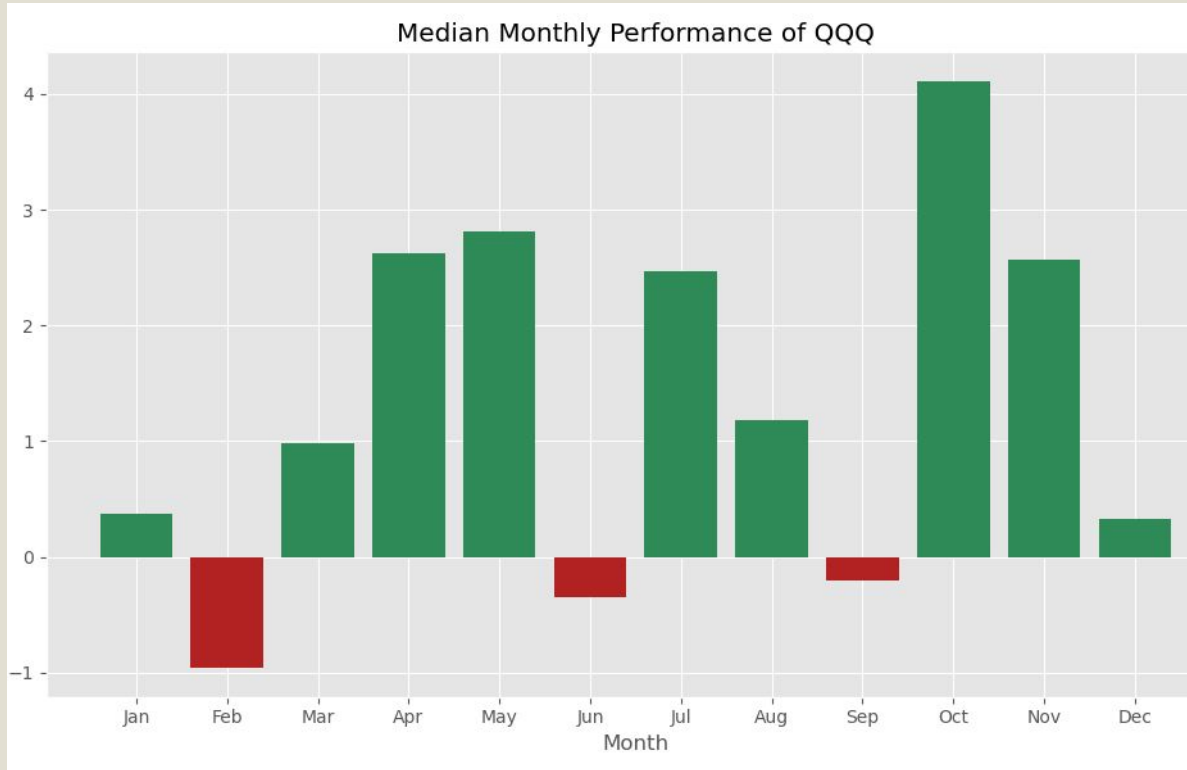


Insights:

- Best month: Oct.
- Worst month: Sep.

*Influenced by outliers

Results



Insights:

- Best month: Oct.
- Worst month: Feb.

Machine Learning

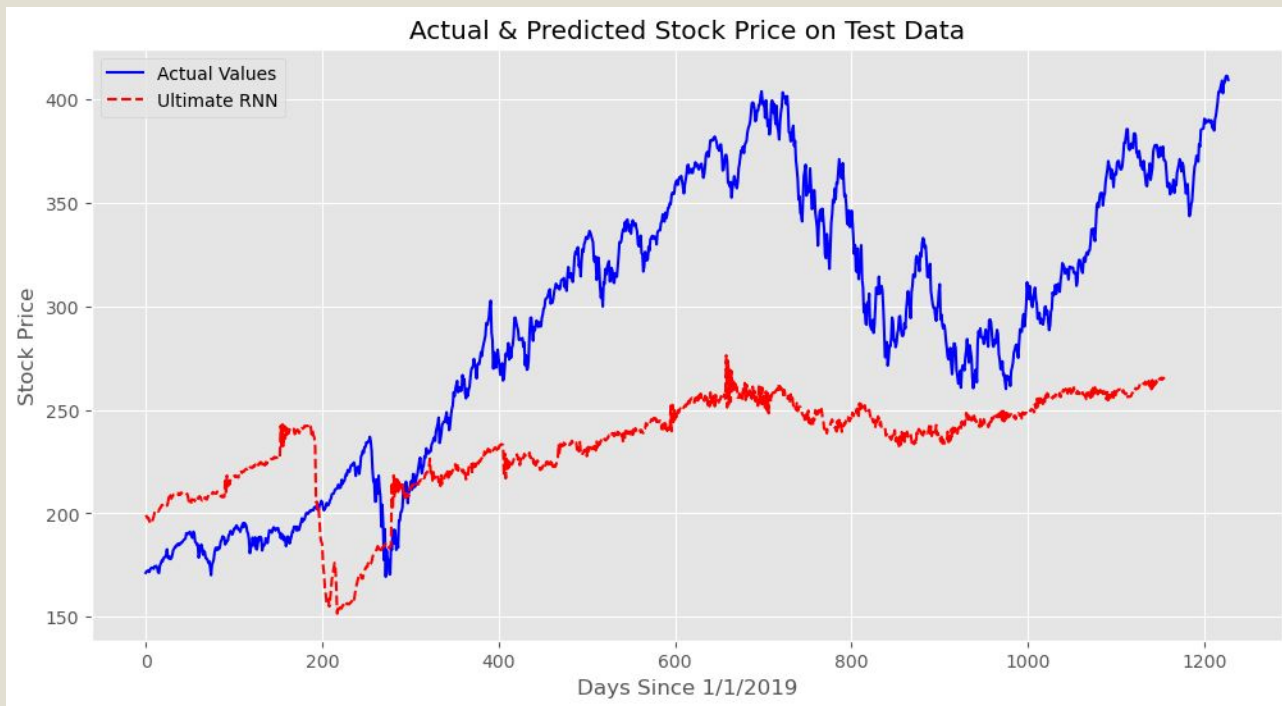
Classical Models:

1. Lasso
2. KNN
3. Decision Tree
4. Random Forest
5. Gradient Boosting
6. XGBoost
7. SVR

Best Models:

1. Lasso (90%)
2. Random Forest (61%)

Deep Learning



Recommendations

1. Invest Early.
2. Invest in late Sept or early Oct.
3. Avoid initializing an investment in early Feb, June, and Sept.



Next Steps

1. Incorporate technical indicators
2. Gather additional macroeconomic data
3. Compare QQQ with other ETFs
4. Meet with financial advisor
5. Adjust time horizon of predictions



THANK YOU



Questions?

Elijah Lopez
elijahlopez94@gmail.com

Resources

- [Invesco QQQ](#) - QQQ ETF Information
- [Yahoo Finance](#) - Stock Data
- [Federal Reserve Economic Data](#) - Economic Data
- [Federal Reserve Bank of Minneapolis](#) - Economic Data
- [University of Southern Queensland](#) - Kruskal–Wallis Statistical Test
- [CleanPNG](#) - Images