

## **STQM 4020 Applied Time Series Analysis Project - Microsoft Stocks**

In my STQM 4020 course, I decided to study the stock market, specifically focusing on Microsoft stocks from 2015 to 2022. My mission was to forecast the high and low stock prices for the forthcoming 365 days, aiming to show the daily fluctuations of stock prices.

My exploration into the data and models revealed an interesting pattern: a predominance of low stock prices compared to high ones. I observed numerous clusters of low-priced stocks, indicating a significant waiting period for stock prices to hit a profitable level (greater than 200). This suggested that most investors had to exercise patience before reaping substantial profits.

The models that best visualized my data were the ARIMA model, the moving average model, and the regression analysis model. These models provided a clear and comprehensive understanding of the stock price trends and patterns.

For forecasting, I employed a sgplot to display the forecasted values for the next 365 days at a 95% confidence level. The forecast line exhibited an upward trend, signifying potential growth. However, the confidence limits progressively widened with each passing day, indicating increasing uncertainty in the forecast. This analysis provided valuable insights into the dynamic and unpredictable nature of the stock market.