

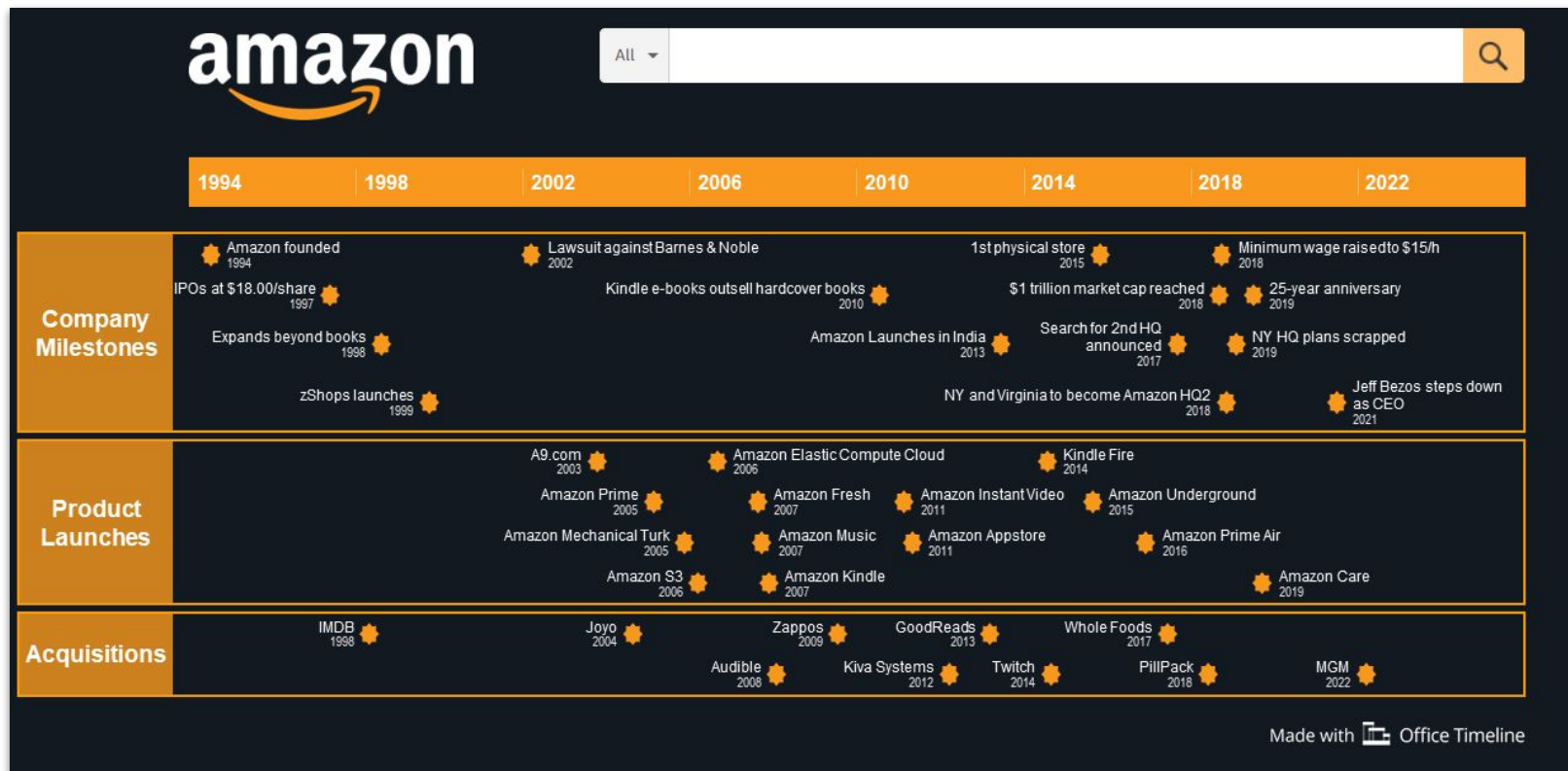


Amazon Stocks Machine Learning Project

Tech Talent & Strategy, Data Science | February-May '23 Cohort | Instructor: Preston Menke

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Company Background



Hypothesis

- Amazon's stock price will decrease into 2019
- Late into 2019 it will increase as demand would rise when stock price lowers
- Price increase leads to demand decrease in 2020
- The model prediction will not represent how the stock actually performed
 - COVID19 Pandemic = positive impact

About the Data

- Data gather from the Yahoo Finance import
- Dates Used: 01/2016 - 01/2020
- Dates Predicted: 2019, 2020
- Robustness - "A trading model is considered robust if it is consistently profitable regardless of market direction."
- Data description from python?
- Some competitor data will be visualized to get a glimpse of market performance



Stock terms definitions

- **Naked Shorting**
 - The process of selling stocks that do not exist. For example, if AMazon only has 1 million shares as part of their market cap, but an investor wants to purchase 200 thousand shares but only 100 thousand shares are available, but the the order is still fulfilled, that is an example of naked shorting.
- **Short Selling**
 - Usually occurs when market makers/hedge funds believe a stock will drop in price, so they sell stocks before actually owning them to make profit. If their plan works, the pay back the shares that were borrowed/loaned out and keep the profits.
- **Bullish Market**
 - Is the time of when the market or certain stocks within the market are on an upward trajectory.
- **Bearish Market**
 - Is the time of when markets are on a downward trend as a whole.

What influences the stock price?

Market trends

Most Common Halts For Common Traders

- LUDP Or LULD
 - This type of halt is triggered by high volatility trading. Good examples would be meme stocks like GME (Gamestop) and/or AMC. These stocks were considered volatile as it was encouraged by mostly online communities to buy the stocks to save them from going bankrupt. In return, these stocks soared in price which triggered halts. These types of halts last anywhere from 5-15 minutes once the price of the stock jumps to over 10% within a short timeframe.

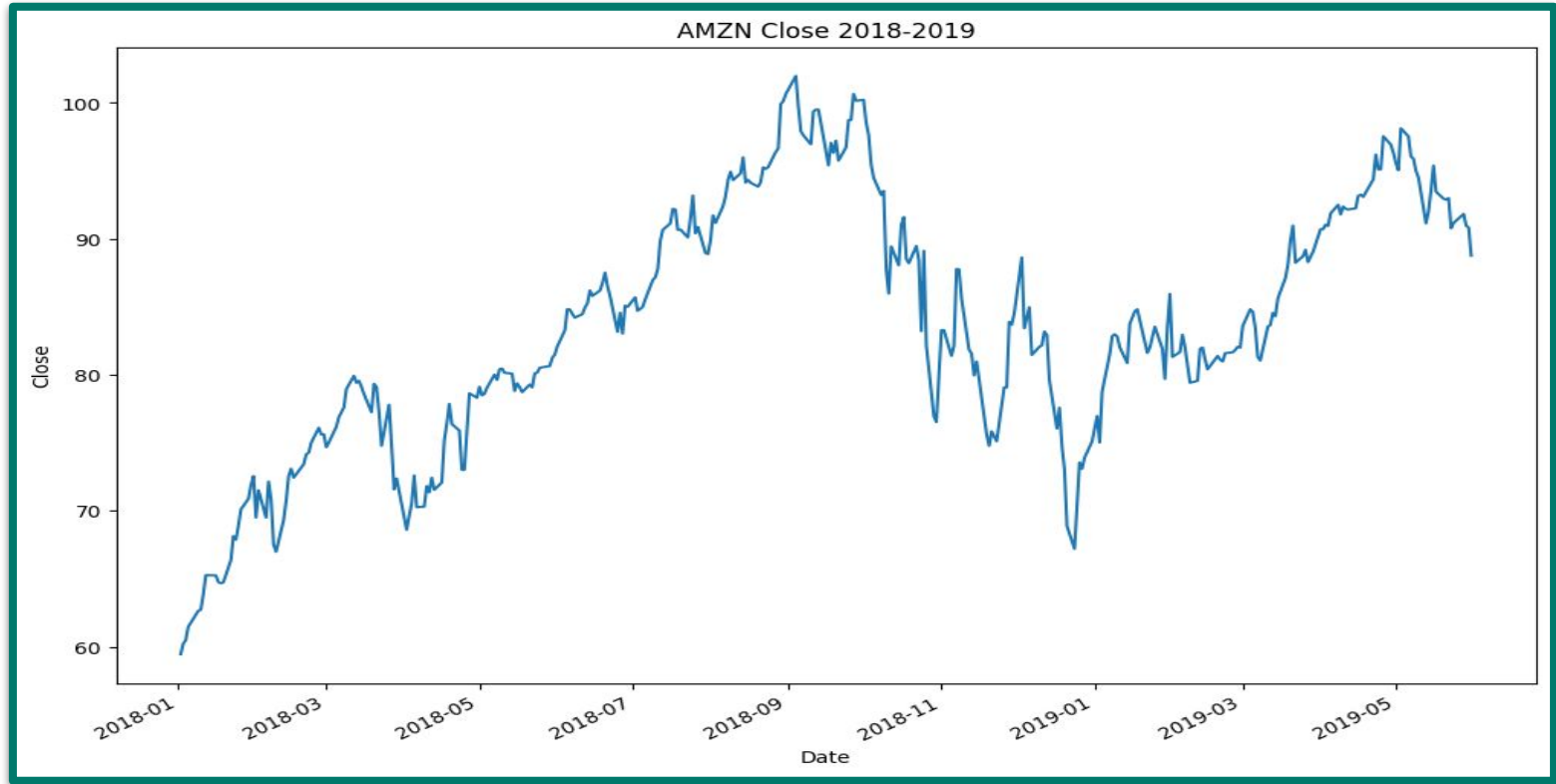
Presidencies or General Elections

- Incoming Presidents make changes/amendments as they see fit.
 - Current rules/regulations could be more relaxed while new rules/regulations would be much more strict.

Natural Events

- COVID-19 is the most recent natural event that caused a shift of the stock market. Many jobs were lost which resulted into the rise of day-traders who solely focused of purchasing certain stocks and selling them within the same day, repeating this process until satisfaction.

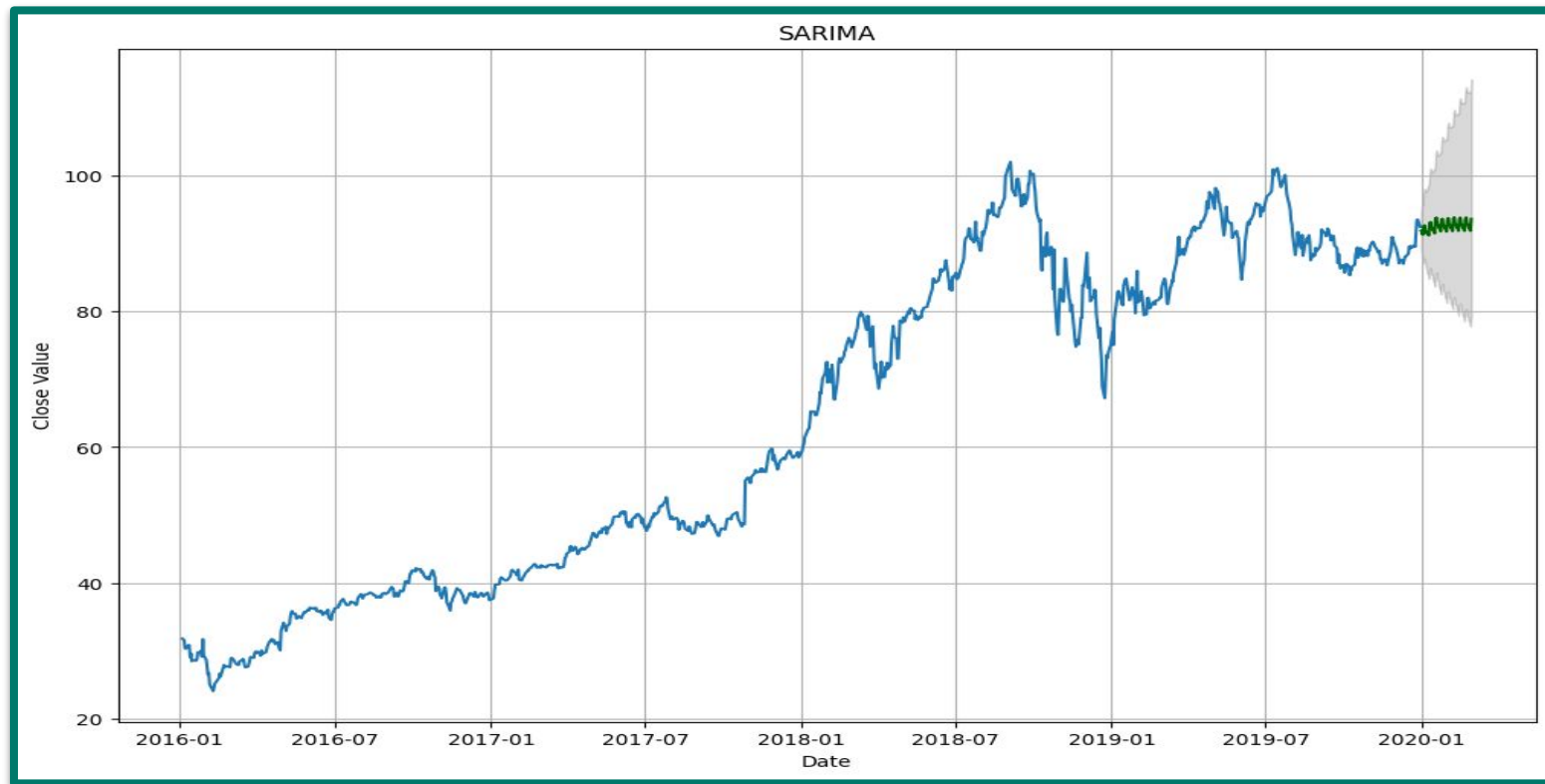
Visual 1 - 2018 Training Data



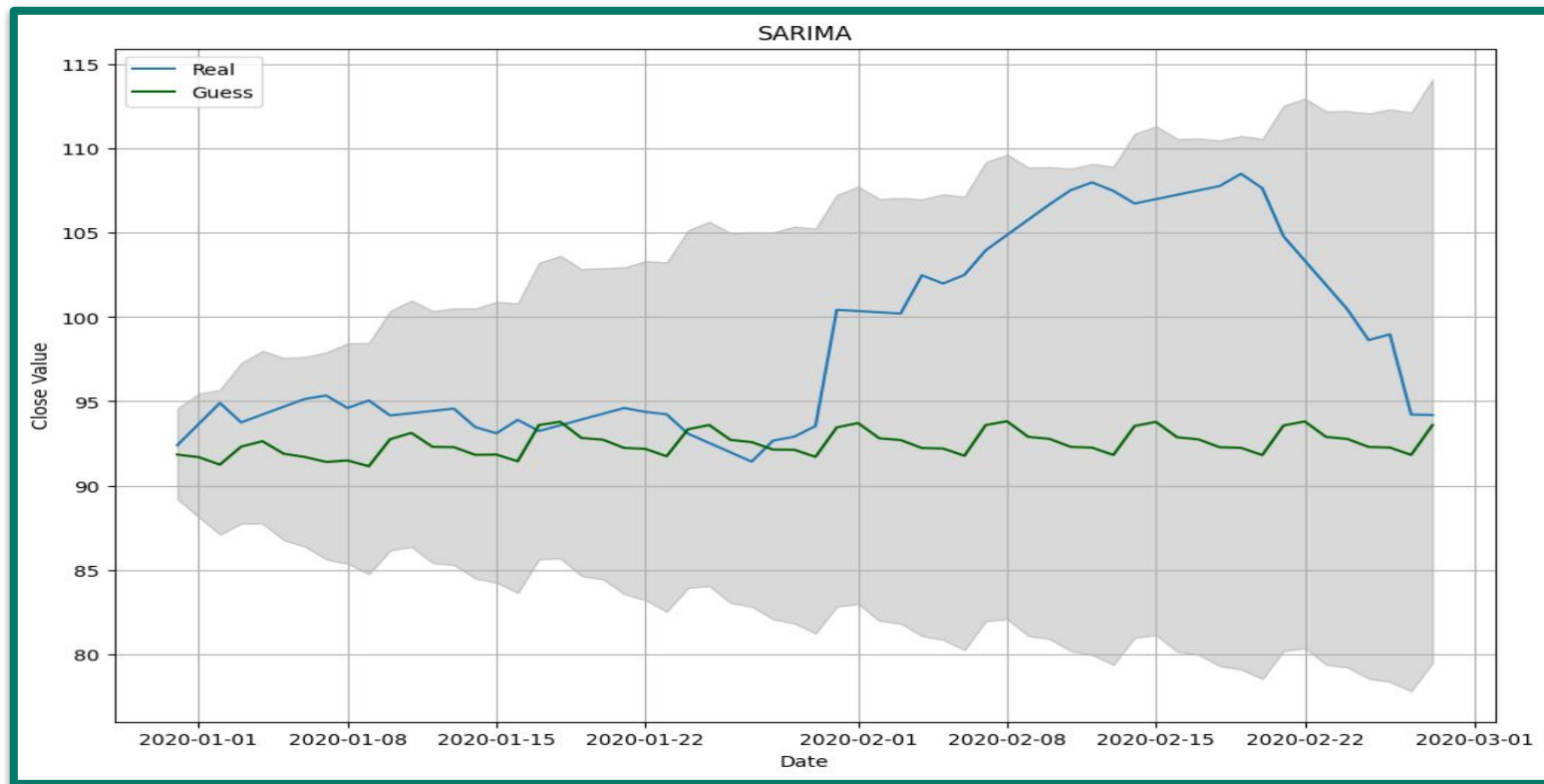
Visual 2 - ARIMA 2019 Prediction



Visual 3 - SARIMA 2020 Prediction



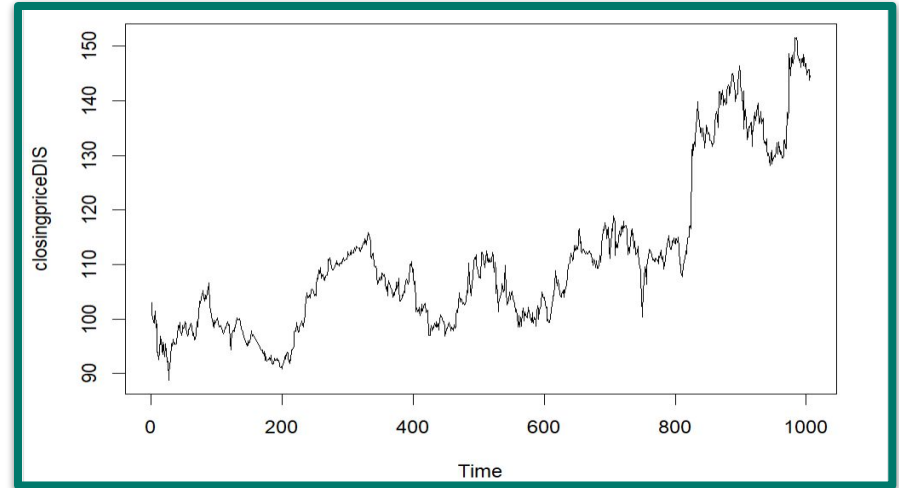
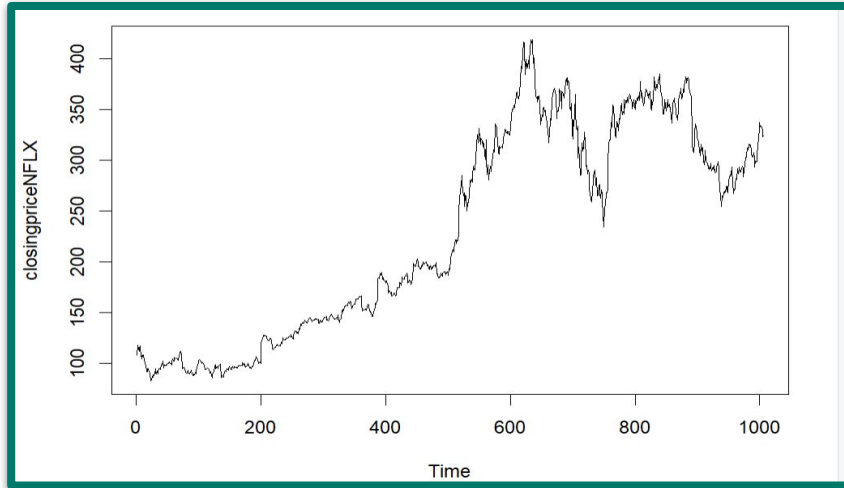
2020 Actual Stock Performance vs Prediction



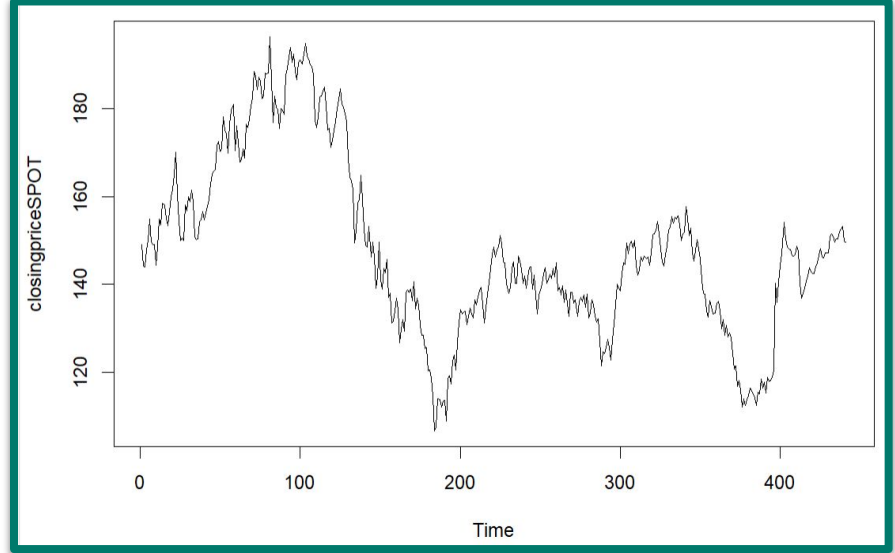
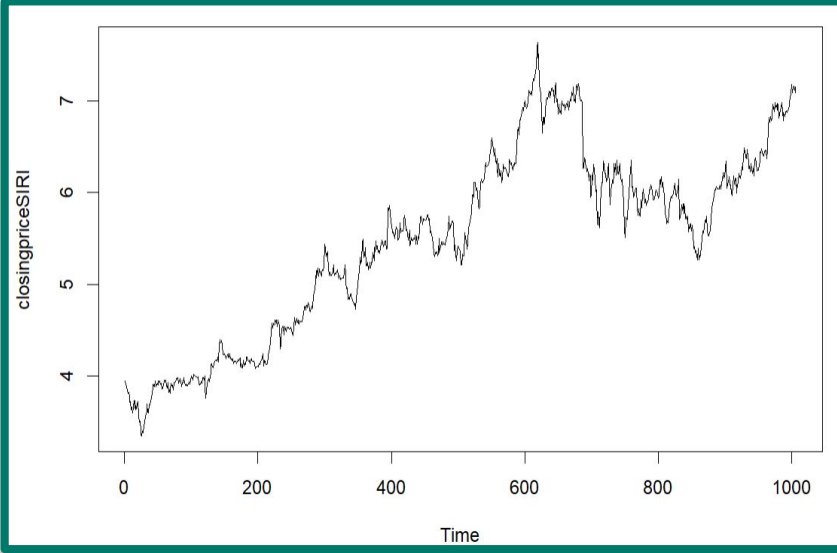
Delivery Services Competitor(s)



Video Streaming Competitor(s) 2016-2019

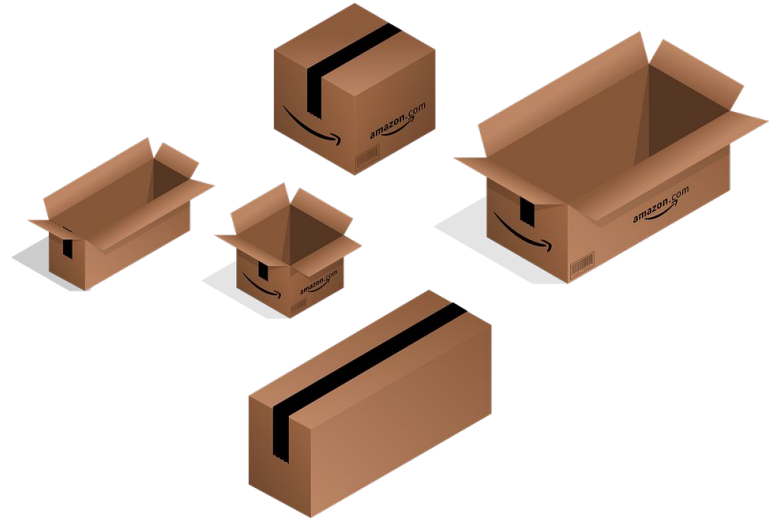


Music Streaming Competitor(s) 2016-2019



Takeaways

- There are several factors that influence the performance of a stock
- Machine Learning models are a useful tool for predicting stock prices with historical data of stock performance
- Predictive models are not best for looking far into the future
- It is not always possible to have an accurate prediction due to events not before experienced, such as the COVID19 Pandemic
- A more complex model is needed which takes into consideration similar historical events and the performance of companies providing similar services during those events
- It is challenging to compare stock performance with competitors, as Amazon provides several services, but the stock is for the whole company, not individual divisions



Sources

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- [Stock Price Prediction with Machine Learning](#)
- [Stock Price Prediction using Machine Learning](#)