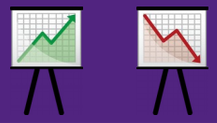

TIME MACHINE: CAN DATA PREDICT THE FUTURE?

The Use of Predictive Analysis in Stock Market Investing

INTRODUCTION

For many average investors, the stock market has been a territory of the fear and uncertainty due to the black void of a future each investment has. The ongoing joke that stock brokers are actually gamblers is not entirely far from the truth. When looking to the past, we see sudden sharp declines that very few saw coming, with the aftermath being seen as a national crisis. The desire to avoid the ramifications of these dips, and possibly even benefit from them, has caused a surge of research into algorithms performing predictive analysis using data from the stock market. In this project, we will give an overview of some major popular models used in stock market predictive analysis and choose one to dive deeper into. Our goal is to analyze the accuracy and accessibility of these various methods and how it can affect an average investor's plans for investments.

WHY IS THIS DATA SCIENCE?

Prediction Analysis is at the core of data science. It is taking the data we are given, analyzing the correlations and causes and uses that information to make decisions that are most likely to give future benefit to the user in a business project, large purchase, or even marketing strategy. The application in the stock market is just one example of how data science is becoming ingrained in society. The option for average consumers to take advantage of these advanced algorithms shows the analysis of data is transforming into an every day occurrence and accessible to all.

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DELIVERABLES

There are many different models used for predictive analysis. We've outlined the 5 most popular ones here:

-Classification Models: Used for binary questions, where the answers are often "yes" or "no" (i.e. Will this stock go up?)

-Clustering Models: Sorts data into separate smart groups based on similar attributes

-Forecast Models: Deals in metric value prediction, estimating numeric value for new data based on learnings from historical data (i.e. What will the price of a particular stock be in 3 months?)

-Outlier Models: Oriented around irregular data entries within a dataset. It can identify anomalous figures either by themselves or with other numbers and categories.

-Time Series Models: Utilizes a sequence of data points, using time as the input parameter. It uses the last year of data to develop a numerical metric and predicts the chosen time period using that metric

In our paper, we choose a model to describe in more detail as it pertains to how they can affect change in an investor's habits and portfolio.

CONCLUSION

Predictive models and analytics are powered by several different models and algorithms that can be applied to a wide range of applications. The stock market is a ripe opportunity for this technology, as there are no "sure things". There are many models and algorithms to use, but not all are accessible to the public. For a notice analyst, a classification model may be the way to go , to keep things simple. However, outlier models have proven to be more tailored for the finance and investing sector.

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