Report on Stock Market Trend Prediction using NSEI data

Introduction

The purpose of this project is to detect bearish and bullish trends in the Indian stock market using the NSEI data. The code uses Python libraries such as 'yfinance', 'numpy', 'pandas', and 'matplotlib' to download, process, and visualize the data. The algorithm used for trend detection is based on the maximum drawdown> Here maximum drawdown is used as a measure of the largest percentage change in asset price from a peak to a trough or vice versa. If the drawdown is greater than a certain threshold, then the trend is considered to have changed.

Data

The data used is the historical daily data of the Nifty 50 index with the data range from 2007-9-17 to 2023-5-10, scraped using 'yfinance'.

Methodology

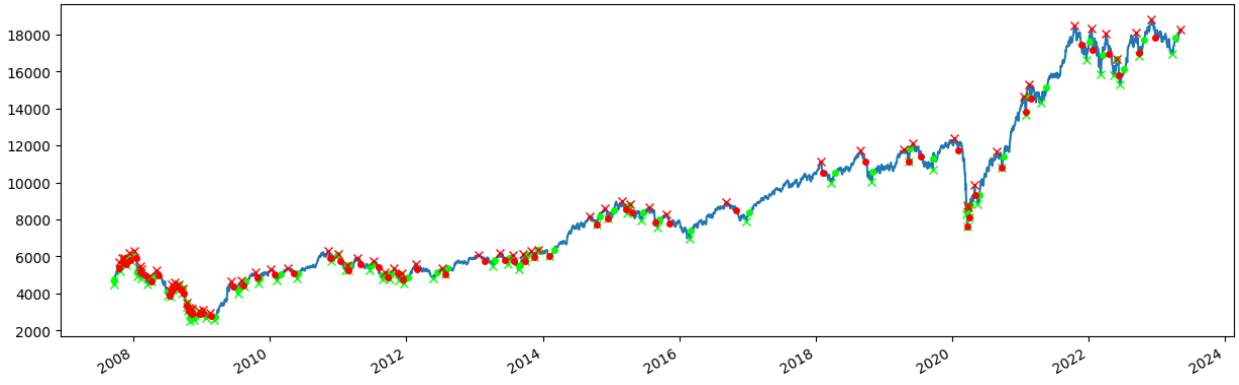
The algorithm used for trend detection is based on the maximum drawdown. Maximum drawdown is a measure of an investment's largest loss from its peak value to its lowest value. It represents the greatest percentage decline in an investment's value from its previous highest point. The maximum drawdown is calculated as the difference between the peak value and the trough value of the investment divided by the peak value. If the drawdown is greater than a certain threshold, then the trend is considered to have changed. The threshold considered here is 5%.

The code loops through each data point and checks if the current trend is bearish or bullish, updating peaks and troughs if the current trend is bullish or bearish respectively.
If the drawdown from the peak is greater than the threshold, then the trend is considered to have changed from bullish to bearish. Similarly, if the drawdown from the trough is greater than the threshold, then the trend is considered to have changed from bearish to bullish.

When such a trend change is identified, the start and end date of the trend are stored in the array 'ddd' along with its type (bullish/bearish).

Results

The figure shows the results for the NSE data from 2007-9-17 to 2023-5-10:



From the figure, the algorithm is able to detect both bullish and bearish trends in the NSE data. The green crosses represent the bullish trends, and the red crosses represent the bearish trends. The circles represent the start and end dates of the trends. We can also see that the algorithm is able to capture the major market movements such as the financial crisis of 2008 and the COVID-19 pandemic of 2020.

Conclusion

In conclusion, this project demonstrates how the maximum drawdown algorithm can be used to detect bearish and bullish trends in the Indian stock market using the NSEI data. The results show that the algorithm is able to capture the major market movements and can be a useful tool for traders and investors to make informed decisions. Further research can be done to improve the accuracy of the algorithm by using other technical indicators and machine learning algorithms.

I chose this algorithm because trend identification is a fundamental analysis technique used in the stock market to predict future market movements. The main idea behind this algorithm is to identify the turning points in the stock price movement, which can help traders to make profitable trading decisions.