PREDICTING FUTURE SALES OF BIG MART WITH MACHINE LEARNING ALGORITHMS

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Abstract: The big mart sales analysis patterns are seen as an important activity and it is more effective. Hence, big mart prices will lead to lucrative profits from sound taking decisions. Therefore, forecasting the big market is a major challenge for investors to use their money to make more profit. Research questions are used to guide the selection of the studies. Hence, these selected studies are helping to find the ML techniques along with their data set for big mart sales prediction. big super market sales prediction using machine learning algorithm, many supermarkets today do not have a good forecast of their yearly sales. This is mostly due to the lack of proficiency, resources and knowledge to make sales estimation. To analyses and forecast sales for the upcoming year, the majority of grocery chains utilize, at best, a set of tools and procedures. There are many problems with using traditional statistical methods to estimate supermarket sales, and they frequently lead to the development of prediction models with subpar performance. The sales projection is based on Big Mart sales from various locations in order to adjust the company strategy to the anticipated outcomes. Then, various machine learning techniques may be used to project potential sales volumes for retailers like Big Mart. Machine Learning models such as Random Forest, Xgboost, Light Gradient Boosting Machine are used in detailed research of sales prediction.

Keywords: Big mart, Web scraping, Sales forecasting, Future prediction, Machine learning.

1. Introduction

In a big mart sale, you can buy and sell shares of companies that are publicly traded. The stocks, sometimes referred to as equities, signify ownership in the business. The large exchange acts as a middleman to facilitate the purchase and sale of shares. Using Big Mart Price Analysis, you can learn the current value of the company and other financial assets traded on an exchange. The development in big mart sales prediction has gained high significance among expert analysts and investors. Analyzing big mart sales movements and price actions are extremely difficult due to the noisy environment in the market. The complication of big mart prices changes many factors that include announcements of quarterly earnings and market news. The big mart sales indices are calculated based on their market capitalization. Accurate forecasting of the big mart sales is therefore a very difficult task by changing the market world. The researchers and market analysts have been keen on developing and testing of big mart sales behavior.

2. Categorization and Description of Works

[1] The paper published on 2021-A systematic review of stock market prediction using machine learning and statistical Techniques-Deepak Kumar, Pradeepta Kumar Sarangi, Rajit Verma. The stock market forecast patterns are increasingly successful and are regarded as a crucial activity. Stock prices will therefore result in significant rewards from wise investment choices. Stock market projections are a significant difficulty for investors due to the stale and noisy data. As a result, predicting the stock market presents a significant challenge for investors looking to maximise their return on investment.

[2] The paper published on 2021-Machine learning techniques and data for stock market forecasting: A literature Review-Mahinda Mailagaha Kumbure, Christoph Lohrmann, Pasi Luukka. In this study of the literature, we look into machine learning methods used to forecast the stock market. The stock markets examined in the literature and the kinds of factors utilised

as input in the machine learning techniques used to predict these markets are a focus topic in this review of the literature. Between 2000 and 2019, 138 journal publications were analysed.

[3] The paper published on 2021- Effectiveness of Artificial Intelligence in Stock Market Prediction based on Machine Learning-Sohrab Mokhtari, Kang K. Yen, Jin Liu. Utilising artificial intelligence (AI) techniques, this paper aims to address the issue of stock market prediction. On the basis of the technical and fundamental investigations, two main models for stock market forecasting can be developed. Regression machine learning (ML) algorithms are used in the technical analysis approach to anticipate the stock price trend at the end of a business day based on historical price data. Contrarily, in the basic analysis, the public sentiment is classified using ML algorithms based on news and social media.

[4] The paper published on 2021-Social Media and Stock Market Prediction: A Big Data Approach-M. J. Awan, M. Shafry, H. Nobanee, A. Munawar, A. Yasin. Big data is the collecting of enormous datasets from analogue and digital sources in order to spot patterns and trends. There are many factors driving this exponential growth in computer data volume and variety. As an illustration, retailers are creating enormous databases of client sales activity. Organisations are working on logistics and financial services, and people are sharing a lot of opinions on prices and products on social media. Big data challenges include the volume and variety of organised and unstructured data. Using PySpark, a tool that is scalable, quick, simple to combine with other tools, and performs better than traditional models, we constructed numerous machine learning models with Spark MLlib in this study.

3 Performance Analysis of the Proposed Methodology in terms of Existing and proposed approach

Information collecting from the Internet is called web scraping. Web scraping includes even simple tasks like copying and pasting your favorite song's lyrics. "Web scraping" typically to an automated operation. While other websites don't mind, some don't like it when automated tools collect their data. The chosen studies forecast major mart sales using a hybrid approach. Selected study S3 offered a hybrid strategy that combines Web scraping with a rough methodology, and S8 proposed a hybrid approach that combines Web scraping with GA in order to enhance the performance

of GA in huge mart sales projections. Another study, S13, used web scraping and the statistical method of discrete wavelet transform to forecast big-box store sales.

3.1 Big Mart Sales Forecasting

In the big mart sales, the investor shows interest in profit by investing some money in the big mart sales. The big mart sales has shown investor interest due to advanced applications where prediction may lead to prosperous market forecasting. Predicting movements of the big mart sales precisely depends on advance information. The tools which are used for big mart sales forecasting can track and control the market which can be used to make the right decisions. The big mart sales needs to handle several information on industrial which covers the entire financial market. These are adjusted according to the business status investors who consider sales and purchase. Several factors affect the mart position are the future estimation income, a news release on earnings and changes in management, etc. Therefore, accurate prediction of the big mart sales helps investors in making better decisions. Through ML techniques the investor can earn more money with high risk. The process of the big mart sales.
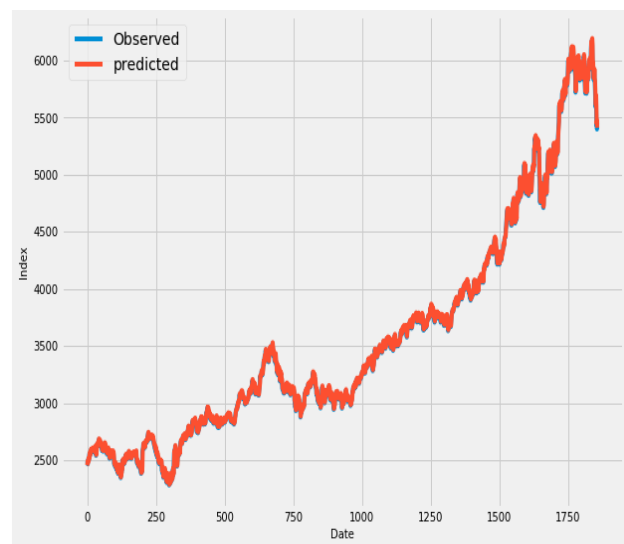

Fig 1. Big Mart Sales Forecasting

3.2 Web Scraping

Web scraping is a programmed technique for gathering copious volumes of data from websites. Most of this data is unstructured in HTML format and is transformed into structured data in a database or spreadsheet so that it can be used in multiple applications. To collect data from websites, web scraping can be done in a range of

methods. Many large websites, like Google, Twitter, Face book, Stack Overflow, etc. These include using specific APIs, online services, or even writing your own code from scratch for web scraping. have structured data access APIs that you can use to access their data. This is the greatest option, however there are alternative websites that either lack the technological sophistication or don't permit users to access significant volumes of structured data. In that case, web scraping is recommended for gathering data from the website.

4. Methodology and Results

Random Forest is a popular machine learning algorithm that can be used in the Predictive Analysis for Big Mart Sales. It is an ensemble learning method that builds multiple decision trees and combines their predictions to make a final prediction. In the context of Big Mart Sales prediction, Random Forest can be used to build a regression model that predicts the sales of various products. The training data would consist of past sales data for the products along with relevant information such as product category, store location, and promotional events. Random Forest can be trained using different hyper parameters to achieve optimal performance on the sales prediction task. The performance of the Random Forest model can be evaluated using metrics such as mean squared error (MSE) and R-squared. Overall, Random Forest is a powerful algorithm that can be used in the Predictive Analysis for Big Mart Sales to develop accurate models for sales prediction. However, it is important to note that other algorithms such as gradient boosting and artificial neural networks can also be used to achieve good performance in this task.
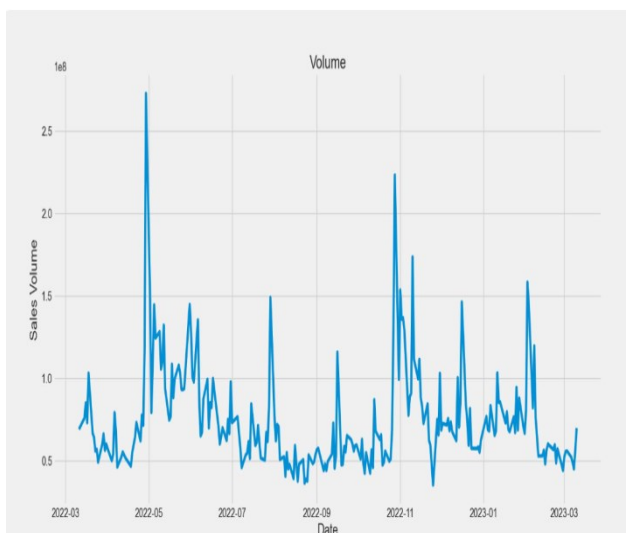

Fig 2. Volume price Results

Fig 3. Future prediction

5 Conclusion

The work demonstrated the potential use of machine learning in analyzing the big mart sales based on the company name, previous price and current prices. The developed webpage is user friendly and the accuracy of predictions are above 90 percent. The process was adopted for all the area to improve and authenticate the price of the products which are useful for the country's GDP growth. The various strategies used in big mart sales divisions divided by mathematical strategies and ML strategies. The purpose behind this survey is to classifying the current techniques related to adapted methodologies, used various datasets, performance matrices, and applying techniques, most dominant journals using 30 investigative articles. The techniques used in the big mart sales prediction are categorized in different ML algorithms. For improving the prediction accuracy, some of the selected studies use the hybrid approaches in the big mart sales. Web scraping techniques are widely used approach for achieving the successful big mart sales prediction.

In the future, we will strive to improve the system for making a reliable big mart sales system that is more reliable and accurate.

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