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Stock Chart Pattern Recognition with Neural Network

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ABSTRACT: The stock market has massive amounts of data in the terabytes and petabytes, which are extremely complicated and can be learned using data mining techniques. The stock market attracts a significant number of individuals who wish to invest their money in shares by selling or buying them. In the existing system that used Naive Bayes algorithm for stock market prediction. But by using this system we give low accuracy as soon as it takes lots of time to execute. Because of this we can propose our system by using CNN algorithm for stock market prediction. Our system gives better performance as soon as better accuracy.

KEYWORDS: CNN, Stock Patterns, Machine Learning, Stock prediction, Naive Bayes.

I.INTRODUCTION

The number of people who invest over the Internet is steadily expanding. Investors are increasingly using the Internet to research, debate, and trade stocks and assets as the stock market rises and falls. Investors are concerned about stock market analysis and making stock market predictions since the stock market is high-risk and high-yield. Traditional mathematical statistical techniques to predict the stock market have not yielded satisfactory results because the stock market is influenced by politics, the economy, and a variety of other factors, as well as the complexity of its internal law, such as non-linear price changes and shares data with high noise characteristics.

Examining and handling such a large volume of data is tough and time-consuming. As a result, the author employs the Hadoop framework to analyse the data. Hadoop is a lightning-fast solution for massively parallel computation. Hadoop analyses stock market data to predict future patterns and provide solutions that can benefit investors. The Hadoop Distributed File System (HDFS) is a file system that connects user applications to the local file system (HDFS).

Figure 1: Stock market prediction

A major focus for my system was the correct timing of selling and buying stocks. Iwanted to understand how professional investors use several approaches to increaseprofitability and reduce risk within their investments and develop an own method formaking profitable investment decisions. In this system we use CNN algorithm forbetter accuracy.

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II.LITERATURE REVIEW

Marc Velay and Fabrice Daniel [1] "Stock Chart Pattern Recognition utilizing Deep Learning," as indicated by the review. It thought about the capacities of CNN and LSTM to perceive normal graph designs in chronicled stock information. The methodology used to create the preparation set, the brain network structures, and the correctness is accomplished are completely shown.

Victor Skuratov et.al [2] The creators' work incorporates a "window" of fluctuating lengths that is parted down into outlines that scale on schedule to a solitary size and in sufficiency to one. For examination, the approaching casings are converted into 2D grids and took care of into a 2D convolutional NN, which assesses the probability of edges having a place with different example classes. With a convolutional NN response speed of around 0.65 seconds per 1000 information tests, the locator's exactness is around 98.6%, comparing to a 2.5-year examination of exchange shutting costs on the trade.

Rouf, N et.al [3] Using progressed exchanging calculations and contemporary literary information from online entertainment organizations, specialists can gauge the market. Text information investigation and gathering calculations are instances of current AI advances that have impressively further developed expectation precision. In the interim, because of dynamic, conflicting, and turbulent information, financial exchange examination and forecast stays perhaps the most troublesome scholarly discipline. The creators' review utilizes an overall system to show how to utilize AI based calculations for financial exchange expectation. The discoveries from the earlier ten years (2011-2021) were assessed utilizing the ACM advanced library and Scopus. A thorough relative investigation was likewise attempted to decide the course of significance.

Hyejung Chung and Kyung-shik Shin [4] In their examination, the creators built a stock expense assumption model in light of RNN and LSTM units, which is one of the most utilized significant learning processes. They utilized adjusted building bits of a model and consolidated GA and LSTM association to ponder the transient parts of the monetary exchange. The LSTM network utilized in this exploration study is comprised of two secret layers, and it is a refined designing for sending nonlinear and muddled parts of the monetary exchange all the more exactly. GA was utilized to see as awesome or close to best motivation for the time window size and number of LSTM units in a LSTM association.

KietikulJearanaitanakij and BunditPassaya [5] The brain mind association and flame plans are utilized in this makers article to recommend a designing for determining the short example of stocks. The investigations are directed by an assortment of candle configuration pictures obtained from different stocks in Thailand's financial exchange (SET). Each picture catches six to twelve candles in its nearby area. The principal results show that the recommended technique can dependably anticipate the short example for most stocks with adequate accuracy. Additionally, the recommended plan accomplishes better accuracy and planning time over ResNet-18, a notable designing.

JINHO LEE1 et.al [6] By and enormous, the portfolios developed considering the first model's outcomes yield generally 0.1 to 1.0 percent return each trade before to trade charges in 31 nations' stock trades. The discoveries propose that a couple of models in stock charts show similar stock expense patterns all through worldwide monetary trades. Moreover, the outcomes recommend that future stock costs might be anticipated freely of whether the model is made and tried utilizing information from numerous nations. The model might be assembled utilizing information from fairly enormous and liquid business areas (e.g., the United States) and tried utilizing information from little organization areas. The discoveries recommend that man-made thinking based stock quote models might be utilized in minuscule organization areas (agricultural nations), in spite of the way that these areas need reasonable information for arranging.

Ravikant1 Suman Kumar Swarnkar2L. P. Bhaiya [7] This shows that, the makers proposed system is prepared for separating some bury association with in the data. Moreover, it is clear from the results that, SVR, RFR DTR model is good for perceiving the movements in designs. For the proposed strategy DTR is perceived as the best model. It uses the information given at a particular second for gauge. Regardless of the way that the other two models are used in various other time subordinate data examination, it isn't beating the DTR model for this. This is a direct result of the startling changes that occur in protections trades. The movements occurring in the protections trade may not commonly be in a standard model or may not really for each situation follow a comparable cycle. Taking into account the associations and the regions, the presence of the examples and the hour of their existence will differentiate. The

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examination of these kind of examples and cycles will give more advantage for the monetary sponsor. To look at such information we ought to use networks like DTR as they rely upon the current information.

Akshay M. More et.al [8] The forecast utilizing AI calculations don't create solid outcomes as the relationship between's them is more fragile. Since the reliance for all factors is under half, the outcomes are not right. The diagram patterns among TCS and Infosys, then again, show tantamount unpredictability, except for a couple of times where they were in the other bearing. In such conditions, a mix of regular language handling procedures for text investigation and rundown may be valuable. Aside from the standards talked about in this writer's article, extra factors like expansion, flattening, worldwide money and gold rates, and global financial strategies, among others, can affect stock costs. Force, Mean Reversion, and Martingales are a portion of different techniques that might be applied.

Rashmi Sutkatti1, Dr. D. A. Torse [9] This creator's exploration examines an assortment of systems, including AI draws near, stowed away Markov models, ARIMA models, and profound learning processes. It very well may be seen that choosing the proper limits for the dataset utilized for assumption plays a significant part in forecast accuracy. Different AI models, for example, cross variety and group models, give a quicker pace of exactness. Better accuracy indispensable examination, which joins sensation assessment and component assurance with AI and profound learning techniques, might be utilized to decide the score.

Xingyu Zhou et.al [10] In this review, the creators present an overall system for antagonistic preparation to expect high-recurrence financial exchange utilizing Long Short-Term Memory (LSTM) and convolutional brain organizations (CNN). This approach utilizes a freely accessible file presented by exchanging programming as info, deterring the requirement for muddled monetary hypothesis study and thorough specialized investigation for the normal non-finance broker. The creators' review mirrors the exchanging method of a genuine broker and investigations the impact of the model update cycle on forecast execution utilizing the moving part preparing and testing set approach. Broad testing has shown that our recommended procedure might increment stock cost bearing expectation precision while bringing down conjecture mistake.

X. Li et.al [11] The engineering of the module and the plan of SiCSchottky obstruction diodes to supplant standard Si quick recuperation diodes will be examined top to bottom. The mechanical, warm, and electrical qualities of the mixture module are contrasted with those of its Si-based partner. In view of the testing results, electro-warm demonstrating is performed to assess the inverter framework level of the two modules. The half breed module gives impressive misfortune decrease benefits, taking into consideration critical framework scaling down, and is a financially savvy substitution for present rapid train foothold inverters.

N. Pinto et.al [12], Text mining and feeling investigation have been broadly utilized in this area. Then again, customary arrangements, for example, time series investigation are as yet utilized alone or related to new methodologies. There is right now no far reaching survey of the examination on the utilization of these strategies couple. In this work, the creators give an exhaustive survey of 57 exploration that utilize time series, message mining, and feeling investigation to assess monetary securities exchange conduct. In this review, information from virtual entertainment and sites was uncovered to be a confounded wellspring of data, bringing about a superior figure. Notwithstanding, the offered models have restrictions as far as definitively picking and coordinating these information.

Elizabeth Fons et.al [13], The gamble changed returns of moved models were over two times those of their zero-preparing partners. The creators likewise suggest utilizing information expansion on the element space, which is characterized as the result of a pre-prepared model (for example expanding the accumulated time-series portrayal). They balance this procedure with the typical one, which involves increasing time series in the information space. When contrasted with a model prepared utilizing move advancing however no expansion, they show that using highlight space increase procedures upgrades risk-changed return by 20%.

III.PROBLEM STATEMENT

Pattern recognition is a field of machine learning that focuses on applying various numerical algorithms to discover patterns in a dataset.The capacity to discover patterns in data may also be used to categorise data into distinct groups or forecast future behaviour on new datasets. Finding sequences of varying scale and length might be easier with automation. It would also give useful information for stock market price forecasting, as these signals have a low connection with prices. According to other research, patterns alone are insufficient to forecast trends, but when combined with other indicators, they can offer different findings.

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IV.EXISTING SYSTEM

In the existing system they used Naive Bayes algorithm for the stock market prediction. By using this algorithm this existing system gives low accuracy as soon as this system takes lot of time to execute. Hence we can propose our system by using CNN algorithm for stock market prediction.

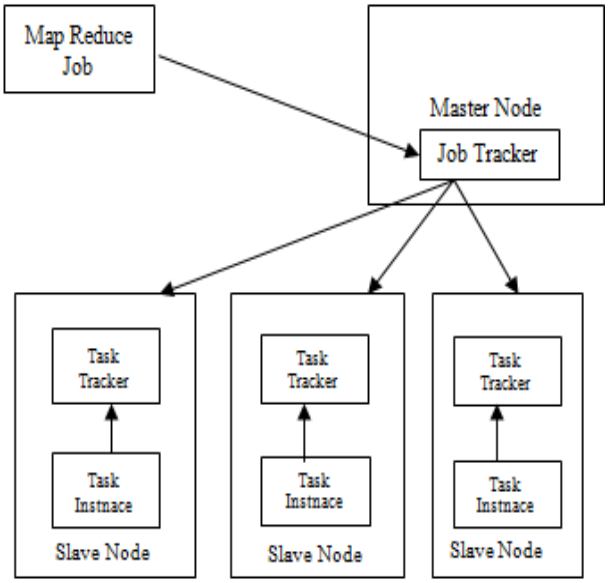

Figure 2: Architecture of Existing system

The application's end user is the user or new stockholder. He looks for stock in the company to invest in. You can also sell your stock. Money Control is the most trusted source of financial data. With our online investing portfolios, you can keep track of your finances. Live stock prices, stock market news, and so on. The server acts as an intermediary between the database and the user. It is in charge of creating proper queries to retrieve data from the database. It contains the information gathered from the Money Control Website's reviews.The map reduction component is used to allow for simultaneous operation on tiny modules.Existing system also includes HDFS distributed file system for managing the files. Map reduce is the appropriate programming system.
This facilitates the computation of the problem in parallel using all linked machines, resulting in more efficient output and results. Data can be replicated up to three times in DFS to prevent data loss in the event of a media failure. The Master node stores massive amounts of data in HDFS and does concurrent computations on all of it (Map Reduce).HDFS is a distributed file system that can scale and deliver high throughput thanks to its easy management interface. HDFS creates several clones of each data block and distributes them among servers in a cluster to ensure reliable and fast access.

V.EXISTING METHODOLOGY

EXISTING METHODOLOGY

Naïve Bayes Algorithm: Derivation: D: Set of tuples
∟ Each tuple is an „n" dimensional attribute vector
∟ X: (x1,x2,x3,…,xn)

Let there be „m" classes: C1, C2, C3,…. Cm
∟ Naïve Bayes classifier predicts belongs to Class Ci if
∟ P(Ci/X)>P(Cj/X) for l<=j<=m, j<>i

Maximum Posterior Hypothesis
∟ P(Ci/X)= P(X/Ci) p(Ci)/ P(X)
∟ Maximize P(X/Ci) P(Ci) as P(X) is constant.
With many attributes, it is computationally expensive to evaluate P(X/Ci). Naïve Assumption of "class conditional independence" P(X/ Ci)= Π P(xk/ Ci) P(X/ Ci)=P(x1/ Ci)*P(x2/ Ci)* ….*P(xn/Ci)

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VI.PROPOSED METHODOLOGY

To overcome all the problems in existing system we can utilize our system by using CNN. CNN used for the stock chart pattern recognition to get the better accuracy of results as well as the it is time consuming process.
To categorise system stock into the following categories, a classifier (in this example, CNN) classifies characteristics from input data and compares them to statistical features from data.:
1. Abrupt decline: if stock values are abruptly decreasing over particular period of time in past yearsthen system predicts that stocks prices will abruptly decline in future.
2. Smooth decline: system predicts that in near future prices of particular stock will decline smoothly(comparing pattern from last some years as specified in stock chart).
3. Stable: stock prices will be stable over the time period
4. Smoothly increase: value of stock will smoothly increase
5. Abruptly increase: if stock values are abruptly increasing over particular period of time in past yearsthen system predicts that stocks prices will abruptly decline in future.

VII.CONCLUSION

In this study, we can observe that the existing system uses the Naive Bayes method to anticipate stock market movements. This system takes a long time to execute, and it has a low level of accuracy. As a result, we can use the CNN algorithm to suggest our system. We receive quick results when we use our method; therefore it's a time-consuming process. In comparison to the previous system, our system is more accurate.

REFERENCES

1. Marc Velay and Fabrice Daniel, “Stock Chart Pattern recognition with DeepLearning” ,Researchgate, June 2018.
2. Victor Skuratov, Konstantin Kuzmin, Igor Nelin, Mikhail Sedankin, ”Applicationof a convolutional neural network to create a detector of technical analysisfigures on exchange quotes charts,” ,(2019), EUREKA: Physics and EngineeringNumber 6 DOI: 10.21303/2461-4262.2019.001055
3. Rouf, N.; Malik, M.B.; Arif, T.; Sharma, S.; Singh, S.; Aich, S.; Kim, H.-C., ”Stock Market Prediction Using Machine Learning Techniques: A DecadeSurvey on Methodologies, Recent Developments, and Future Directions,” ,Electronics2021, 10, 2717.https://doi.org/10.3390/electronics10212717
4. Hyejung Chung and Kyung-shikShin , ”Genetic Algorithm-Optimized LongShort-Term Memory Network for Stock Market Prediction ”,Sustainability 2018,10, 3765; doi:10.3390/su10103765
5. KietikulJearanaitanakij and BunditPassaya , “Predicting Short Trend of Stocksby Using Convolutional Neural Network and Candlestick Patterns ”, 2019 4thInternational Conference on Information Technology (InCIT), Bangkok, THAILAND
6. JINHO LEE1, RAEHYUN KIM1, YOOKYUNG KOH1, JAEWOO KANG1, ”Global Stock Market Prediction Based on Stock Chart Images Using DeepQ-Network ”,Citation information:DOI10.1109/ACCESS.2019.2953542, IEEE
7. Ravikant1 Suman Kumar Swarnkar2L. P. Bhaiya , ” Stock Market Predictionusing RFR, DTR SVR “, JSRD - International Journal for Scientific ResearchDevelopment— Vol. 6, Issue 07, 2018 — ISSN (online): 2321-0613
8. Akshay M. More, Pappu U. Rathod, Rohit H. Patil, Darshan R. Sarode. ,”Stock Market Analysis and Prediction using Hadoop“, International Journalof Computer Sciences and Engineering Open Access Research Paper Vol.-6,Issue-5, May 2018 E-ISSN: 2347-2693
9. Rashmi Sutkatti1, Dr. D. A. Torse , “Stock Market Forecasting Techniques:A Survey ” , International Research Journal of Engineering and Technology(IRJET) e-ISSN: 2395-0056 Volume: 06 Issue: 05 — May 2019 www.irjet.netp-ISSN: 2395-0072 © 2019, IRJET — Impact Factor value: 7.211 — ISO9001:2008 Certified Journal — Page 4842
10. Xingyu Zhou, Zhisong Pan, Guyu Hu, Siqi Tang, Cheng Zhao , ”Stock MarketPrediction on High-Frequency Data Using Generative Adversarial Nets,”,Mathematical Problems in Engineering Volume 2018, Article ID 4907423, 11pages.
11. X. Li et al., ”High-Voltage Hybrid IGBT Power Modules for Miniaturization ofRolling Stock Traction Inverters,” , in IEEE Transactions on Industrial Electronics,vol. 69, no. 2, pp. 1266-1275, Feb. 2022, doi: 10.1109/TIE.2021.3059544.
12. N. Pinto, L. da Silva Figueiredo and A. C. Garcia, “Automatic Prediction ofStock Market Behavior Based on Time Series, Text Mining and Sentiment Analysis:A Systematic Review” , 2021 IEEE 24th International Conference on

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.165 |

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ComputerSupported Cooperative Work in Design (CSCWD), 2021, pp. 1203-1208,doi: 10.1109/CSCWD49262.2021.9437732.

13. E. Fons, P. Dawson, X. -j. Zeng, J. Keane and A. Iosifidis, "Augmenting TransferredRepresentations for Stock Classification" , ICASSP 2021 - 2021 IEEE InternationalConference on Acoustics, Speech and Signal Processing (ICASSP),2021, pp. 3915-3919, doi: 10.1109/ICASSP39728.2021.9413530.

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