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Algorithmic Trading

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ABSTRACT: A company's stock exchange price is not just a measure of the present worth of the value of its shares, but an indicator of its expected future performance as well. The company is an incorporated organisation with the Regulatory Body and shares trading members are registered with SEBI. Given that stock market statistics are extremely time-specific and usually nonlinear in nature, it is very difficult to forecast future stock values. The forecast offers details about the present state of the flow of inventory values. This will also be used to decide whether to purchase or sell the individual shares of the particular stock for consumers. Many scientists were conducted with different data mining techniques to forecast stock market prices. This paper attempts to forecast the stock price of companies in the national stock exchange index LIX15 using Neural Network technology. For designing and training the models, the past data of the chosen stock will be used. To verify the consistency of the model, the effects of the model are used for comparison with actual data..

KEYWORDS: Stock Market Prediction, Supervised Machine Learning,

I. INTRODUCTION

Over the course of time, one will note that mankind has wanted to eliminate the suffering from his life. The presumption in society is that making more money brings security and luxury, so it is reasonable that there has been a lot of focus paid to trying to predicting the stock rates. Various strategies, hypotheses, and metrics, all with their own properties, have been attempted with differing degrees of effectiveness. Although it was attempted using a number of methods, no one was successful in solving the problem. The field of artificial intelligence researchers and investors alike are expecting that neural networks will help them figure out the underlying principles of consumer behaviour. A stock market is a public venue where shares of stock and derivative securities are exchanged at a given price. This is the type of market in which securities listed on a stock exchange can still trade. The corporation has a governing authority whose shares are traded on the stock exchange. It is often referred to as the secondary market because it takes place between two participants and influences the primary market. The Financial Exchange puts the two disparate people together to trade in their securities. Pricing in the stock market is determined by supply and demand. When stocks that are popular fall out of favour rise in price, on the market, but stocks that are being dumped on the market will decrease. Listed companies are described as any organisation that has publicly-filed shares that are traded on the stock exchange. Investors like to make the most money by buying and selling when their shares are at a point when they are both at their maximum. It is, however, very difficult to correctly forecast the future price of a commodity using stock market statistics, which are usually non-time invariant and subject to chaotic, nonlinear trends. Stock market data has grown rapidly connects people from around the globe and has become a challenge to use as a forecasting tool because of the changing technologies of finance and globalisation

II. MOTIVATION

Investors look to profit from equity portfolios by purchasing and selling their holdings at the opportune moment of maximum or minimum potential profit. Unlike traditional, physical statistics, the future price of a stock can be difficult to forecast using stock market information since the stock market is extremely variable and nonlinear. the rapid growth in economic globalisation and the international markets, and emerging information technology are all resulting in new ways to expand the reach of our research.

III. RELATED WORK

Algorithmic trading can be done in many ways and using many different method one of them is the machine learning with the help of machine learning and previous data we can perform the different operations to predict the price [1]. The predicting price outcomes from data we got from the couple of days or years with help of this we can perform linear



regression and other methods [2]. With understanding of data we got is sufficient for forecasting the price and other thing in long terms of investing or trading [3]. Stock prediction is also done with help of AI and we can automate the stock buy and sell with the predefined conditions[4]. In a financially volatile market, as the stock market, it is important to have a very precise prediction of a future trend. Because of the financial crisis and scoring profits, it is mandatory to have a secure prediction of the values of the stocks. Predicting a non-linear signal requires advanced algorithms of machine learning.[5].studies on supervised machine learning models in stock market predictions. The study discussed how supervised machine learning techniques are applied to improve accuracy of stock market predictions. Support Vector Machine (SVM) was found to be the most frequently used technique for stock price prediction due to its good performance and accuracy [6]. the application of machine learning techniques to stock market prediction is being undertaken thoroughly throughout the world. Machine Learning techniques are proving to be much more accurate and faster as compared to contemporary prediction techniques. [7]. we predict the stock prices of five companies listed on India's National Stock Exchange (NSE) using two models- the Long Short Term Memory (LSTM) model and the Generative Adversarial Network (GAN) model with LSTM as the generator and a simple dense neural network as the discriminant

Existence System

1. Low accuracy with Low customization options

IV. PROPOSED SYSTEM

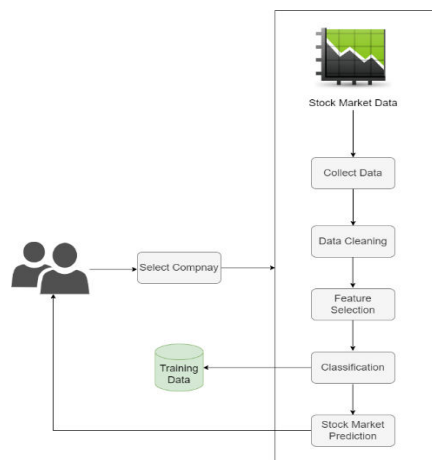


Fig. 1 System Architecture

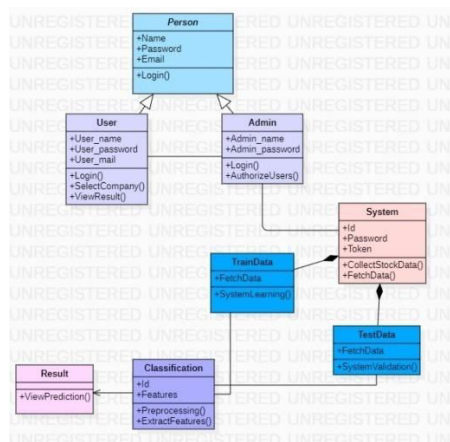


Fig. 2 Class Diagram

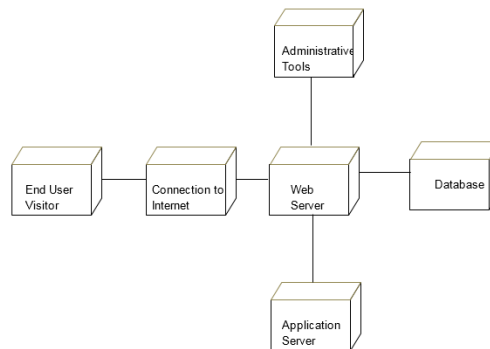


Fig. 3 Component Diagram

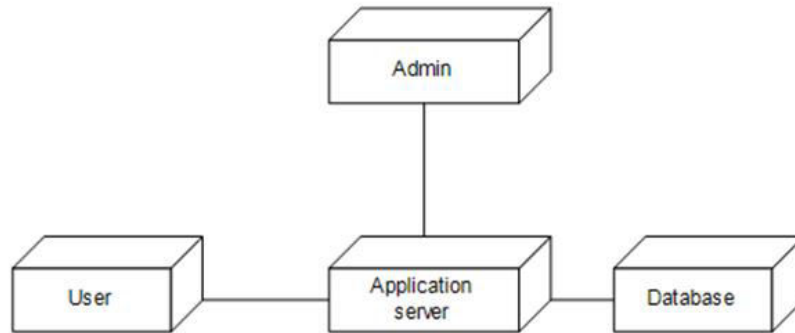


Fig.4 Deployment Diagram

1. Mathematical Module

Let us consider S as a system.

S= INPUT: Identify the inputs

F= f1, f2, f3, FN— F as set of functions to execute commands.

I= i1, i2, i3—I sets of inputs to the function set O= o1, o2, o3. —O Set of outputs from the function sets,

S= I, F, O

I = Input

O = Output

F = Functions implemented to get the output

Space Complexity: The space complexity depends on Presentation and visualization of discovered patterns. More the storage of data more is the space complexity.

Time Complexity: Check No. of patterns available in the datasets= n If (n (1)) then retrieving of information can be time consuming. So, the time complexity of this algorithm is

O (n^n). = Failures and Success conditions.

2. Working

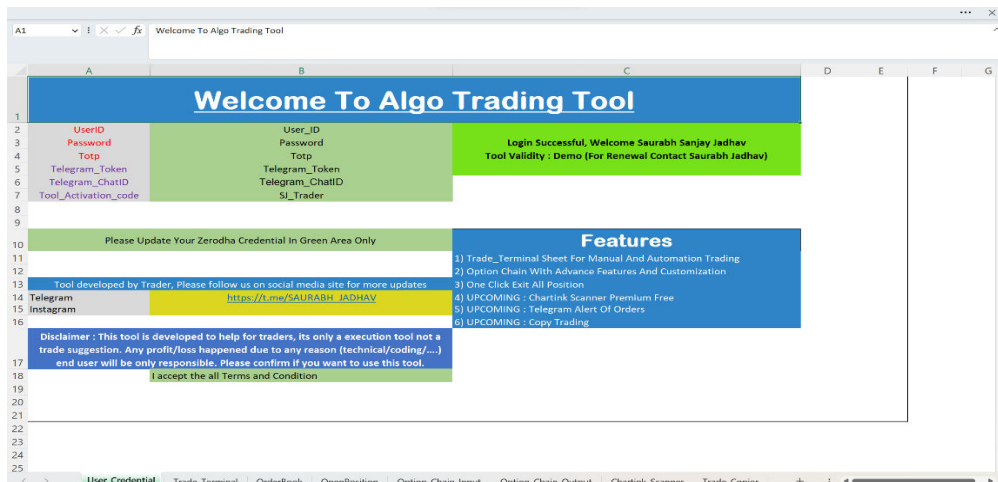


Fig. 5 Login Page



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Fig. 6 Trade Terminal

Fig. 7 Trade Book

Fig. 8 Open Position Sheet



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FNO Symbol	Expiry Date	User Input	Additional Detail
NIFTY	20-04-2023	Symbol=>> NIFTY	Spot LTP 17226
BANKNIFTY	27-04-2023	Exp=>>> 27-04-2023	Total Call OI 485559
AARTIND	04-05-2023	RefreshRate=>> 5	Total Put OI 860460
ABB	11-05-2023	NoOfStrike=>> 15	Total call change in OI 2382382
ABBOTINDIA	18-05-2023		Total Put change in OI 2464367
ABCAPITAL	25-05-2023		
ABFRL	29-06-2023		Max Call OI 72674
ACC	28-09-2023		Max Put OI 110681
ADANIENT	28-12-2023		Max Call or Strike 18000
ADANIPOWER	28-03-2024		Max Put or Strike 17000
ALKEM	27-06-2024		
AMBUJACEM	26-12-2024		Max Call Change in OI 45245
APOLLOHOSP	26-06-2025		Max Put Change in OI 67545
APOLLOTYRE	24-12-2025		Max Call Change in OI Strike 15450
ASHOKLEY	25-06-2026		Max Put Change in OI Strike 15450
ASIANPAINT	31-12-2026		
ASTRAL	24-06-2027		
ATUL	30-12-2027		
AUBANK			
AUROPHARMA			
AXISBANK			
BAJAJ-AUTO			
BAJAJFINSV			
BAIFINANCE			
BALKRISNDI			
BALMAINCHIN			
BANDHANBNK			
BANKBARODA			
BATAINDIA			
BEL			
BERGEPAINT			
BHARATFORG			
BHARTIARTL			

Fig. 9 Option Chain Input

NSE OPTION CHAIN AUTO DATA ANALYZER																
CALL								PUTS								
Open	Hi	Low	Close	Vol	LTP	OI	Change	Open	Hi	Low	Close	Vol	LTP	OI	Change	
0.954272	20289	0	0.132804	789.3	0	0	0	0	0	0	0	0	11.95	0.161711	0	0
0.920619	767	0	0.152895	746.5	0	0	0	0	0	0	0	0	14.2	0.156687	0	0
0.939076	9065	0	0.149921	692.55	0	0	0	0	0	0	0	0	14.55	0.151443	0	0
0.928879	1183	0	0.141516	644.75	0	0	0	0	0	0	0	0	16.5	0.14705	0	0
0.913463	9962	0	0.146298	598.4	0	0	0	0	0	0	0	0	18.3	0.141498	0	0
0.91784	954	0	0.125296	545.75	0	0	0	0	0	0	0	0	20.8	0.137965	0	0
0.888962	12660	0	0.130447	503.7	0	0	0	0	0	0	0	0	24.55	0.133733	0	0
0.876817	1732	0	0.1221	454.75	0	0	0	0	0	0	0	0	28.15	0.129739	0	0
0.843369	30882	0	0.124012	413.5	0	0	0	0	0	0	0	0	34.45	0.127186	0	0
0.816342	2201	0	0.120252	369.65	0	0	0	0	0	0	0	0	40.15	0.123955	0	0
0.788377	85270	0	0.117753	327.65	0	0	0	0	0	0	0	0	48.75	0.120876	0	0
0.747098	2940	0	0.114223	286.4	0	0	0	0	0	0	0	0	57.7	0.117427	0	0
0.704025	37642	0	0.111497	247.7	0	0	0	0	0	0	0	0	68.8	0.114415	0	0
0.654546	3762	0	0.109079	212.15	0	0	0	0	0	0	0	0	83.5	0.112778	0	0
0.605073	82091	0	0.107398	178.4	0	0	0	0	0	0	0	0	96.6	0.110272	0	0
0.542218	6793	0	0.105995	148.6	0	0	0	0	0	0	0	0	117.95	0.107481	0	0
0.482275	22461	0	0.103375	120.65	0	0	0	0	0	0	0	0	146.3	0.105023	0	0
0.419451	4379	0	0.10134	95.55	0	0	0	0	0	0	0	0	164.7	0.102964	0	0
0.357473	72674	0	0.100019	74.65	0	0	0	0	0	0	0	0	195.9	0.100339	0	0
0.296337	6090	0	0.097996	56.7	0	0	0	0	0	0	0	0	235.95	0.099446	0	0
0.239886	30524	0	0.096998	42.2	0	0	0	0	0	0	0	0	262.4	0.098165	0	0
0.190231	3700	0	0.095283	31.05	0	0	0	0	0	0	0	0	294.25	0.097195	0	0
0.148071	42460	0	0.094841	22.1	0	0	0	0	0	0	0	0	341.75	0.096234	0	0
0.110472	5895	0	0.094251	15.6	0	0	0	0	0	0	0	0	393.2	0.096599	0	0
0.100466	22879	0	0.094422	11	0	0	0	0	0	0	0	0	436.9	0.101886	0	0
0.094407	2485	0	0.095064	8.4	0	0	0	0	0	0	0	0	483.9	0.101886	0	0
0.047005	13898	0	0.096919	5.85	0	0	0	0	0	0	0	0	561.6	0.111809	0	0
0.041335	2484	0	0.102311	3.9	0	0	0	0	0	0	0	0	57.65	0.102384	0	0
0.044323	52128	0	0.100599	4.45	0	0	0	0	0	0	0	0	621.05	0.110416	0	0
0.027834	1045	0	0.108927	3.6	0	0	0	0	0	0	0	0	663.7	0.10	0	0
0.024253	5060	0	0.112008	3.1	0	0	0	0	0	0	0	0	717.35	0.106981	0	0

Fig. 10 Option Chain Output

Scanner_Name	Condition	nscodename	name	per_chg	close	volume
1st Scanner	RSI Above 70 (30 Min)	HLIANCE	Reliance Industries Limited	1.50	2414.8	1711306
2nd Scanner	Supertrend Buy Signal Crossover (15 Min)	BHARTIARTL	Bharti Airtel Limited	1.06	756.85	2482569
3rd Scanner	RSI Below 70 (30 Min)	HLINDRUP	Hindustan Unilever Limited	-1.40	245	4807228
4th Scanner	Supertrend Sell Signal Crossover (15 Min)	GLDREKIP	Godrej Consumer Products Limited	4.80	407.25	1715616
		AXISBANK	Axis Bank Limited	-3	858	2123079
		COAL	Coal India Limited	2.84	306.2	965949
		MPZ	MPL Limited	1.21	4550.7	2752
		WATSONIT	WATSONIT	0.14	47948.1	0
		FININDEN	Page Industries Limited	-2.01	3982.25	20060
		ABBOTINDIA	Abbott India Limited	0.31	22077.6	7635
		NIFTYIND	Nifty India Limited	1.1	21980	44408

Fig. 11 Chartink Scanner



3. Advantage

- To develop application that makes the trading easy with the help of condition which works automatically.
- Emotion Less trading, never let your emotions backlog takeover your trading decisions.
- High frequency trades are only possible via machine.
- Managing multiple position at single time.
- No matter how busy you are, you will never miss a trading opportunity.
- Analyse your trades and optimize the trading plan.

4. Conclusion

The main objective of this algorithmic trading project is not just to profit by trading but to save costs, minimize market impact, and minimize the execution risk of a trading orders. This is an attempt to make trading application that punch multiple orders for different symbols at same time which is not possible for human. In this project we tried to add more features for user to use it freely It saves time, resources and outperforms people in terms of performance.

V. COMPARISON

As we compare proposed system with existing system, the proposed system is faster and more efficient, because used simulator performs correct calculation and gives precise results in accordance with the existing system. In Proposed system we have used advanced features than the existing system In India very few platforms provide the Algorithmic Trading facility and they charges high amount for the service we are providing this service for free.

In other platforms user need to use only the broker defined algorithms they cant make their own strategy here we are providing the facility for user to make or design their own strategy in excel with help of formulas

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