



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 9, Issue 11, November 2020

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.512**

9940 572 462

6381 907 438

[ijirset@gmail.com](mailto:ijirset@gmail.com)

[www.ijirset.com](http://www.ijirset.com)

# Research Study in Stock Market Prediction Using ML

**Karthik Bhandari**

IT Student, Department of Information Technology, B.K. Birla College of Arts, Science and Commerce,  
(Autonomous), Kalyan, Maharashtra, India

**ABSTRACT:** The prediction of stock costs has invariably been a really difficult drawback for investors. available Market Prediction, the aim is to predict the long-run price of the monetary stocks of a corporation. The recent trend of available market prediction technologies is that the use of machine learning that makes predictions supported the values of current stock exchange indices by coaching on their previous values. Machine learning itself employs totally different models to create prediction easier and authentic. The paper focuses on the employment of Regression and LSTM primarily based on Machine learning to predict stock values. Factors thought of square measure open, close, low, high, and volume.

**KEYWORDS:** Machine Learning, LSTM, Dataset, Stock, stock exchange, and volume.

## I. INTRODUCTION

A correct prediction of stocks will result in immense profits for the vendor and therefore the broker. Frequently, it's brought out that prediction is chaotic instead of random, which suggests it may be expected by careful examine the history of the several stock exchange. Machine learning is associated with economics thanks to representing such processes. It predicts a {market price |market price |value} getting ready to the tangible value, thereby increasing accuracy. The introduction of machine learning to the realm of stock prediction has appealed to several kinds of analysis as a result of its economical and correct measurements. The important part of machine learning is that the dataset used. The knowledge ought to be as concrete as doable as a result of a touch modification within the data will uphold huge changes within the outcome. the quantity is that the variety of shares that passed from one owner to a different throughout the amount. The model is then checked on the test knowledge.

Regression and LSTM models square measure engaged for this conjecture severally. Regression involves minimizing error and LSTM [3] [4] contributes to the memory of the info and results for a long-standing time. Finally, the graphs for the fluctuation worth |of costs} with the dates (in the case of the Regression-based model) and between actual and expected price (for the LSTM primarily based model) square measure premeditated.

The rest of the paper consists of the following: Section II discusses the connected work. Section III puts forward the 2 models used and therefore the strategies utilized in them intimately. Section IV discusses the results created with totally different plots for each of the models intimately. whereas Section V consists of the conclusion and therefore the last section involves the references.

## II. RELATED WORK

From the literature survey, it's discovered that the appliance of machine learning techniques to stock exchange prediction is being undertaken completely throughout the planet. Machine Learning techniques square measure proving to be way more correct and quicker as compared to up to date prediction techniques. Long immediate memory (LSTM) network may be a style of the continual network. LSTM introduces the memory cell, gate structure, that has been established to be able to effectively associate reminiscences and input remote in time. LSTM will grasp the long structure of knowledge dynamically over time. during this paper, we have a tendency to apply LSTM networks to predict the worth movement of a short. we have a tendency to experiment on some stocks willy-nilly selected from CSI three hundred constituent stocks. The experiment shows that the exactitude, recall rate, and demanding error of LSTM square measure all higher than that of the random prediction.

Long immediate memory network (LSTM) may be an explicit style of continual neural network (RNN), that is that the general term of a series of neural networks capable of process consecutive knowledge. LSTM may be a special network structure with 3 “gate” structures (shown in Fig. 1). 3 gates square measure placed in associate LSTM unit, referred to as associate input gate, forgetting gate, and output gate. whereas info enters the LSTM’s network, it may be selected by rules. solely the data conforms to the rule are going to be left, and therefore the info that doesn't adjust is going to be forgotten through the forgetting gate.

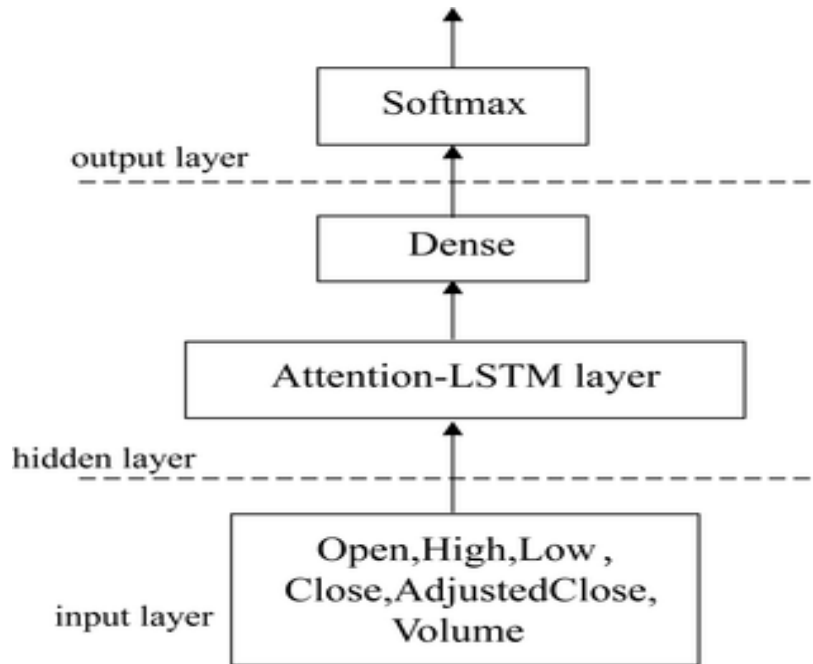


Fig 1. LSTM model

The main purpose behind the victimization of this model available market prediction is that the predictions rely on massive amounts of knowledge and square measure usually addicted to the future history of the market [6]. therefore LSTM regulates error by giving aid to the RNNs through holding info for older stages creating the prediction additional correct [7]. therefore proving itself the maximum amount additional reliable compared to different strategies.

Long immediate memory (LSTM) Model to Predict Stock costs. LSTMs square measure terribly powerful in sequence prediction problems as a result of they are able to store past info. this can be necessary in our case as a result of the previous price of a stock is crucial in predicting its future price.

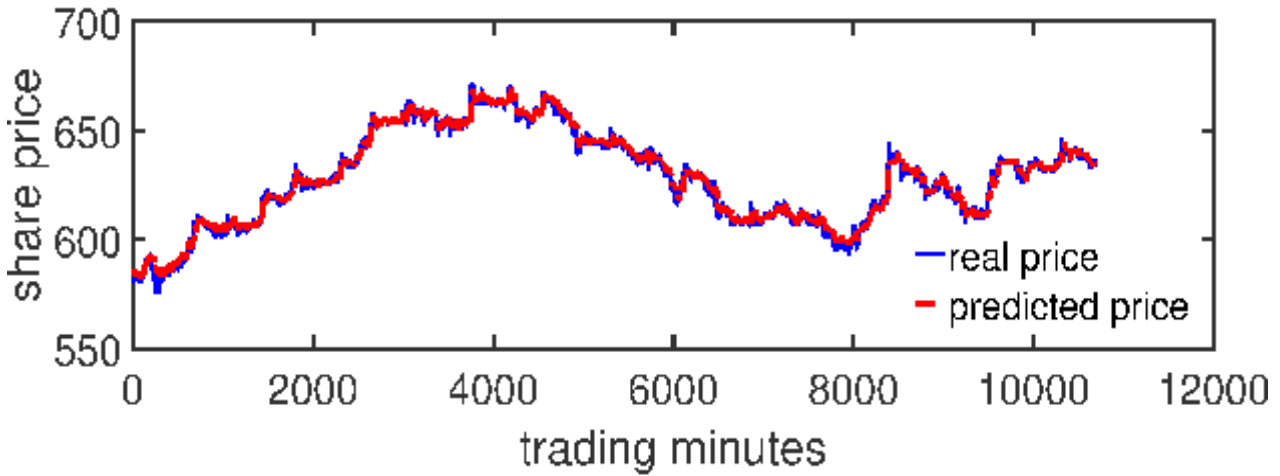


Fig 2. Prediction using model

### III.METHODOLOGY

An online survey was held using Google form. The link of the Form was circulated in social media platform. The questionnaires in the form were designed to test the proposed hypothesis.

i. Risk in investing

A total of 30 participants data was collected. Among 86.7%(26) where peoples who think its risky to invest in stock and 13.3%(4) peoples says no.

5. Do you think there is a risk in investing in stocks?

30 responses

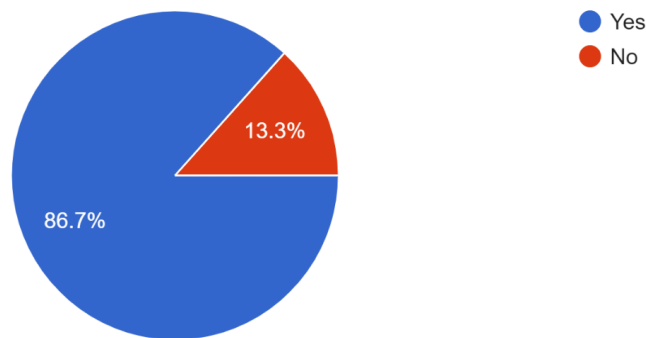


Fig 3. Response for risk in investment

ii. Accuracy

Participants were asked to choose do they will invest in stocks if the machine shows them the maximum accuracy(yes/no).

2. Will you invest your money if the machine showing the most accuracy?

30 responses

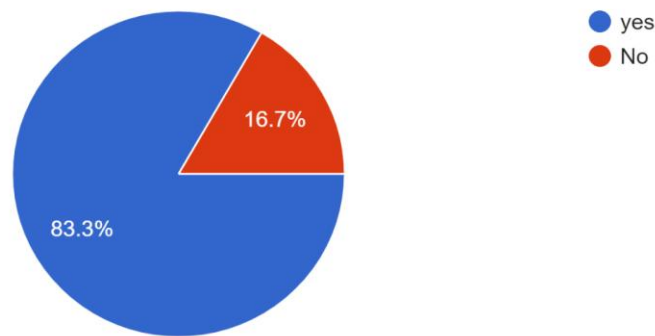


Fig 4. Response for need of accurate model

#### IV. EXPERIMENTAL RESULTS

The survey data was collected and solved by CHI SQUARE TEST with 0.05 significance level. We checked whether there is relation between risk in investing and investing with maximum accuracy. The participants were asked questions to collect data(ex. Risk in investing? Do they invest if the machine shows maximum accuracy?)

We choose,

Null hypothesis = There is no significance relation between risk and accuracy of model.

Alternative hypothesis = there is significance relation between risk and accuracy of model.

$$X^2_{tabular} = 3.84 \quad X^2_{cal} = 0.3702$$

The data samples were calculated using chi square test and the survey analysis resulted that

People will invest in stocks risk freely if the machine shows them maximum accuracy. Hence, there is a significance relation between risk and accuracy among participants.

#### V. CONCLUSION

According to survey people would love to invest in stocks if the risk gets decreased. As our research has helped to build an accurate model. But still there will be the risk but it will get decreased using the LSTM model. As this model shows the maximum accuracy.

LSTM-based deep-recurrent neural network (Associated Net) is projected to predict multiple costs of stock at the same time. The model structure, the rule framework, and therefore the experiment style square measure was given. The accuracy of the stock exchange prediction system may be additionally improved by utilizing a way larger dataset than the one being utilized presently. moreover, different rising models of Machine Learning may even be studied to visualize the accuracy rate resulted from them. Sentiment analysis through Machine Learning on however news affects the stock costs of a corporation is additionally a really promising space.



### VIACKNOWLEDGMENT

A special gratitude is conveyed to our Prof. Swapna Augustine Nikale, Department of Information technology of B.K. Birla College of Arts, Science, Commerce (Autonomous) Kalyan, Thane, Maharashtra, India and thankful to all participants who respond and helped the survey.

### REFERENCES

1. Aditya Gupta, b. d. (n.d.). Stock market prediction using Hidden Markov Models. 2012 Students Conference on Engineering and Systems. doi:10.1109/SCES.2012.6199099
2. Alexander Porshnev, I. R. (n.d.). Machine Learning in Prediction of Stock Market Indicators Based on Historical Data and Data from Twitter Sentiment Analysis. 2013 IEEE 13th International Conference on Data Mining Workshops. doi:10.1109/ICDMW.2013.111
3. Ashish Sharma, D. B. (2017). Survey of stock market prediction using machine learning approach. 2017 International conference of Electronics, Communication and Aerospace Technology (ICECA). doi:0.1109/ICECA.2017.8212715
4. David M. Q. Nelson, A. C. (n.d.). Stock market's price movement prediction with LSTM neural networks. 2017 International Joint Conference on Neural Networks (IJCNN). doi:10.1109/IJCNN.2017.7966019
5. Girija V Attigeri, M. P. (n.d.). Stock market prediction: A big data approach. TENCON 2015 - 2015 IEEE Region 10 Conference. doi:10.1109/TENCON.2015.7373006
6. Jithin Eapen, D. B. (n.d.). Novel Deep Learning Model with CNN and Bi-Directional LSTM for Improved Stock Market Index Prediction. 2019 IEEE 9th Annual Computing and Communication Workshop and Conference (CCWC). doi:10.1109/CCWC.2019.8666592
7. Kai Chen, Y. Z. (n.d.). A LSTM-based method for stock returns prediction: A case study of China stock market. 2015 IEEE International Conference on Big Data (Big Data). doi:10.1109/BigData.2015.7364089
8. Khaled A. Althelaya, E.-S. M.-A. (n.d.). Stock Market Forecast Using Multivariate Analysis with Bidirectional and Stacked (LSTM, GRU). 2018 21st Saudi Computer Society National Computer Conference (NCC). doi:10.1109/NCG.2018.8593076
9. Li-Chen Cheng, Y.-H. H.-E. (n.d.). Applied attention-based LSTM neural networks in stock prediction. 2018 IEEE International Conference on Big Data (Big Data). doi:10.1109/BigData.2018.8622541
10. Manuel R. Vargas, B. S. (n.d.). Deep learning for stock market prediction from financial news articles. 2017 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA). doi:10.1109/CIVEMSA.2017.7995302
11. Manuel R. Vargas, C. E. (n.d.). Deep Learning for Stock Market Prediction Using Technical Indicators and Financial News Articles. 2018 International Joint Conference on Neural Networks (IJCNN). doi:10.1109/IJCNN.2018.8489208
12. Mehak Usmani, S. H. (n.d.). Stock market prediction using machine learning techniques. 2016 3rd International Conference on Computer and Information Sciences (ICCOINS). doi:10.1109/ICCOINS.2016.7783235
13. Minami, S. (-R.-6. (n.d.).
14. Mojtaba Nabipour, P. n. (n.d.). Predicting Stock Market Trends Using Machine Learning and Deep Learning Algorithms Via Continuous and Binary Data; a Comparative Analysis. IEEE Access ( Volume: 8). doi:10.1109/ACCESS.2020.3015966
15. P.D. Yoo, M. K. (n.d.). Machine Learning Techniques and Use of Event Information for Stock Market Prediction: A Survey and Evaluation. International Conference on Computational Intelligence for Modelling, Control and Automation and International Conference on Intelligent Agents, Web Technologies and Internet Commerce (CIMCA-IAWTIC'06). doi:10.1109/CIMCA.2005.1631572
16. Rohit Choudhry, a. K. (n.d.). A Hybrid Machine Learning System for Stock. World Academy of Science, Engineering and Technology 39 2008.
17. Sima Siami-Namini, N. T., & Namin, A. S. (n.d.). A Comparison of ARIMA and LSTM in Forecasting Time Series. 2018 17th IEEE International Conference on Machine Learning and Applications (ICMLA). doi:10.1109/ICMLA.2018.00227
18. Sreelekshmy Selvin, R. V. (n.d.). Stock price prediction using LSTM, RNN and CNN-sliding window model. 2017 International Conference on Advances in Computing, Communications and Informatics (ICACCI). doi:10.1109/ICACCI.2017.8126078



18. Strader, T. J., Rozycki, J. J., ROOT, T. H., & and Huang, Y.-H. (. (n.d.). "Machine Learning Stock Market Prediction Studies: Review and Research Directions. Journal of International Technology and Information Management: Vol. 28 : Iss. 4 , Article 3. Retrieved from <https://scholarworks.lib.csusb.edu/jitim/vol28/iss4/3>
19. Tingwei Gao, Y. C. (n.d.). Applying long short term memory neural networks for predicting stock closing price. 2017 8th IEEE International Conference on Software Engineering and Service Science (ICSESS). doi:10.1109/ICSESS.2017.8342981
20. Zhiyong Zhao, R. R. (n.d.). Time-Weighted LSTM Model with Redefined Labeling for Stock Trend Prediction. 2017 IEEE 29th International Conference on Tools with Artificial Intelligence (ICTAI). doi:10.1109/ICTAI.2017.00184



**INNO SPACE**  
SJIF Scientific Journal Impact Factor

**Impact Factor:  
7.512**

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details