**LITERATURE SURVEY ON STOCK PRICE PREDICTION USING MACHINE LEARNING**

Eshita Pradhan Riya Yadav

CSE Branch CSE Branch

Roll No. : 211000018 Roll No.: 211000047

Email address : [eshita21100@iiitnr.edu.in](mailto:eshita21100@iiitnr.edu.in) Email address: [riya21100@iiitnr.edu.in](mailto:riya21100@iiitnr.edu.in)

Sonali Tudu

CSE Branch

Roll No. : 211000056

Email address : [sonalit21100@iiitnr.edu.in](mailto:sonalit21100@iiitnr.edu.in)

***Abstract-***

**In today’s financial world stock exchange has become one of the most significant events. The world’s economy today is widely dependent on the stock market prices. The Stock Market has been very successful in attracting people from various backgrounds be it educational or business .The nonlinear nature of the Stock Market has made its research one of the most trending and crucial topics all around the world.. People decide to invest in the stock market on the basis of some prior research knowledge or some prediction. In terms of prediction people often look for tools or methods that would minimize their risks and maximize their profits and hence the stock price prediction takes on an influential role in the ever challenging stock market business.**

**Adopting traditional methodologies such as fundamental and technical analysis doesn’t seem to ensure the consistency and accuracy in the prediction. As a result the machine learning technologies have become the recent trend in the stock market prediction whose prediction is based on the existing stock market values eventually as an outcome of training on their previous values.**

**This paper focuses on RNN (Recurrent Neural Networks) and LSTM (Long Short term memory) technologies in predicting the ongoing trend of the stock market.**

*Keywords—* **Stock, Stock Market, Shares, Shareholder, Recurrent Neural**

**Network(RNN),Long Short Term**

**Memory(LSTM).**

**I. INTRODUCTION**

A stock or a share which is also known as a company’s equity is referred to as a financial instrument that is used to represent an ownership in a company that represents a proportional assertion on its assets and earnings. For example, an individual who is the owner of a hundred thousand shares of a company with a million outstanding shares would be having a ten percent stake ownership in it. Stock exchanges are nothing but the secondary markets wherein the present owners of the shares could transact with the potential buyers. It is a matter of utmost importance to understand that the corporations that have been listed on stock markets do not sell and buy their own shares often. So when a share of stock is bought in the share market, it is not being bought from the company itself but from the company’s shareholder.



**Fig 1: Flow of shares and funds**

In the same way when a share is being sold it is not being sold to a company directly but is being sold to an investor. In developing countries like India the rapid growth of its economy depends largely on the growth of its Stock Market. If there is a rise in the stock market, the growth in the company’s economy would be rather high. If there is a downfall in the stock market the growth in the company’s economy would be down.

**II. LITERATURE SURVEY**

[1] An LSTM-Method for Bit-coin Price Prediction: A Case Study Yahoo Finance Stock Market, IEEE 2019- Ferdiansyah et al., Bit-coin is a type of Cryptocurrency and currently is one of a kind of investment on the stock market. Stock markets are inclined by several risks. And bit-coin is one kind of crypto currency that keeps rising in recent years, and sometimes suddenly falls without knowing influence on the stock market. There’s a need for automation tools to predict bit-coin on the stock market because of its fluctuations. This research study studies how to create mode prediction bit-coin stock market prediction using LSTM. Before confirming the results the paper tries to measure the results using RMSE (the Root Mean Square Error).The RMSE will at all times be larger or equal to the MAE. The RMSE metric assesses how well a model can calculate a continuous value. The method that is applied on this research to predict Bit-coin on the stock market Yahoo finance can forecast the result above $12600 USD for the next couple of days after prediction.

[2] Research on Stock Price Prediction Method Based on Convolutional Neural Network, IEEE 2019- Sayavong Lounnapha et al. This paper intends for a prediction model for stock price which is centered at the convolutional neural networks, that has exceptional capability of learning on its own. The data set is taught and tested relating the behaviours of both Convolutional Neural Networks and Thai stock market The result shows that the model on grounds of Convolutional Neural Networks can effectually recognize the altering trend in stock market price and envisage it which provides significant allusion for stock price forecast. The accuracy of the prediction is found to be elevated, and it could also be promoted in the field of finance.

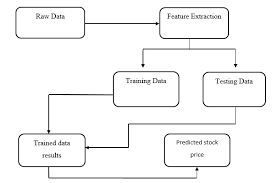
[3] Share Price Prediction using Machine Learning Technique, IEEE 2019-Jeevan B et al., Lately stock market has been the talk of the town with more and more people from academics and business showing interest in it. This paper mostly deals with the approach towards predicting stock prices using RNN (Recurrent Neural Network) and LSTM (Long Short Term Memory) on National Stock Exchange using numerous elements such as the present-day market price as well as anonymous events. A recommendation system along with models constructed on RNN and LSTM methods are used in selecting the company is also mentioned in this paper.

[4] Stock Market Prediction Using Machine Learning Techniques, IEEE 2020- Naadun Sirimevan et al., The Stock Market Prices play a crucial role in today’ economy. Researchers have discovered that social media platforms such as twitter and web news tend to influence the decision- making process of any individual. In this research behavioural reflex towards web news is taken into count to reduce the gap and make the prediction much more accurate. Precise predictions were made for a day, a week and two weeks here after.

**III. PROPOSED SYSTEM**

As represented in the previous section getting the historical data from market is mandatory step. Then there is a need to extract the feature which is required for data

analysis, then divide it as testing and training data, training the algorithm to predict the price and the final step it to visualize the data**.**

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**Fig 2: System Architecture**

The typical LSTM unit consists of a cell, an info door, an entrance door and a door with a view. The cell collects values over discretionary time intervals, and the three inputs manage the progress of data into and out of the cell. The main advantage of the LSTM is its ability to learn context-specific temporal dependence. Each LSTM unitcollects information for either a long or short period of time (hence the name) without explicitly using the activation function within the recurrent components.

Subsequently, data from a past cell state can pass through a cell unaltered rather than

expanding or decreasing exponentially at each time-step or layer, and loads can meet their ideal quality in a reasonable measure of time. This allows LSTM's to take care of the evaporating slope issue – as the value put

away in the memory cell is not iteratively adjusted, The inclination does not disappear when prepared with back

engendering, where markets such as NSE and BSE are considered to be Indian trading entities for our analyses**.**

**III. I Parameter used**

List of parameters/Symbols used in this paper is listed in Table 1.

|  |  |
| --- | --- |
| Parameter used | Meaning |
| Date | Date of stock price |
| Open | Open price of a share |
| Close | Closing price of a share |
| Volume/ trade  Quantity | Number of shares traded |
| High | Highest share value for the day |
| Low | Lowest share value for the day |
| Turnover | Total turn over of the share |
|  |  |

**III .2.Mythodology**

Stock market prediction seems like a complicated problem because there are various factors that are still left unaddressed and do not seem to be statistical at first. But to our rescue there are various machine learning algorithms by using which we could efficiently predict current trends in the stock market by using the references from the previous data. Here the dataset that we are going to use has been collected from Yahoo finance. The data considered or taken into account. The data considered or taken into account.was readily available in the csv format which was first read and converted into a data frame by making use of one of the most popular libraries, Pandas in Python. In the due course, one specific company’s data was pulled out by separating data depending on the symbol field. After this, the data was segregated into testing and training data sets by performing normalization by using yet another popular Python library known as Sklearn library. The test set was placed as 20 percent of the dataset that was available. Although Machine learning has various algorithms that could be used for predicting the stock prices here in this paper we make use of two main algorithms known as RNN and LSTM.



**Fig 3: Indian Stock Market Trend**

**IV. LSTM**

The proposed framework that learns online anticipating the close costs of the stock with the assistance of Long Short Term Memory (LSTM). The Long Short Term Memory (LSTM) is a counterfeit intermittent neural

system (RNN) design[1] used in the field of deep learning, Unlike standard feed forward neural systems, LSTM has input associations. Not only does the procedure not focus on single information (e.g. pictures)

but also on full information arrangements, (For example, a speech or a video). For example, LSTM is material for undertakings, such as un partitioned,associated penmanship recognition, speech recognition and recognition of peculiarities in arranged traffic or IDS

(interruption location frameworks).

**Algorithm 1: Stock prediction using LSTM**

**Input: Historic stock data**

**Output: prediction of stock price using price variation**

Step 1: Start.

Step 2: Data Preprocessing after getting the historic data from the market for a particular share.

Step 3: import the dataset to the data structure and read the open price.

Step 4: do a feature scaling on the data so that the data values will vary from 0 and 1.

Step 5: Creating a data structure with 60 timestamps and 1 output.

Step 6: Building the RNN (Recurrent neural network)

Step 5 data set and Initialize the RNN by using sequential

repressor.

Step 7: Adding the first LSTM layer and some Dropout regularization for removing unwanted values.

Step 8: Adding the output layer.

Step 9: Compiling the RNN by adding adam

Optimization and the loss as mean\_squared\_error.

Step 10: Making the predictions and visualizing the results using plotting techniques. Before processing the data there is a important step that is to collect the information from market. Information assortment is the principle step in our

proposed framework importing of the information from advertise clearing organizations like BSE (Bombay Stock

Exchange) and NSE (National Stock Exchange). The dataset that will be utilized in the market expectation must be utilized to be separated dependent on different perspectives. Information assortment additionally supplements to upgrade the dataset by including more information that is outside. Our information for the most part comprises of the earlier year stock costs. For python available packages for retrieving the data from NSE is NSEpy. The next step is to preprocess the data; in this step the Information Pre-Processing is a significant advance in information mining here the change in crude information into a basic configuration is required. The information which is retrieved from source will be conflicting,

fragmented and it will contain mistakes. The

preprocessing step will purify the information; toward the end there is a need to perform highlights scaling which will restrict the factors. The preparation of the model incorporates cross-approval, which is a very well-founded, projected execution of the model using the preparation information. the purpose of the tuning models is to explicitly tune the calculation training is to add information to the calculation itself. The test sets are immaculate, as a model ought not to be made a decision about dependent on concealed information. Scale up the information to the

genuine offer costs. The final step is to draw the data using visualization technique that helps to show the variation of data in the outcome of our algorithm.

**IV. EXPERIMENT AND RESULT**

This proposed system makes use of data taken from Yahoo finance, trained and tested. The LSTM RNN model used for the prediction is found out to be very effective and resembles the actual trend very well.

**IV. CONCLUSION**

From the research done so far it could be concluded that the RNN and LSTM libraries are very effective in determining the stock price trends effectively relative to the actual market trend. At the same time what we could find out is that the python libraries that were used as a part of the training process were not very optimal.However, the python library functions are considered to be more adaptable. From our work done so far we can easily tell that certain stock trends can be predicted easily on the basis of certain general rules and regulations of the stock. This the main reason behind the existence of the private placement institutes. Few things such as optimization of the neural network parameters as well as the training process however always has much room for improvement. All these points would be considered as further steps in the research.

**V. REFERENCE**

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[3] Meghna Misra; Ajay Prakash Yadav; Harkiran Kaur (2020). Stock Market Prediction using Machine Learning Algorithms: A Classification Study in Department of Computer Science and Engineering,.