

Stock Market Value Prediction using Machine Learning Concept



V. Nigamrutha, S. Anusuya

Abstract: Stock market consists of various buyers and sellers. The stock market value is dynamic. It means the stock market value is changed day by day. Actually stock has been represented as shares. The owner of the share may be an individual or group of peoples. In this current economic condition stock market value prediction is the critical task because the data is dynamic. Stock market prediction means to find the future value of the stock on a financial exchange. The expected prediction output to be accurate, efficient and robust value. Traditionally the stock values are predicted by using stock related news. But it does not provide a better result. Wrong prediction of stock value leads to heavy loss. Machine learning concepts play a very important role in various domains. It is also used to predict the stock market value with the help of collected data. This paper describes about stock market value prediction using machine learning SVM (Support Vector Machine) technique. This proposed concept is implemented by python programming language. This machine learning concept produces better prediction result compared with other machine learning techniques.

Keywords: Stock Market, Prediction, Machine Learning, Features, Preprocessing.

I. INTRODUCTION

Actually, traders buy the shares for less price and sales the same shares at high rate. Now stock market value prediction is one of the key research areas in current economic condition. Stock value analysis is divided into two categories. The first type is called fundamental analysis. In this analysis perform by using various parameters like political climate, current condition of the organization and economic level. The investors take their decision based upon the above mentioned attributes. The second type of the analysis is technical analysis. Here the stock values are predicted by using various statistical values generated by the organization such as past price condition and volumes of data. Stock market data is a dynamic data. Every day the stock market value is changed. So, traditional methods are not able to produce better result. In this current scenario machine learning concepts are used in various fields.

Traders are used various machine learning algorithms to predict the stock value. These algorithms are generating better result compared with traditional methods. Multivariate analysis with time series data is also used to predict the stock value. This proposed machine learning SVM concept uses historical data for predicting stock market value. The main aim of the proposed concept is gain the market value with the help of machine learning approach. The following figure 1 shows the sample screen of stock market value.



Figure 1 Stock Market Value

The main objective of this proposed concept is to avoid unpredictable share value decision making. The stock market value is fluctuate condition. In this research article proposed a new model for predicting stock market value by using SVM approach. This concept is developed by using python language.

The second part of this article reviewed various machine learning concepts used to predict stock market value. The third part of the paper describes the proposed flow diagram and SVM concept. Fourth part discussed the proposed system result. Finally fifth part concludes the proposed concept.

II. LITERATURE SURVEY

1. Kunal Pahwa et al., says that stock market is one of the complex and difficult way in business. Investor, brokers, banking divisions and various organizations profits depends on the value of share market. In this article authors predict the stock market value by using machine learning concept with the help of open source libraries. This proposed system generates a better result. The result was the proposed system which depends upon the numbers and assumptions of various axioms [1].

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2. Tejas Mankar et al., said that Machine learning approaches and artificial intelligence concepts are being used in combination with data mining techniques to find the solution of real world problems. This technique provides better accuracy with minimum investment value. This method reduce large amount of time for predicting stock market value. Now most of the peoples invest their annual income into the share market. With the help of proper guidance the investors can able to yield high profit.

But most of the investors said stock investment is risky compared with other investments. In this article the authors proposed a new machine learning model by using tweet data. The closing stock values are also included in this proposed system. This proposed system definitely helpful to the various investors [2].

Ashish Sharma et al., discussed about the nature of stock market. It is actually dynamic in nature. Various researches are ongoing in this particular area. Investor's searches methods and tools for predicting stock market value, for decreasing the risk level. Prediction of stock value plays a major role in stock market. It is very difficult and complicated task. Traditional methods do not provide better result. In this research article the authors took a survey of regression concept to detect stock market value from existing database. The future work of this article is improving the regression concept with the help of more variables [3].

3. Zhen Hu et al., said that traditional regression concepts facing various problems. SVM is the new learning algorithm to control the decision. In this paper the authors presented a hypothetical and experiential architecture to implement SVM concept to predict the stock market value. Initially four organization economic factors are considered for multivariate approach. Next, SVM concept was used to analyze the association among the factors and predict the stock market value [4].

4. Zhihao PENG says that Big data analytics are used in various business sectors for correct forecast and study of the large amount of data sets. Here robust Cloudera-Hadoop approach had been used depends on data to do the analysis for any type of data. Here US stocks were used for analysis from yahoo. Apache Hadoop big-data architecture was used to manage large amount of data with the help of distributed data management. In this article predict the stock value with the daily basis gains using machine learning concept of Spark [5].

5. Ishita Parmar et al., says the importance of the stock market prediction. The main aim of predict future stock market value of the share market. By using the organizations existing values machine learning concepts predict the stock market value. Various machine learning approaches are existed. This article focused regression concept and LSTM based machine learning concept to predict stock market value. The various factors like open, close, volume, high value and low value are considered for predicting stock values [6].

6. Honghai Yu et al., define equity return values are predictable has been known as "new fact in finance

market". Here the authors constructed neural network architecture with two stages with the combination of SVM and EMD (Empirical Mode Decomposition) (EMD) was used to predict stock market value. In the initial stage using EMD concept divide the inputs into various regions. SVM concept was used to find most suitable kernel value and learning parameters in the second stage. At the last stage integrate all the regions to find the prediction of economic time value. Here China Stock Market Index has been used for an analysis and discovers the proposed concept generates advanced forecast presentation compared with single SVM concept [7].

7. Haiying Huang et al., explained about the problems in predicting stock market value. Stock market value prediction based upon various attributes and their critical dealings to find the prediction value of the organization stock market level. The proper prediction methods are used to generate better profit. In this paper the authors using a new architecture that integrated with support vector regression approach and Fourier transform concept to predict stock value price with the help of historical value of the organization. Fourier transform concept was used for filter the noise level and support vector regression approach is used for develop the model with the help of training. Finally the result of this proposed architecture has been used to predict the stock market value in the powerful way [8].

III. PROPOSED METHOD

Stock market values are dynamic in nature. So, the prediction of stock value is very difficult task. Traditionally stock market value has been predicted by using the help of stock related news. After certain period computing concepts are used to predict stock market value. Now machine learning approaches are used to predict the stock market value in better way. The following figure 1 is the flow diagram of this proposed concept.

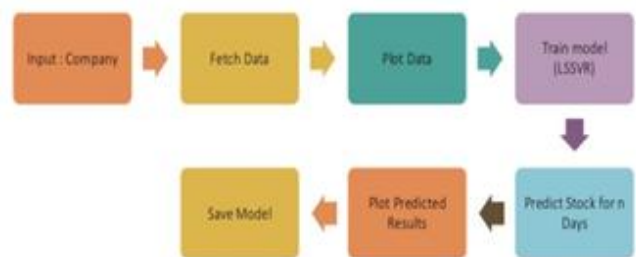


Figure 2 Process Flow

The input data has been captured from the company historical value. Then the data has been preprocessed by using various data mining concepts. The main usage preprocessing is to remove unwanted data from the original data. After the selection of features the machine learning concept is applied to classify the data. This proposed system can be divided into various modules.

The first module of the proposed system is data collection.

This proposed model uses historical data of the company. The proper data set will improve the performance of the system. The second module of this system is data preprocessing. In this stage find the missing value from the original data set, searching categorical values etc. Training the machine module is used to test the data with the help of algorithms. This module cross validation task is performed. The final module is data scoring. In this module the predictive model is applied on the original data set. The collected data available in the form of xlsx file. The various attributes used in this prediction process is HIGH, LOW, OPENP, CLOSEP, YCP, LTP, TRADE, VOLUME and VALUE. The figure 3 shows the data representation in xlsx format.

	DATE	TRADING CODE	LTP	HIGH	LOW	OPENP	CLOSEP	YCP	TRADE	VALUE (mn)	VOLUME
0	2018-08-16	1JANATAINF	6.2	6.3	6.1	6.2	6.2	6.2	58	0.757	122741
1	2018-08-16	1STPRINF	11.2	11.2	10.9	11.0	11.1	10.9	145	2.640	238810
2	2018-08-16	AAMRANET	80.1	80.4	78.5	78.5	79.7	78.3	545	15.488	195035
3	2018-08-16	AAMRATECH	30.8	31.6	30.7	31.0	30.9	31.0	155	5.100	164889
4	2018-08-16	ABBISTINF	6.1	6.1	5.9	6.0	6.1	6.0	109	11.214	1857588

Figure 3 xlsx format

The following figure 4 represented the time series plots by using matplotlib.pyplot library value.

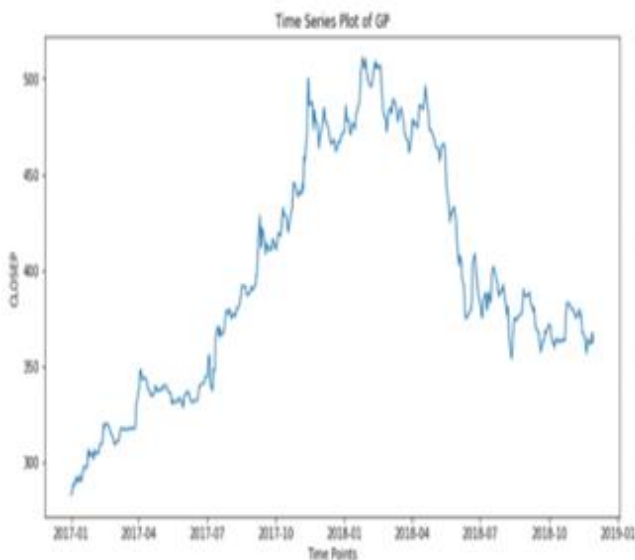


Figure 4 Time Series Plots

IV. RESULTS AND DISCUSSIONS

Now machine learning concepts are applied in various domains. The future value of stock market is also predicted by using various machines learning concept. In this proposed system SVM classifier is used to predict the stock market value. This classifier is one of the discriminative classifier. It

uses supervised learning i.e. a labeled training data value. The generated are the hyper planes which is used to categorizes the new dataset. In this classifier uses various parameters to predict the stock market value. The important parameters are kernel parameter, gamma parameter and regularization parameter. The following two histogram charts are created by using the parameters "CLOSEP" and "OPENP", "HIGH" and "LOW".

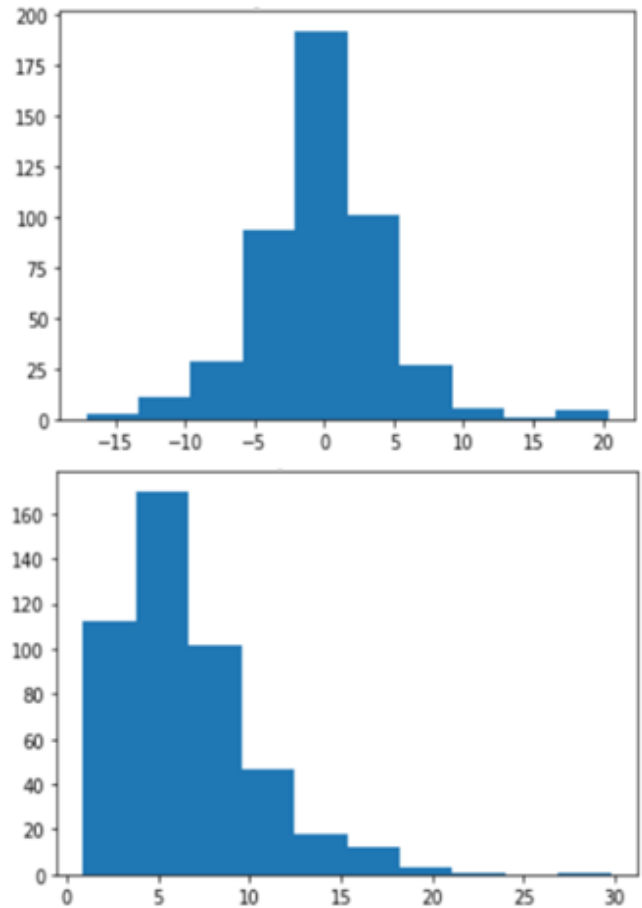


Figure 5: Graphical prediction analysis

After training the model the following confusion matrix is obtained is shown below.

	precision	recall	f1-score	suppor
-1.0	0.76	0.93	0.84	2
1.0	0.85	0.58	0.69	1
micro avg	0.79	0.79	0.79	4
macro avg	0.81	0.75	0.76	4
weighted avg	0.80	0.79	0.78	4

Figure 6 Confusion Matrix

V CONCLUSION

Stock market values are not stable as it is changed day by day. Due to this reason the prediction of future stock value is a tedious process.



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In olden days stock market values are predicted by using various stock related news. But it does not provide the better result. If there is any error on the predicted value it leads to the huge loss. All traders are interested to buy the shares at the less amount and sales the shares in higher rate. For that reason proper prediction methods are needed.

In current situation various machine learning concepts are used to predict the stock market value. In this research article SVM machine learning concept is used to predict the stock market value.

For this prediction historical values are used. This proposed SVM concept generates better result compared with other machine learning concepts. The future work of this project is to add more attributes in this share market value prediction.

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