

# Stock Value Prediction System

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**Abstract:** The use of artificial neural network is gaining popularity in the research field. Neural network consist of interconnected neurons which decipher value by using input data by feeding network values. The main aim of our project is to use backpropagation process to predict the future value. Stock market prediction models are the most challenging fields in computer science. The aim of this project is implementation of neural networks with back propagation algorithm for stock value prediction .A neural network is a powerful data-modeling tool that is able to capture and represent complex input/output relationships. We apply Data mining technology to the stock in order to research the trend of the market. Our proposed system provides methods to develop machine learning stock market predictor based on Neural Networks using Back propagation algorithm, with intent of improving the accuracy. In this paper we have used data mining process along with artificial neural network networking to predict the future value of the stock. This paper overcomes the all traditional statistical methods of the stock market value prediction.

**Keywords** –Artificial Intelligence, Neural Networks, Back propagation Machine Learning, Stock market.

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## I. INTRODUCTION

Nowadays, with the progress in technology we've got help in every field. We Humans are always interested in knowing what is going to happen next. Same goes with the field of stock market, People generally want to invest their money in stock market and expect high returns in short span of time. But there is no fixed pattern with which the market goes up and down. Various parameter are to be considered, through which the market behaves. These days stock prices are affected due to many reasons like company related news, political events, natural disasters etc.

With the advent of Artificial Neural Network, which is machine learning approach it can deal with non linear data which helps in forecasting. Neural Networks are considered as common Data mining method in different fields like economy, business, industry and science. Neural Networks are self adjusting methods based on training data, so that they can solve the problems. Neural networks can find the relationship between the input and output of the system even if the relation is complicated as it is based on training the data sets. The application of neural networks is very beneficial as pattern recognition problems predicting future is based on training set. The Back-propagation algorithm is most common type of neural network used in forecasting. Backpropagation consist of inputs and processing units known as either neurons or nodes. Back-propagation is a neural network learning algorithm. Back-propagation learns by repeatedly processing the set of samples and comparing the networks prediction for each with the actual output. If the error between the actual output and the

predicted value exceeds a threshold value then the weights of the connections (between the neurons or nodes) are modified so as to reduce the mean square error between the predicted and actual value. The modifications in the weights are done in the opposite direction i.e. from the output layer through each hidden layer down to the first hidden layer. Because the modifications in the weights of the connections are done in the backwards direction so the name given to the algorithm is Back-propagation.

In this project we are going to use the historical data from yahoo finance .It is a website which stores all the data of various companies and thus we fetch the historical data, process the historical data, train them using the back-propagation algorithm and then use the trained data sets which further helps in predicting the future value of stock.

## II. LITERATURE REVIEW

Stock Market Value Prediction Using Neural Networks:[1] In this paper, two kinds of neural networks, a feed forward multilayer Perceptron (MLP) and an Elman recurrent network, are used to predict a company's stock value based on its stock share value history. Both the networks are trained using back-propagation algorithm. The obtained results shows that amount of error using MLP neural network is less comparatively and MLP predicts close to the real one in comparison to the other methods.

Stock Price Prediction Using K-Nearest Neighbor (KNN) Algorithm:[2] In this paper, the author has applied k-nearest

neighbor algorithm and non-linear regression approach in order to predict stock price. A prediction process for five listed companies on the Jordanian Stock Market was carried out, and is considered to be the first of its type implemented in Jordan as a case study using real data and market circumstances. Consequently, a robust model was constructed for the purpose set out. The data was extracted from five major listed companies on the Jordanian stock exchange, the sample data was used for training data set (about 200 records for each company). The author adopted a prediction algorithm tool of KNN with  $k=5$  to perform such tests on the training data sets. According to the results, KNN algorithm was stable and robust with small error ratio, so the results were rational and reasonable. In addition, depending on the actual stock prices data; the prediction results were close to actual prices.

Stock Value Prediction using Artificial Neural Networks.2013:[4] In this paper ,a stock price prediction model using multi-layer feed forward Artificial Neural Network (ANN) is used. In this model, the author has used back-propagation algorithm containing one input layer, one hidden and one output layer. It is repeatedly processed and process continues until it results maximum accuracy. As the closing price of any stock already covers other attributes of the company, the author have used historical stock prices (closing) for training the network.

The model was generated in five steps:

- a) Data Collection
- b) Data pre-processing
- c) Neural Network Creation and Training
- d) Network Validation
- e) Using the Network

Indian Stock Market Predictor System:[6] In this paper the author has combined both the statistical numeric data and sentiments of the stock on the internet to predict future prices in the stockMarket,there are two kinds of data to be extracted historical data about a firm and news articles regarding that company. Gathering data from internet is solely based on the (SOR) Subject of Reference (e.g.ICICI bank).Some web mining techniques (ex. crawler) are used to gather all web pages. The system uses a predictor based on Neural Network. The training of the Neural Network is done first. After training, the system is fed with historical stock prices and postings or text of the news articles about a particular firm as inputs. The neural network with 1 input layer, 2 hidden layers and 1 output layer have been used. The model is predicting for the day  $i$  using theprevious four days values for the company and the fifth input is the Sentiment value of  $i-1$  day.

### III. PROJECT OBJECTIVES

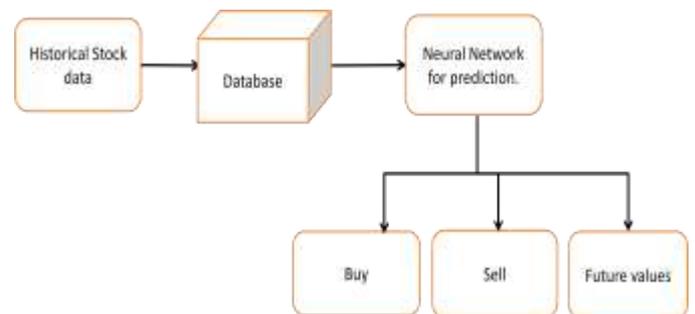
The sole purpose of this system is to predict the values of the stock based on the historical data .This helps the user in investing his money in the right company. The project is based on an application therefore it can be used on any operating system. The System also helps the user to compare between the stocks and select the stock appropriate to him.

The System includes the following features:

- The system provides a registration system for the user so the user can keep track of his stocks
- The system provides a alert system to send alerts related to stocks to the user.
- The system allows user to compare between the stocks.

### IV. PROPOSED SYSTEM

Our system is based on real time data thus it can be used anytime. The system takes historical data from yahoo finance as the input and then uses the back-propagation algorithm to predict the future values of the stock using concept of artificial neural networks Our system provides features like comparing two or more stocks and helping the user to select best available stock from the selected once. System provides detail analysis regarding including the graph of a particular stock. The system also has a feature of sending alert messages to the user regarding the information about the stock.



Algorithm:

- Step 1: Accept the input.
- Step 2: Assign weights to each input and perform Weighted summation
- Step 3: Apply it to the input layer neurons.
- Step 4: Process the input at each neuron and calculate the error.
- Step 5: Change the weights to minimize the error.
- Step 6: Process the inputs again and repeat till the error is minimized and reaches its threshold value.
- Step 7: Stop when the result is obtained.

## V. EXPERIMENTAL RESULTS

Our project is implemented using .Net, we have designed the GUI using Microsoft Visual Studio 2012. We have also used Microsoft SQL server 2008 for keeping the track of the users, all the user information is stored in the database. Our project consist of admin who controls the application .Admin is responsible for adding or deleting stocks from the application. The application also uses SMTP protocol to send email to the user. The training of data set is done using back propagation algorithm ,when the error is reached to a threshold value the training of data set is stopped and using those trained data set the value of stock is predicted.

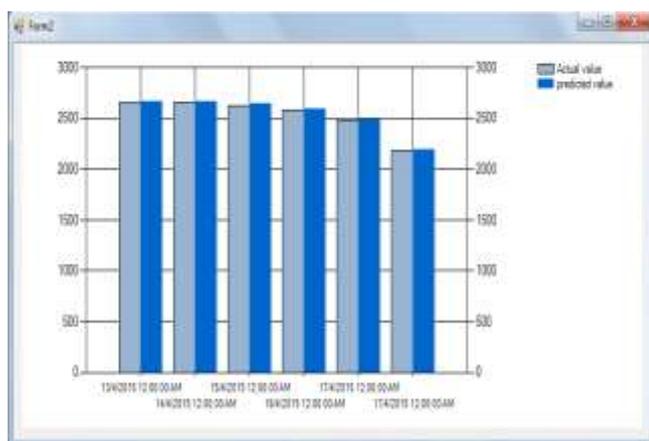


Figure 1. comparison of actual and predicted value

## VI. FUTURE WORK

Our project is solely based on the historical values of stock, the accuracy of the result obtained using only past value. Stock market also relies on many technical indicators. The accuracy of the result can be increased applying those technical indicators of stock, this can be done using sentiment analysis which can be a useful way in predicting results more accurately.

## VII. CONCLUSION

In this paper, we use one of the most precise prediction technology using multilayered neural networks in our system to provide buying or selling recommendations to our user. The system tries to predict future values of particular stock with maximum accuracy. The system collect historical data from yahoo finance to predict the values .The system only uses historical values to predict the values of the stock. This paper is providing the accurate value of the stock value than existing system.

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