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REVIEW PAPER ON AN IMPROVED APPROACH FOR BUSINESS & MARKET INTELLIGENCE USING ARTIFICIAL NEURAL NETWORK

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Abstract*:* Stock prediction with data mining techniques is one of the most important issues in finance being investigated by researchers across the globe. Data mining techniques can be used extensively in the financial markets to help investors make qualitative decision. One of the techniques is neural network. In this, neural networks technique is applied to get the predicted price. Although neural networks may have complex structure, long training time, and uneasily understandable representation of results, neural networks have high acceptance ability for noisy data and high accuracy and are preferable in data mining. We used Back propagation algorithm for training session and Multilayer Feed forward network as a network model for predicting price. In this, we introduce a method which can predict share market price using Back propagation algorithm and Multilayer Feed forward network.

Keywords: Data mining, Neural Network, Machine Learning, Back propagation Algorithms, Share Market.

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INTRODUCTION

We all know the running world is fully depends of computer technique which play vital role in living style as well as working life from here and there. Today's databases and data repositories contain so much data and information that it becomes almost impossible to manually analyse them for valuable decision-making. A new data analysis technique is needed with large data and extracts potentially valuable information; therefore, data mining technology comes into being. Data Mining is the core of knowledge discovery work, the main research is focused on the methods and techniques of finding knowledge [1]. Now we are generating the idea of modelling- and computational programming technique having multidimensional prospects who can behave like the human activities by artificial component. We are fully concerned on the soft-computing process by introducing the application and utilization of neural network. It is a non-trivial process of automatically exacting that useful information hidden in the data collection from it. Thus, the size and volume of data being managed raises new and interesting issues.

However, more and more data, expanding the size of the database, result in a huge flood of data. the information of supporting decision is very poor, so how to change large amounts of data into decision-supporting information and how to provide decision makers a unified focus of research has become a global perspective [2]. To solve this problem, the data warehouse established in many areas. But the large amounts of data often make it impossible to identify information hidden in the data warehouse and supporting decision-making. Therefore, humans need assistance in their analysis capacity; humans need data mining and its applications. The application for the data mining is the neural technique which is very wide.

LITERATURE REVIEW & RELATED WORK

H. White [7] reported some results of an on-going project using neural network modelling and learning techniques to search for and decode nonlinear regularities in asset price movements. Author, focus on case of IBM common stock daily returns. Having to deal with the salient features of economic data highlights the role to be played by statistical inference and requires modifications to standard learning techniques which may prove useful in other contexts.

J. Racine et al. [8] in there paper they propose tests for individual and joint irrelevance of network inputs. Such tests can be used to determine whether an input or group of inputs "belong" in a particular model, thus permitting valid statistical inference based on estimated feed forward neural-network models. The approaches employ well-known statistical re

sampling techniques. They conduct a small Monte Carlo experiment showing that there tests have reasonable level and power behaviour, and they apply methods to examine whether there are predictable regularities in foreign exchange rates. They find that exchange rates do appear to contain information that is exploitable for enhanced point prediction, but the nature of the predictive relations evolves through time.

K. Schierholt et al. [9] made to predict the behaviour of bonds, currencies, stocks, or stock markets. In this paper, the Standard and Poor 500 Index is modelled using different neural network classification architectures. Most previous experiments used multilayer perceptions for stock market forecasting. In their paper, a multilayer perception architecture and ZL probabilistic neural network are used to predict the incline, decline, or steadiness of the index. The results of trading with the advice given by the network are then compared with the maximum possible performance and the performance of the index. Results in their paper show that both networks can be trained to perform better than the index, with the probabilistic neural network performing slightly better than the multi layer perceptron.

P. Charkha in [10] analysed feed forward network using back propagation learning method with early stopping and radial basis neural network to predict the trend of stock price i.e. Classification and to predict the stock price i.e. value prediction. Objective of their research was to determine the usability of artificial neural networks in predicting the future prices based on past prices alone.

BACK PROPAGATION

Back propagation is a form of supervised learning for multi-layer nets, also known as the generalized delta rule. Error data at the output layer is back propagated to earlier ones, allowing incoming weights to these layers to be updated. It is most often used as training algorithm in current neural network applications. Since its rediscovery, the back propagation algorithm has been widely used as a learning algorithm in feed forward multilayer neural network [5].

Back propagation is a general purpose learning algorithm. It is powerful but also expensive in terms of computational requirements for training. A back propagation network with a single hidden layer of processing elements can model any continuous function to any degree of accuracy given enough processing elements in the hidden layer. A back propagation neural network uses a feed-forward topology, supervised learning, and back propagation learning

algorithm. This algorithm was responsible in large part for the re-emergence of neural networks in the mid 1980s.
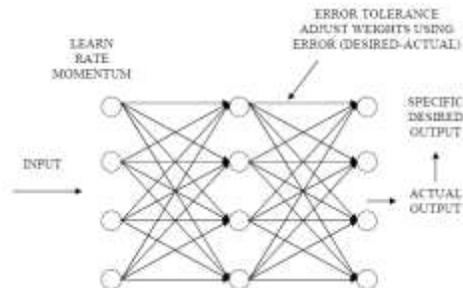

Figure 1: Back Propagation Network

There are literally hundreds of variations of back propagation in the neural network literature, and all claim to be superior to "basic" back propagation in one way or the other. Its two primary virtues are that it is simple and easy to understand, and it works for a wide range of problems. The basic back propagation algorithm consists of three steps.

- The input pattern is presented to the input layer of the network. These inputs are propagated through the network until they reach the output units. This forward pass produces the actual or predicted output pattern.

- Because back propagation is a supervised learning algorithm, the desired outputs are given as part of the training vector. The actual network outputs are subtracted from the desired outputs and an error signal is produced.

- This error signal is then the basis for the back propagation step, whereby the errors are passed back through the neural network by computing the contribution of each hidden processing unit and deriving the corresponding adjustment needed to produce the correct output. The connection weights are then adjusted and the neural network has just "learned" from an experience.

APPLICATION

The application of neural network which is commonly used in real world is as follows:

- Predict the translation initiation sites in DNA sequences and Study human TAP transporter.

- Explain the theory of neural networks using applications in biology

- Predict immunologically interesting peptides by combining an evolutionary algorithm.

- Carry out pattern classification and signal processing successfully in bioinformatics; in fact, a large number of applications of neural network can be found in this area.

CONCLUSION

In this paper, we tried to sum up the application of Artificial Neural Networks (ANN) for predicting stock market. ANN have shown to be an effective, general purpose approach for pattern recognition, classification, clustering and especially time series prediction with a great degree of accuracy. Nevertheless, their performance is not always satisfactory. Back propagation algorithm is the best algorithm to be used in Feed forward neural network because it reduces an error between the actual output and desired output in a gradient descent manner.

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