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Research Article

STOCK MARKET PRICE COMPARISON USING BPNN AND ANFIS

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ABSTRACT

As stock price gets fluctuated every bit of second it becomes very difficult to predict the stock price. To overcome the difficulties faced by people while predicting or guessing the stock price the algorithms would be created which will be helpful in overcoming the difficulties faced while predicting the stock price .The accuracy of models while predicting the stock price is tested with the real price which will be helpful for stock traders to predict the price of the stock.

INTRODUCTION

Stock Market Prediction is the technique to determine the future value of a company stock or other financial instrument traded on exchange. The successful prediction of a stock's future price could yield profit. The efficient-market hypothesis suggests that stock prices reflects all currently available information and any price changes that are not based on newly available information about the company that is highly unpredictable. Nowadays there is increase in the number of daily trading of the stock market. And it is a crucial task to predict the stock price of any stock efficiently. There are many models developed for predicting the stock price based on various different methods and technology. There are even hybrid model available for predicting the accurate stock price. The two models BPNN and fuzzy are trained which helps in predicting the stock price and the deviation of the graphs obtained is tested with the original price .The hybrid model is developed which is tried for getting the better results. The models will help in predicting the stock prices much efficiently which will help every stock trader to deal efficiently with stocks.

Related Work

Stock market price prediction is done using various artificial neural network (ANN) where ANN is data mining technique that are learning capability of the human brain.ANN have been used for prediction of stock from long time. The prediction model, the implementation process, data collection is carried out in different steps. It uses the simple process and approach of carrying out the feed forward back propagation neural network. The performance of network was recorded and different error and value where studied for the prediction and working of the algorithm.

In these work, forecasting of stock price using fuzzy neural network is predicted. The genetic fuzzy neural network is used for the prediction of the stock price .The fuzzy logic works as the rule based development in artificial intelligence it can tolerate noisy information and train the network for predictions. The fuzzy network is combined with the genetic fuzzy neural network for overcoming the difficulties of fuzzy network and the predictions obtained are much better and higher results.

In these work, a fuzzy inference system is combined into an ANFIS structure, to take advantage of neural methodology to train a fuzzy system that intensifies its capability of dealing with nonlinearity and impression in addition to its implementation .In these logic the advantage is obtained when the large dataset is trained for input parameters .The results obtained to them where much higher and of better accurate prediction.

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Proposed System

Artificial Neural Network

Artificial neural network(ANN) is an information processing system that were inspired by generalizations of mathematical of human neurons .Artificial neural network are chosen for its ability to generalize results from unseen data, for dynamic system for real time data. ANN's are parallel computational models comprised of densely interconnected adaptive processing units. These methods are fined grained parallel implementation model. ANN,s have ability to identify and learn correlated data patterns between input datasets and corresponding actual target values. ANN, s are networks of highly interconnected neural computing elements that have ability to respond to input and adapt to the environment by learning.ANN has two phases, the phase of learning and the phase of recalling. In the phase of learning, known datasets are used as a training signal in input and output layers .The recall takes the input of the weight obtained in the learning phase .

Back Propagation Neural Network

Here in these paper we are using feed-forward back propagation algorithm for training the stock market company data and for predicting the stock value. The back propagation algorithm with multilayer feed forward for network prediction is used. Feed Forward back propagation has three layers of working as shown below in the figure 1:

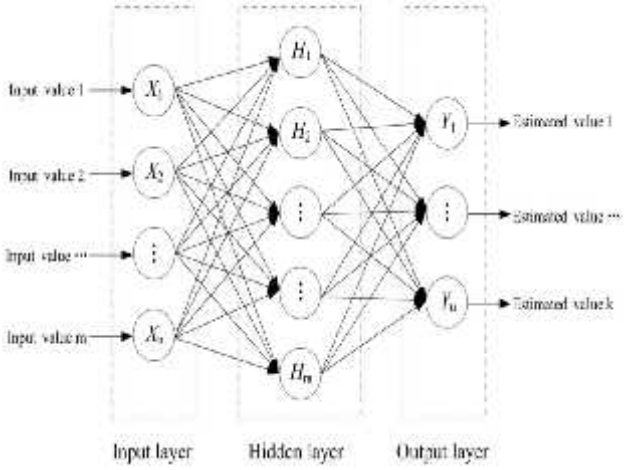

Figure1 Feed-forward back propagation architecture

As shown in above figure feed-forward back propagation architecture has three layers of neurons, where one is input layer, one hidden layer and one output layer is present. The training data is first taken by the input layer where the data is processed to the hidden layer neurons and the output layer is provided with the data where the output layer data id further again processed as the training data through hidden layers which gives the better prediction result and provides the much better values of prediction. As the number of hidden layers is increased the prediction of the results becomes better in fee-forward back-propagation neural network.

Fuzzy Neural Network

Fuzzy neural network is an learning machine that uses the learning algorithm an fuzzy logic for finding the aproximation of the fuzzy values.fuzzy logic uses an if-then rules for the training of the data sets .The if-then rules of fuzzy set are obtained through the key components of fuzzy inference system(FIS) that effectivelty models the human expertise in applications.The fuzzy lacks the adaptibility to deal with the changing external environment .

Adaptive Neuro Fuzzy Inference System(ANFIS)

As there are many difficulties in fuzzy neural network so here in our proposed system the adapative neuro fuzzy inference system is used that is the sugeno model is used for prediction of the data .The ANFIS architecture represent both the sugeno and Tsukamoto fuzzy models.In anfis model there are 2 inputs x and y and one output z based on which the if –then rules are developed.In ANFIS it gives the linear output .It works based on the linear equation.

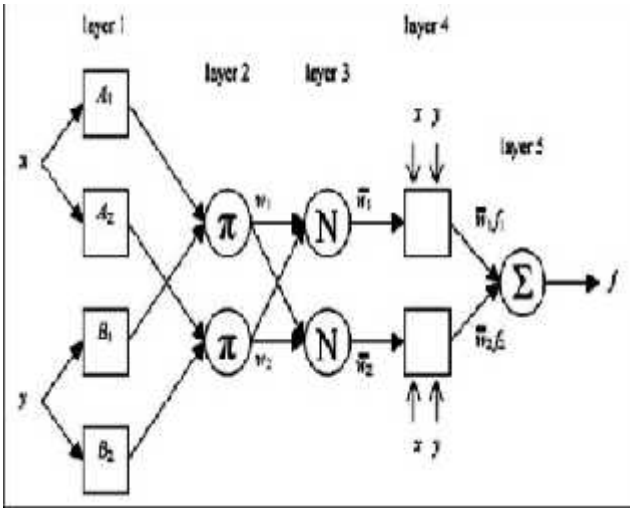

Figure 2 ANFIS architecture

The if- then rules developed are as below:
Rule1:If x is A_1 and y is B_1 ,then $f_1=p_1x+q_1y+r_1$,
Rule2:If x is A_2 and y is B_2 ,then $f_2=p_2x+q_2y+r_2$,

further more rules are developed similarly in the inference system.The output is obtained after processing of the all the rules in the inference system.

CONCLUSION

In this paper, thus we have proposed the system where the feed-forward back propagation neural network(BPNN) and the Adaptive Neuro Fuzzy Inference System(ANFIS) would be used for the further prediction of the stock price of the different companies.The comparision of both the algorithm would be studied for the output values , error values etc.The model is further developed .The RMSE error of both the models is compared and studided.The analysis of Stock data is to be done and the prediction of the stock price would be given by the model.

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