

Forecasting Stock Market Indices Using Artificial Neural Networks

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This research work presents an Artificial Neural Network (ANN) approach for stock price indices forecasting. The data from the Colombo stock exchange (CSE) have been used as inputs for the Proposed System. The nonlinear nature and the complex behavior of this type of time series data, create difficulties in forecasting. This research determines the feasibility and practicality of using an ANN as a forecasting tool since it is capable of approximating nonlinear functions.

Aim of this investigation was to demonstrate the utility of Feed Forward Back Propagation neural network to investigate the predictability of stock market indices using the most appropriate ANN model that would be able to accurately predict the future behavior of stock market price indices.

This has been accomplished by developing a system for time series forecasting with the use of neural network technology. The system was implemented by considering main properties of ANN such as choice of input parameters, determination of the number of neurons in hidden layer, learning rate of neural network training and finally construction of a neural network forecaster. Large amount of neural networks were implemented with different combination of properties as mentioned above and finally the most optimum model was selected as forecaster. Implemented system successfully achieves the good directional prediction accuracies. Computer simulations are presented to show the effectiveness of the implemented system.

This study shows that the accuracy of the model mainly depends on the input parameters and the architecture of the neural network. Finally it suggests ways to improve the ANN forecasting model.

Key words: Artificial Neural Network (ANN), Colombo stock exchange