Abstract

Forecasting is very important for planning and decision-making in all fields to forecast the conditions and cases surrounding the problem under study before making any decision[21]. Hence, many forecasting methods have been developed to produce accurate forecasting values, reduce the degree of randomness, the changes that affect the time series, and non-linearity of data. In this proposed research, A Hybrid model (Neuro-Fuzzy-PSO) to forecast Time series. The proposed Hybrid model in the first stage after data initialization generate fuzzy inference system(FIS) by NEURO-FUZZY, which use grid partition method, Fuzzy C-Mean (FCM), and subtractive clustering.In the second stage trains the model NEUROFUZZY by back propagation method, Hybrid method, and PSO method. The Revenue Tax data taken from the Republic Yemen during the period 2000-2014 as a data of time series to achieve, ministry of Finance. The performance of the proposed forecasting system is evaluated using common statistical standard measures such as Mean Absolute Error (MAE), Mean Square Error (MSE), Root Mean Square Error (RMSE), Mean Absolute Percentage Error (MAPE), and The linear
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repression. Also, the forecasting results obtained are compared with all models used. Experimental results showed that the hybrid model Neuro-Fuzzy-PSO of forecast reduces the degree of randomness, the changes that affect the time series, and non-linearity of data. The results for real data sets under consideration clearly prove that the hybrid model (generation by subtractive method and PSO training) is able to outperform each components model used separately in terms of increasing the forecasting accuracy and decreasing the overall forecasting errors.

References


Index Terms

Computer Science  Fuzzy Systems

Keywords
Neuro-Fuzzy, PSO Algorithm, Subtractive Clustering