

Comparison of ANN Back Propagation Techniques in Modelling Network Traffic Activities

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In this paper, we demonstrated a method used for forecasting the daily network traffic activities by using artificial neural network (ANN) with back propagation (BP) algorithms. We used the inputs and outputs of data from network traffic to identify ANN-BP models and algorithms, and we studied the performance of seventeen BP algorithms. The results using the 17 BP algorithms that include R², MSE, MAPE and MAD were obtained with (2-12-1) network structure. Then, we compared the results using MAPE and accuracies values. The results of the comparison shows that from the seventeen BP algorithms were tested, there are some BP algorithms that generate high efficiency and accuracy of predicting the network traffic activities. Based on the results obtained, Levenberg-Marquardt, Bayesian Regularization, Fletcher-Powell Conjugate Gradient, Gradient Descent, Gradient Descent with Adaptive Learning Rate, Batch Training with Weight and Bias Learning Rules, and Sequential Order Weight/Bias Training algorithms are found to be very good for forecasting network traffic activities.