



A NEW MULTILAYER FEEDFORWARD NETWORK BASED ON TRIMMED MEAN NEURON MODEL

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Abstract: The multilayer perceptron model has been suggested as an alternative to conventional approaches, and can accurately forecast time series. Additionally, several novel artificial neural network models have been proposed as alternatives to the multilayer perceptron model, which have used (for example) the generalized-mean, geometric mean, and multiplicative neuron models. Although all of these artificial neural network models can produce successful forecasts, their aggregation functions mean that they are negatively affected by outliers. In this study, we propose a new multilayer, feed forward neural network model, which is a robust model that uses the trimmed mean neuron model. Its aggregation function does not depend on outliers. We trained this multilayer, feed forward neural network using modified particle swarm optimization. We applied the proposed method to three well-known time series, and our results suggest that it produces superior forecasts when compared with similar methods.

Key words: *neural networks, neuron model, trimmed mean, particle swarm optimization, outliers, forecast*

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1. Introduction

Forecasting refers to the process of making an inference related to the future using available knowledge. It is important to the economy and policies of countries. Conventional forecasting models may not be adequate because they require various assumptions. Artificial neural networks (ANNs) do not require the conventional time series assumptions, and have been used extensively and successfully as an

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