

An IM-COH Algorithm Neural Network Optimization with Cuckoo Search Algorithm for Time Series Samples

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Abstract : Back propagation algorithm (BP) is a widely used technique in artificial neural network and has been used as a tool for solving the time series problems, such as decreasing training time, maximizing the ability to fall into local minima, and optimizing sensitivity of the initial weights and bias. This paper proposes an improvement of a BP technique which is called IM-COH algorithm (IM-COH). By combining IM-COH algorithm with cuckoo search algorithm (CS), the result is cuckoo search improved control output hidden layer algorithm (CS-IM-COH). This new algorithm has a better ability in optimizing sensitivity of the initial weights and bias than the original BP algorithm. In this research, the algorithm of CS-IM-COH is compared with the original BP, the IM-COH, and the original BP with CS (CS-BP). Furthermore, the selected benchmarks, four time series samples, are shown in this research for illustration. The research shows that the CS-IM-COH algorithm give the best forecasting results compared with the selected samples.

Keywords : artificial neural networks, back propagation algorithm, time series, local minima problem, metaheuristic optimization

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