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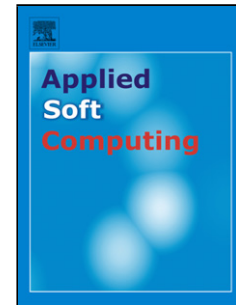
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Performance Analysis of a Higher Order Neural Network with an Improved Shuffled Frog Leaping Algorithm for Currency Exchange Rate Prediction

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Highlights:

- The predictability of a higher order neural network called Pi-Sigma network (PSNN) is explored for forecasting highly non linear and dynamic currency exchange rates.
- An improved shuffled frog leaping (ISFL) algorithm is set forth to estimate the unrevealed parameters of the network.
- A comparative performance of PSNN is analyzed with proposed ISFL learning technique and other evolutionary learning schemes such as shuffled frog leaping (SFL), Particle Swarm Optimization (PSO) and Differential Evolution (DE) algorithm.
- The proposed model is also compared with state of art models such as MLP, RBF and LR based predictor models.

Abstract

Accurate and unbiased prediction of future currency exchange rate is always a potential field of research in domain of financial time series analysis. In this paper, an attempt is urged to examine the predictability of a higher order neural network called Pi-Sigma network for forecasting the highly non linear and dynamic currency exchange rates. An Improved Shuffled Frog Leaping (ISFL) algorithm is set forth to estimate the unrevealed parameters of the network. The network is also examined with few other meta-heuristic learning techniques and compared with other state of art models. Empirically the model validation is realized over three currency exchange data sets such as USD/CAD, USD/CHF, and USD/JPY accumulated within same period of time. Practical analysis of results suggests that the Pi-Sigma network learned with ISFL is a promising predictor model for currency exchange rate prediction compared to other models included in the study.

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