Imperialist Competitive Algorithm Combined with Refined High-Order Weighted Fuzzy Time Series (RHWFTS-ICA) for Short Term Load Forecasting

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Abstract- In this study, a hybrid algorithm based on a refined high-order weighted fuzzy algorithm and an imperialist competitive algorithm (RHWFTS-ICA) is developed. This method is proposed to perform efficiently under short-term load forecasting (STLF). First, autocorrelation analysis was used to recognize the order of the fuzzy logical relationships. Next, the optimal coefficients and optimal intervals of adaption were obtained by means of an imperialist competitive algorithm in the training dataset. Lastly, the obtained information was employed to forecast the 48-step-ahead of the STLF problems. To validate the proposed method, eight case studies of real load data, collected from the U.K. and France.