

Short-Term Load Forecasting Based on Variational Mode Decomposition and Least Square Support Vector Machine

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Abstract : To address the problems of non-linearity and high randomness of the original power load sequence causing the degradation of power load forecasting accuracy, a short-term load forecasting method is proposed. The method is based on the Least Square Support Vector Machine optimized by an Improved Sparrow Search Algorithm combined with the Variational Mode Decomposition proposed in this paper. The application of the variational mode decomposition technique decomposes the raw power load data into a series of Intrinsic Mode Functions components, which can reduce the complexity and instability of the raw data while overcoming modal confounding; the proposed improved sparrow search algorithm can solve the problem of difficult selection of learning parameters in the least Square Support Vector Machine. Finally, through comparison experiments, the results show that the method can effectively improve prediction accuracy.

Keywords : load forecasting, variational mode decomposition, improved sparrow search algorithm, least square support vector machine

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