基于模糊灰色聚类 AMPSO-BP 短期负荷预测

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摘　要：相似日的准确选取是精准预测短期负荷关键，提出了一种模糊灰色聚类方法选取相似日.神经网络由于强大的非线性逼近能力、不需要建立数学模型等优势可以很好地完短期负荷预测.但是常用的神经网络也存在学习效率慢、容易陷入局部极小值的缺点.为改进传统神经网络的不足，提高预测精度，提出自适应变异粒子群优化算法（Particle Swarm Optimizition with Adaptive Mutation，AMPSO）优化 BP 神经网络参数.最后利用唐山市电网数据通过 Matlab 进行仿真，实验结果显示，所提的负荷预测方法有更好的预测准确性和稳定性.

关键词：负荷预测；神经网络；模糊灰色聚类；自适应变异粒子群优化

Short-term load forecasting based on fuzzy gray correlation clustering and AMPSO-BP neural network

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Abstract：Accurate selection of similar days was the key to accurately predict short-term load，and a fuzzy gray clustering method was proposed to select similar days. The neural network could well predict short-term load for prediction due to its strong nonlinear approximation ability and need not to establish mathematical models. However， the commonly used neural network also had the disadvantages of slow learning speed and easy to fall into local minimum values. A Particle Swarm Optimizition with Adaptive Mutation (AMPSO) algorithm was proposed to optimize BP neural network parameters in order to improve the shortcomings of traditional neural networks and improve the prediction accuracy， Finally， using Tangshan power grid data to simulate through matlab， the experimental results show that the proposed load forecasting method has better prediction accuracy and stability.

Key words：load prediction; neural network; fuzzy gray correlation clustering; AMPSO

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