

工程与应用

改进GA-BPNN在短期电力负荷预测中的应用

张勇, 杨云

陕西科技大学 电气与信息工程学院, 西安 710021

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摘要 为了避免传统方法预测短期电力负荷建模复杂性, 将改进遗传算法(GA)和误差反向传播(BP)算法相结合构成的混合算法用于训练人工神经网络, 结合电力负荷历史数据, 对短期电力负荷进行仿真预测。仿真结果表明, 该混合算法有效地解决了常规BP算法学习网络权值收敛速度慢、易陷入局部极小和GA算法独立训练神经网络速度缓慢等问题, 具有较快的收敛速度和较高的预测精度。

关键词 [短期电力负荷](#) [遗传算法](#) [人工神经网络](#) [反向传播](#) [预测](#)

分类号

Research of short-term power load forecasting based on improved GA-BP neural network model

ZHANG Yong, YANG Yun

Department of Electrical and Information, Shaan' xi University of Science & Technology, Xi' an 710021, China

Abstract

In order to avoid the complex forecasting model of short-term load by traditional methods, the hybrid algorithm which combines improved GA with BP is used to train artificial neural network for carrying on the simulation forecast to the short-term power load according to the past power load data. The results show that the defects of conventional BP algorithm, i.e., easy to fall into local minimum, slow convergence speed of the weight value of learning network, and that of GA, i.e., the training speed is too slow when GA is used to train the neural network effectively improved by itself, are effectively improved by the hybrid algorithm and the hybrid algorithm possesses faster convergence speed and higher calculation accuracy.

Key words [short-term load](#) [GA \(genetic algorithm\)](#) [artificial neural network](#) [BP \(error back propagation\)](#) [forecasting](#)

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通讯作者 张勇 helloaword@126.com

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