

## 电力市场

### 改进的TSK型动态模糊神经网络在短期负荷预测中的应用

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#### 摘要:

将改进的TSK型模糊神经网络(fuzzy neural network, FNN)应用于短期负荷预测。该FNN由椭圆基函数构成神经元的中心和宽度参数, 并且具有以下特征: 网络结构和参数可自动并同时进行调整, 不需提前分割输入空间, 也不需提前选择网络初始参数; 模糊规则在学习过程中可动态增删, 不需采用迭代算法即可快速生成。这种模糊规则可动态增删的模糊神经网络(growing and pruning fuzzy neural network, GPFNN)简单有效, 可以降低网络的复杂性, 加快网络的学习速度。使用EUNITE竞赛数据作测试数据对上述GPFNN方法进行测试, 结果表明采用该方法进行短期负荷预测时可获得较高的准确率。

#### 关键词:

### An Improved TSK-Type Dynamic Fuzzy Neural Network Approach for Short-Term Load Forecasting

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#### Abstract:

In this paper, an improved TSK-Type fuzzy neural network (FNN) is proposed for short-term load forecasting. The FNN is based on ellipsoidal basis function neurons consisting of a center vector and a width vector, and has the following features: structure identification and parameters estimation are performed automatically and simultaneously without partitioning the input space and selecting initial parameters in advance; fuzzy rules can be recruited or deleted dynamically during the learning process, and can be generated quickly without resorting to iteration algorithms. This growing and pruning fuzzy neural network (GPFNN) is simple and effective. It can not only reduce the complexity of the network but also accelerate the learning speed. The GPFNN is tested on the actual electric load data from EUNITE competition data. Results show that it provides the superior accuracy when applying in the short-term load forecasting.

#### Keywords:

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