

电力市场

基于D-S证据理论的相似日支持向量机短期负荷预测

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摘要:

针对基于支持向量机(support vector machine, SVM)的负荷预测方法存在数据输入维数大、训练时间长等缺点, 提出了一种基于证据融合的相似日支持向量机预测方法。选取相似日时考虑平均负荷的大小、负荷曲线形状和温度差值, 通过证据融合得到与预测日负荷高度相似的相似日, 以此作为支持向量机的训练数据, 剔除了大量的冗余数据, 减少了输入维数, 提高了预测精度。将该方法用于短期负荷预测, 并与采用标准支持向量机法得到的结果进行对比, 发现该方法可显著提高预测精度。

关键词:

Short-Term Load Forecasting for Similar Days Based on Support Vector Machine and Dempster-Shafer Theory

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Abstract:

In view of the defects in the load forecasting based on support vector machine (SVM) such as high dimensionality of input data and long training period, an evidence fusion-based load forecasting method, in which the SVM is utilized, for similar days is proposed. During the choosing of similar days the range of average load, the shape of load curve and the difference of temperature are considered, and by means of evidence fusion the similar day, whose load is highly similar to the forecasted day, is obtained and is taken as the training data of SVM while a lot of redundant data are rejected, thus the dimensions of the input is decreased and the forecasting accuracy is improved. Applying this method to short-term load forecasting and comparing the forecasting results with those by standard SVM, it is proved that the forecasting accuracy is evidently improved.

Keywords:

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