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基于改进ENN2 聚类算法的多故障诊断方法

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Multi-fault diagnosis method based on improved ENN2 clustering algorithm

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摘要

针对可拓神经网络无法解决多故障诊断的问题, 建立问题模型, 将多故障诊断问题转化为多特征样本的聚类问题. 从模型结构和学习算法两个方面对ENN2 进行改进, 提出基于改进ENN2 聚类算法的多故障诊断方法, 并对其参数和时间复杂度进行分析. 采用工程实例对所提出的方法进行验证, 结果表明, 所提出的方法能够解决离线的多故障诊断问题, 且得到的诊断模型可用于在线状态监控, 具有较好的应用前景.

关键词 : 多故障诊断, 可拓神经网络, 改进ENN2 聚类算法, 状态监控

Abstract :

For the problem that multi-fault diagnosis can not be solved by the extension neural network, a problem model is built, and the multi-fault diagnosis problem is transformed into the clustering problem for multi-attribute samples. ENN2 is improved from two faces of the model structure and learning algorithm, and the multi-fault diagnosis method based on the improved ENN2 clustering algorithm is proposed with the analysis of parameters and time complexity. The proposed method is verified by an engineering instance. The results show that the method can resolve the offline multi-fault diagnosis problem, and the obtained diagnosis model can also be applied to online fault monitoring, so it has a wide application prospect.

Key words : multi-fault diagnosis extension neural network improved ENN2 clustering algorithm condition monitoring

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