工程与应用

基于粗糙集决策网络的故障诊断规则提取方法

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摘要　　针对故障诊断信息的不一致性，提出一种基于粗糙集决策网络的故障规则提取方法。将故障诊断决策系统通过分辨矩阵和分辨函数进行属性约简后，构造出一个不同简化层次的决策网络。将属性约简集作为网络初始节点，根据网络节点得到决策规则集；同时，为了有效滤除噪声，在置信度的基础上引入了规则覆盖度的概念，对提取的规则进一步评价，最终提取有效的诊断规则。旋转机械故障实例验证了该方法的有效性。

关键词　　粗糙集　故障诊断　规则提取　决策网络　覆盖度

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Method of rules extraction for fault diagnosis based on rough set theory decision network

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Abstract

Directing to the inconsistency of the fault diagnosis information，a method of the rules extraction for fault diagnosis based on rough set theory and decision network is proposed.The fault diagnosis decision system attributes are reduced through discernibility matrix and discernibility function firstly，and then a decision network with different reduced levels is constructed.Initialize the network's node with the attribute reduction sets and extract the decision rule sets according to the node of the decision network.In addition，the concept of coverage degree based on confidence degree is introduced to filter out noise and evaluate the extraction rules.The availability of this method is proved by a fault diagnosis example of rotating machines.

Key words　　rough set theory　fault diagnosis　rules extraction　decision network　coverage degree

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