论文与报告

基于结点优化的决策导向无环图支持向量机及其在故障诊断中的应用

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摘要

支持向量机(Support vector machine, SVM)是利用离在线数据自动建立故障诊断模型的智能方法,它在多故障诊断时, 必须先进行多分类扩展. 决策导向无环图(Decision directed acyclic graph, DDAG)法是一种性能优秀的多分类扩展策略, 但该方法的决策结果与结点的排部密切相关, 而其结点的排部却是主观的, 影响了诊断的正确率. 本文提出一种根据故障数据的空间分布来优化结点排部的方法, 它能够提高支持向量机诊断的正确率. 采用该方法扩展的多分类支持向量机在变压器故障诊断中获得良好效果.

关键词　支持向量机　故障诊断　多分类　决策导向无环图　结点优化

分类号

	扩展功能
	本文信息
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	▶ [HTML全文](0KB)
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Support Vector Machine Based on Nodes Refined Decision Directed Acyclic Graph and Its Application to Fault Diagnosis

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Abstract

Support vector machine (SVM) is an intelligent method which can create diagnostic models automatically by using off/on-line data sets, but it needs to be extended to a multi-class classifier for multi-fault diagnosis. Decision directed acyclic graph (DDAG) is an extending strategy with outstanding performance. However, its decision largely depends on the sequence of nodes which is arbitrarily selected. This affects the accuracy of diagnosis. In this paper, we proposed a method to refine the sequence of nodes according to the distribution of fault data sets, so as to improve the accuracy of SVM-based diagnosis. Multi-class SVM extended by our method has been employed as a transformer fault diagnosis, and satisfactory results have been obtained.

Key words　Support vector machine (SVM)　fault diagnosis　multi-class　decision directed acyclic graph (DDAG)　node-refined

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