

工程与应用

## 基于RIPPER的旋转机械故障诊断知识获取

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**摘要** 数据挖掘技术能够从大量、不完全、有噪声、模糊、随机的实际应用数据中, 提取隐含在其中的、人们事先不知道的本质的规律。为了有效地发现旋转机械故障诊断过程中的故障征兆知识, 引入数据挖掘技术和方法。针对旋转机械, 构建了基于重复增量修枝算法RIPPER (Repeated Incremental Pruning to Produce Error Reduction) 的故障诊断知识获取系统。通过收集故障现象并整理成由故障征兆、故障类型等组成的故障信息样本, 应用RIPPER算法对故障进行分析得到故障诊断规则集文件, 实现故障诊断系统知识的获取和自动更新, 并能对旋转机械的常见故障进行诊断, 验证了算法的合理性。

**关键词** [旋转机械](#) [故障诊断](#) [知识获取](#) [规则挖掘](#) [重复增量修剪减少误差方法 \(RIPPER\)](#)

分类号

## Rotating machinery fault diagnosis knowledge rules mining based on RIPPER methodology

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### Abstract

Data mining technology could extract the un-known natural rules from the amount, incomplete, noise, fuzzy and random practical information. The data mining technology is studied in order to obtain the fault diagnosis knowledge of rotating machinery effectively. A new fault diagnosis model is proposed based on data mining. The RIPPER (Repeated Incremental Pruning to Produce Error Reduction) data mining rule learning algorithms are studied by comparison from all aspects such as prediction accuracy, learning efficiency and robustness. Through collected the fault information and created the fault samples, the rules set files are obtained by using the RIPPER rule-learning algorithm and the intelligent diagnosis knowledge rules are updating in time. Finally the fault type is determined. The extracted knowledge rules can also be used as the real time diagnosis. It is used for vibration signal data mining in engineering field concerned with the frequency domain successfully.

**Key words** [rotating machinery](#) [fault diagnosis](#) [knowledge acquisition](#) [rule mining](#) [RIPPER](#)

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