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基于RS与LS_SVM的密闭鼓风炉故障诊断

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摘要 针对密闭鼓风炉故障信息的复杂性和不完备性，建立了基于粗糙集（RS）和最小二乘支持向量机（LS_SVM）相结合的故障诊断模型。首先运用等频率划分法对故障诊断数据中的连续属性进行离散化，然后采用粗糙集理论进行故障诊断决策系统约简，获得最优决策系统。将约简结果与LS_SVM相结合，建立了故障诊断模型。实验结果表明，该模型提高了诊断效率和判断准确率。

关键词 粗糙集（RS） 最小二乘支持向量机（LS_SVM） 故障诊断 密闭鼓风炉

分类号

Imperial smelting furnace fault diagnosis based on rough set and least squares support vector machine

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Abstract

Due to the incompleteness and complexity of fault diagnosis for imperial smelting furnace，a method based on Rough Set（RS） and Least Squares Support Vector Machine（LS_SVM） is proposed to identify the fault of imperial smelting furnace.Firstly，the discretization for the continuous attributes data in diagnostic decision system uses equal frequency scale.Then，diagnostic decision-making is reduced based on rough sets theory，the noise and redundancy in the sample are removed and the key conditions for diagnosis are determined.The model for fault diagnosis is established by combining the reduction results and LS_SVM.The experiment system implemented by this method shows a good diagnostic ability.

Key words Rough Set（RS） Least Squares Support Vector Machine（LS_SVM） fault diagnosis imperial smelting furnace

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