基于**LS-SVM**和**SVM**的气动执行器故障诊断方法

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摘　要：

为了解决自确认气动执行器的故障诊断问题，提出了一种基于最小二乘支持向量机(LS-SVM)回归建模和支持向量多分用LS-SVM回归建立气动执行器的正常模型，将实际输出与模型输出比较，产生残差作为气动执行器的非线性故障特分类机结构，以残差作为输入建立支持向量多分类机，判断气动执行器故障类型。利用DABLib生成的故障数据对所障诊断方法进行了比较，结果表明该方法有效的解决了气动执行器故障诊断的小样本和非线性问题。

关键词：执行器故障诊断;最小二乘支持向量机；支持向量多分类机；残差；特征提取

Pneumatic actuator fault diagnosis based on LS-SVM and SVM

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Abstract:

To solve the fault diagnosis problem of self-validating pneumatic actuator, an actuator fault diagnosis approach based on le regression modeling and support vector machines (SVM) multi-classifier is proposed. The LS-SVM regression is used to esta actuator. The residuals generated by comparing the output of the models and the actual actuator are used as the nonlinear fe structure of the support vector machines for multi-classification is designed using clustering method, which is used as fault pattern of the actuator. The proposed approach is verified using fault data generated by DABLib model and compared with I indicate that the proposed approach resolves the small sample and nonlinear problem in pneumatic actuator fault diagnosis.

Keywords: Actuator fault diagnosis；Least square support vector machine (LS-SVM); Support vector machine (SVM) multi-