

论文

基于贝叶斯信息融合的解析冗余辅助机内测试决策

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摘要:

利用不同传感器之间的解析关系,产生某传感器的冗余信号辅助机内测试(BIT)决策,在虚警率(或漏报率)较高的BIT决策中融合其他可靠性较高的传感器信息.对冗余信号的先验分布、虚警率、漏报率进行建模.经残差分析后,给出残差决策结果和BIT结果的后验分布,选择贝叶斯风险小者作为最终决策.同时,给出了贝叶斯融合需满足的条件.实验分析结果表明,该方法增加了BIT决策的可信性,有助于BIT虚警剔除和漏报检测.

关键词: 信息融合 冗余 机内测试 虚警 贝叶斯

Analytic Redundancy Assisting Built-in Test in Decision-Making Based on Bayesian Information Fusion

Abstract:

Analytic redundancy(AR) signals produced by analytic relations between sensors are applied to assist Built-in test(BIT) in determining a fault, and higher reliability sensors are involved in the BIT decision of sensors with high false alarm rate(FAR) or missing alarm rate(MAR). The prior distribution, FAR and MAR models are established for AR signals. After analyzing residuals, posterior distributions for the results of residual decision and BIT are given. Then, the final decision is the one which has minimum Bayesian-risk. Meanwhile, the requirements for Bayesian fusion are proposed. Experimental results show that the proposed method increases the credibility of decision-makings, which can be used in detecting false alarm and missing alarm.

Keywords: Information fusion Redundancy Built-in test(BIT) False alarm Bayesian

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