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基于本体的飞机舵面结构故障诊断方法

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Fault diagnosis of aircraft control surface based on ontology

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摘要 从系统工程的角度分析了飞机系统的复杂性,将飞机族的概念引入到飞机的本体建模中,并以舵面故障诊断过程为研究对象,首先用Protégé建立了飞机本体的领域知识模型,然后将单故障和组合故障的诊断知识列为本体中的SWRL规则,最后利用JESS推理出 新知识得出诊断结果,实现了用本体来选择修复方案的过程.该方法能够实现复杂系统的建模及故障诊断 方案的准确选择,并可通过增加新的诊断知识来完善故障诊断知识库.

关键词: 系统工程 飞机 故障诊断 本体 自修复

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Abstract: The complexity of aircraft system was analyzed from the engineering point of view and the concept of aircraft family was introduced to the ontology modeling of aircraft. At the same time, the fault diagnosis of aircraft control surface was also studied. First, the domain knowledge model of aircraft ontology was built by Protégé. Then the knowledge of single fault and combined faults diagnosis were listed as SWRL rules. Finally, the diagnosis result could be concluded through JESS reasoning to select the right plan of self-repairing. This method can be used to realize the modeling of complex systems and accurate selection of fault diagnosis plan. And the knowledge base of fault diagnosis can also be improved by adding new rules.

Key words: system engineering aircraft fault diagnosis ontology self-repairing

作者相关文章

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