系统工程

基于模糊聚类和粗糙集的仿真可信性模糊综合评估

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摘要：

为客观有效地解决仿真可信性评估问题，提出基于模糊聚类和粗糙集的仿真可信性模糊综合评估方法。阐述了基于模糊传递闭包法进行模糊聚类分析的基本步骤，分析了粗糙集中属性重要性的相关原理；提出了基于模糊聚类和粗糙集的可信性模糊综合评估模型，利用模糊聚类和粗糙集中的属性重要性原理客观地进行各因素权重分配，结合模糊综合评判进行仿真可信性综合评估；以某飞行视景仿真系统为例，进行可信性综合评估。结果表明,该方法具有一定的合理性和可行性。

关键词： 模糊聚类 粗糙集 权重分配 可信性评估

Fuzzy comprehensive evaluation of simulation credibility based on fuzzy clustering analysis and rough sets theory

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Abstract:

To execute credibility evaluation of modeling and simulation applications objectively and cost-effectively, a method of fuzzy comprehensive evaluation of simulation credibility based on fuzzy clustering analysis and rough sets theory is proposed. The fuzzy clustering analysis (FCA) based on fuzzy transitive closure method is analyzed and the attribute significance in rough sets theory is introduced briefly. Furthermore, a fuzzy comprehensive evaluation model of simulation credibility based on FCA and rough sets theory is established. With the confirmation of multi-attribute weight allocation by FCA and rough sets theory, simulation credibility evaluation is performed based on fuzzy comprehensive evaluation. Finally, the method is applied to credibility evaluation of a flight visual simulation system. The evaluation result shows the reasonability and validity of the proposed approach.

Keywords: fuzzy clustering   rough set   weight allocation   credibility evaluation

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