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基于描述逻辑的模糊ER模型

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Abstract

The relationship of description logic ALNUI and ER model is analyzed, especially how to translate ER model into ALNUI knowledge bases for reducing the reasoning on ER model to model reasoning on ALNUI knowledge bases is investigated, and the problem of fuzzy ER modeling with description logic is further studied. Aiming at the characteristics and requirement of fuzzy ER model and based on the description logic ALNUI, the description logic ALNUI is generalized through fuzzy logic. And a kind of new description logic, i.e., fuzzy description logic FALNUI (fuzzy ALNUI), is presented. The fuzzy ER modeling with description logic FALNUI is studied to translate fuzzy ER model into FALNUI knowledge bases. The reasoning problem of satisfiability, redundancy, and subsumption relation of fuzzy ER model may reason automatically through reasoning mechanism of fuzzy description logic FALNUI, and the correctness of these reasoning problems is proved.

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摘要

分析了描述逻辑ALNUI与ER模型的关系,特别是如何将ER模型转化为ALNUI的知识库,从而利用ALNUI的推理机制对ER模型进行自动推理的有效性,在此基础上,进一步研究了基于描述逻辑的模糊ER模型.针对模糊ER模型的特点和需求,在描述逻辑ALNUI的基础上,对描述逻辑ALNUI进行了模糊化推广,提出了一种新的描述逻辑,即模糊描述逻辑FALNUI.研究了基于FALNUI的模糊ER模型,即研究了如何将模糊ER模型转化为FALNUI的知识库,并利用FALNUI的推理机制研究了模糊ER模型的可满足性、冗余性和包含关系等自动推理问题,证明了这些推理问题的正确性.

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