

系统工程

一种基于证据修正的一致性模糊Petri网模型

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摘要:

针对传统的基于模糊Petri网模型的形式化推理算法不能很好地求解含闭环结构的模糊Petri网, 提出了一种基于证据修正的一致性模糊Petri网模型。该模型通过引入证据修正因子, 把多规则情形退化为一定置信度的带复合证据的单规则情形进行处理, 有效简化了模型中的闭环结构。该模型还充分利用模糊“与”规则和模糊“或”规则的内部逻辑关系, 对产生式规则中逻辑“与”和逻辑“或”两种组合关系进行了区分, 克服了传统的“累加型”加权模糊逻辑方法的缺点, 降低了算法推理的复杂度。最后通过实例证明了该模型的有效性, 而且易于编程实现, 尤其适合应用于较复杂的模糊Petri网推理。

关键词: 证据修正 模糊Petri网 模糊产生式规则 闭环

Consistent fuzzy Petri net model based on evidence revision

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Abstract:

To solve the problems arising in the processing of expressing the inference arithmetic of fuzzy Petri net with closed loops in structure, a model of consistent fuzzy Petri net based on evidence revising factor is constructed, in which the multi rule situation is degenerated into a single rule one with a certain confidence factor of compound evidence, and the closed loops are equal to common structure effectively. The model also makes full use of the inner logistic relations between fuzzy AND and fuzzy OR in the rule, distinguishes the two combination relations between AND and OR in the representation of the fuzzy rules with fuzzy Petri net. So the disadvantages of the traditional accumulation type weighted fuzzy logistic method are conquered and the complexity of the algorithm is reduced. Finally an example is provided to demonstrate that the reasoning model is effective and can be carried out through programming easily. It fits reasoning for the complex fuzzy Petri net especially.

Keywords: evidence revising fuzzy Petri net fuzzy production rule closed loop

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