

博士论坛

Grey集上的逻辑和运算算子

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摘要 通过定义单位区间I的全体灰信息域上的偏序关系, 给出grey集和grey关系在一个格上的定义。由单位区间上的模糊逻辑和运算算子, 依据经典扩张原理构造了定义在 $\Theta(I)$ 上相应的grey算子。由格运算的性质导出grey关系合成运算的表示, 依照模糊化算子和判决化算子的定义得出对应的grey算子。讨论有关算子的基本性质并举例说明其应用。通过对grey语义的语言值上一组运算的数学描述, 旨在提高信息系统对灰信息的处理能力, 将处理范围由模糊语言值拓展到基于gray语义的语言值。

关键词 [Grey集和grey关系](#) [\$\Theta\(I\)\$](#) [Grey算子](#) [语言值运算](#)

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Some logical and operational operators on grey sets

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Abstract

By defining a partial ordering relation on the universal grey information domains of unit interval I, a definition of grey sets and grey relations on a lattice is given in this paper. Applying the classic extension principle, the corresponding grey operators defined on lattice $\Theta(I)$, are constructed with fuzzy logical and operational operators on unit interval. The representation for compositional operation of grey relations is introduced with the properties of lattice operations, and the corresponding grey operators are provided in light of the definitions of fuzzification operator and determination operator. The basic properties of some operators are discussed and their applications are exemplified. Aiming at improving the processing capacity of grey information in information system, the processing scope of linguistic values is extended from fuzziness to grey environments, with the mathematical descriptions for a group of operations on linguistic values of gray semantics.

Key words [grey sets and grey relations](#) [lattice \$\Theta\(I\)\$](#) [grey operators](#) [operations on linguistic values](#)

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