Computer Science > Information Theory

A new fuzzy rough sets based on fuzzy coverings

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This paper provides further study on fuzzy coverings based rough sets. We first present the notions of the lower and upper approximation operators based on fuzzy coverings and derive their basic properties detailedly. Additionally, the concepts of a fuzzy subcovering, the reducible and intersectional elements, the union and intersection operations are provided and their properties are discussed in detail. Afterwards, we introduce the concepts of a consistent function and fuzzy covering mappings and investigate their fundamental properties. Later on the notion of a homomorphism to reveal the relationship between fuzzy covering information systems is proposed. We also show how a large-scale fuzzy covering information system can be converted into a small-scale one by means of a homomorphism. Finally, an illustrative example is employed to show that the attribute reduction is simplified significantly by our proposed approach.

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