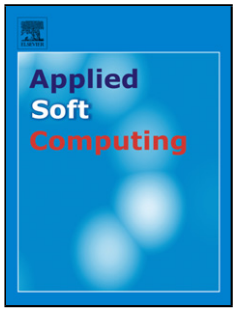

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A commentary on "A novel soft rough set:Soft rough hemirings and corresponding multicriteria group decision making"[1]

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Abstract:

Zhan, Liu and Herawan(2016) proposed a novel soft rough set called soft rough hemiring and researched its algebra properties, along with an application in group decision making. However, we found that some results or its proofs are incorrect. Thus, the purpose of this note is to point out Remark 3.9, Proposition 3.16's proof are incorrect, moreover Theorem 4.9, 4.12, 4.15, 4.18 whose proofs mainly based on Proposition 3.16 and Lemma 4.43 whose proof based on Remark 3.9 are also generally incorrect.

MSC: 16Y60, 13E05,03G25.

Keywords: Rough set; Soft rough set; MSR-hemiring.

1 Introduction

Soft set theory, introduced by Molodtsov[1] in 1999, has been considered as an effective mathematical tool for modeling uncertainty, while rough set theory, was first proposed by Pawlak[2,3] has also become an important tool for uncertainty management in a wide range of applications related to intelligent decision making systems, cognitive science, pattern recognition, machine learning, image processing and so on. Zhan, Liu and Herawan[4] studied soft rough set from a new vision and proposed Remark 3.9, Proposition 3.16, 3.17, Theorem 4.9, 4.12, 4.15, 4.18 and Lemma 4.43, we show that these results are not true.

2 Preliminaries

In this section, we recall definitions of soft set, rough set, soft rough set and some related concepts.

Definition 2.1.([1]) Let U be an initial universe of objects and E_U(E, for short) the set of parameters in relation to objects in U. Let $\mathcal{P}(U)$ denote the power set of U and $A \subseteq E$. A pair (F, A) is called a soft set over U, where F is a mapping given by $F : A \to \mathcal{P}(U)$.

Such a mapping reflects the innate character of concept of a soft set, i.e., a soft set is a mapping from parameters to $\mathcal{P}(U)$. This shows that a soft set over U is a parameterized family of subsets of the universe U. For $\epsilon \in A$, $F(\epsilon)$ is regarded as the set of ϵ-approximate elements of the soft set (F, A).

Definition 2.2.([2]) Let R be an equivalence relation on the universe U, (U, R) be a Pawlak approximation space. A subset $X \subseteq U$ is called *definable* if $R_*X = R^*X$;

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