Subtraction of soft matrices

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Abstract. In this paper, we introduce subtraction operation notation on the soft matrix of size m×n with its entry on the set {0, 1}. In addition, we studied the characteristics of subtraction operations over intersection and union operations on soft matrices. The result shows the distributive law of subtraction operations over intersection and union operations on the soft matrix. Finally, we discuss the characteristics of De Morgan's law analogous to set theory.

1. Introduction

The development of research in mathematics over time is increasingly varied, ranging from continuing previous research or correcting previous research to becoming a better study.

Similarly, the theory of soft sets popularized by Molodtsov [1] is follow-up research and, at the same time, corrects the idea of fuzzy sets introduced by Zadeh [2]. In contrast, Zadeh's theory of fuzzy sets popularized is a correction of the idea of sets invented by Georg Cantor [3].

The soft set theory is a frame of the fuzzy set theory, which deals with uncertainty parametrically. The soft set theory is a collection of intuitively parameterized sets because the set limits depend on parameters. Formally, the group is a couple $(\Delta, \aleph)$ such that Δ is a mapping of parameters $\aleph$ to the muster of all subsets of the universe $Ц$.

Sourced from the definition of the soft set $(\Delta, \aleph)$ of the $Ц$ universe, many researchers apply it to other fields, between [4–9].

One of the products of the soft set studied by [10,11,20–23,12–19] is a soft matrix of size m×n with entries in the form of elements at {0,1}.

This paper aims to introduce the notation of the subtraction operation of the soft matrices. Furthermore, we will study the characteristics of intersection and union operations of subtraction operations, the distributive law of subtraction operations over intersection and union operations, as well as De Morgan's law of subtraction operations that are similar to set theory.

2. Method

We keep in mind some of the foundation definitions, and results wore in the sequel in this segment. For details, we refer to [1,10,24–27].

We'll give some notation: Ц states the set of universes, $P(Ц)$ says the set of all subsets of $Ц$, and $\aleph$ and $\Im$ are sets of parameters where $\aleph \subseteq \Im$.

Definition 2.1. A couple $(\Delta, \aleph)$ is termed the soft set of $Ц$ if Δ is the function from $\aleph$ to a collection of all subsets from $Ц$, i.e.

$$\Delta : \aleph \to P(Ц) \tag{1}$$