Fuzzy Congruence Relation on the Semi-group of Alternatives

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Summary

The theory of 'fuzzy semigroup' is a part of fuzzy algebra, which is an important branch of fuzzy mathematics. Many important results in crisp algebra are not yet generalized to fuzzy algebra, not because of the impossibility or the difficulty of such tasks, but because of the insufficiency of fuzzy algebraic tool. Rosenfeld formulated the notion of fuzzy subgroups and showed how some basic notions of group theory can be extended in an elementary manner to fuzzy subgroups. Since then, fuzzy sets with many other kinds of algebraic structure have received attention in the literature. These have included 'Semigroups' also. The notion of a fuzzy congruence on a semigroup is studied by many authors. The set of alternatives X can be realized as a semigroup, by introducing a semigroup structure in X. We make use of the fuzzy weak preference relation R on X for this purpose. A quotient semigroup of X, induced by the fuzzy indifference relation I is introduced, and the Homomorphism Theorem with respect to the relation is presented.

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