A NOTE ON ($\epsilon$, $\epsilon \lor q$)-FUZZY EQUIVALENCE RELATIONS AND INDISTINGUISHABILITY OPERATORS

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Received 02:03:2010 : Accepted 25:10:2010

Abstract

In this paper ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relations are defined and some of their properties are studied. The partition of an ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relation is studied. It is shown that under a semibalanced mapping the preimage of an ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relation is an ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relation, whereas the image of an ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relation under a balanced mapping is an ($\epsilon$, $\epsilon \lor q$)-fuzzy equivalence relation. To conclude, ($\epsilon$, $\epsilon \lor q$)-fuzzy indistinguishability relations are defined and some of their properties are studied.

Keywords: Fuzzy set, Fuzzy equivalence relation, Fuzzy G-equivalence relation, Fuzzy partition, Fuzzy indistinguishability operator.

2000 AMS Classification: 03 B 52, 03 E 02, 03 E 72.

1. Introduction

The theory of fuzzy relations is a generalization of that of crisp relations of a set. Zadeh [38] introduced the concept of fuzzy relations, he also introduced the concept of fuzzy similarity relations in [39]. This provided an impetus for research in this very important area. Many authors like Chakraborty and Das, Murali, Nemitz [10, 11, 27, 28] studied fuzzy equivalence relations.

As the research progressed it soon became clear that any given relation may or may not satisfy a particular requirement for the fuzzy equivalence/similarity relation defined

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