Fuzzy system reliability analysis using trapezoidal vague sets of type-II

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Abstract

To make the analysis more consistent and logical according to real life situations, in this paper, the concept of trapezoidal vague set is extended by the idea of trapezoidal vague sets of type-II. Also we have introduced: definition of trapezoidal vague set of type-II and arithmetic operations between two trapezoidal vague sets of type-II. Further, a new method has been developed for analyzing the fuzzy reliability of a series and parallel system using trapezoidal vague sets of type-II, where the reliability of each component of a system is represented by a trapezoidal vague set of type-II defined on the universe of discourse [0,1]. The developed method has been used to analyze the fuzzy reliability of a radar warning receiver. The proposed method can model and analyze the fuzzy system reliability in a more flexible and intelligent manner in comparison to the methods given by Chen, Upadhyay et al., Chang et al. and Kumar et al.

References