CONNECTIVITY ANALYSIS AND APPLICATIONS OF GRAPHIC FUZZY MATROIDS

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Abstract: This paper addresses a basic inquiry into the connectivity of fuzzy matroids, a fundamental concept with wide-ranging applications. Our contribution involves introducing an innovative equivalence relation derived from graphic fuzzy matroids. We rigorously define the connectivity of graphic fuzzy matroids using equivalence classes, providing a clear and precise characterization of their connectedness. Throughout the analysis, we highlight several essential properties of this connectivity concept, supplementing our discussion with illuminating examples. We present three practical applications showcasing the significance of connected graphic fuzzy matroids in diverse fields. In social network analysis, our findings offer valuable insights into the structure and connectivity of complex networks. In environmental reliability monitoring, connected graphic fuzzy matroids serve as a powerful tool for assessing and ensuring the reliability of environmental systems. In the context of geographic information systems, our research contributes to the enhancement of spatial connectivity analysis.

Keywords and Phrases: Graphic fuzzy matroids, Connectedness, Fuzzy Graphs.

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