Novel approximate solving algorithm for fuzzy relational equations

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Abstract

This paper presents a novel approximate solution algorithm for fuzzy relational equations with max-product composition. Solving fuzzy relational equations is a very important research topic because many practical engineering problems end up with fuzzy relational equations (F.R.E). Most theoretical results on F.R.E. strongly rely on an as sumption that the family of exact solutions is nonempty. However, the fuzzy relational equations may no solutions. Therefore, this paper proposes real-valued GA method to find an approximate solution for fuzzy relational equations with max-product composition. An example illustrates that the proposed algorithm is effective and simple.

Keyword：Fuzzy relational equation, Genetic algorithm, Max-product composition