

عنوان مقاله:

Resolution and simplification of Dombi-fuzzy relational equations and latticized optimization programming on DombiFRES

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خلاصه مقاله:

In this paper, we introduce a type of latticized optimization problem whose objective function is the maximum component function and the feasible region is defined as a system of fuzzy relational equalities (FRE) defined by the Dombi t-norm. Dombi family of t-norms includes a parametric family of continuous strict t-norms, whose members are increasing functions of the parameter. This family of t-norms covers the whole spectrum of t-norms when the parameter is changed from zero to infinity. Since the feasible solutions set of FREs is non-convex and the finding of all minimal solutions is an NP-hard problem, designing an efficient solution procedure for solving such problems is not a trivial job. Some necessary and sufficient conditions are derived to determine the feasibility of the problem. The feasible solution set is characterized in terms of a finite number of closed convex cells. An algorithm is presented for solving this nonlinear problem. It is proved that the algorithm can find the exact optimal solution and an example is presented to illustrate the proposed algorithm.

کلمات کلیدی:

Fuzzy relational equations, Dombi t-norm, strict t-norm, latticized objective function, nonlinear programming

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