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Problems on solving matrix aggregation in group decision-making by glowworm swarm optimization. (English) [Zbl 1400.90311](#)

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Summary: Judgment matrix aggregation, as an important part of group decision-making, has been widely and deeply studied due to the universality and importance of group decision-making in the management field. For the variety of judgment matrix in group decision-making, the matrix aggregation result can be obtained by using the mode of glowworm swarm optimization. First, this paper introduces the basic principle of the glowworm swarm optimization (GSO) algorithm and gives the improved GSO algorithm to solve the matrix aggregation problems. In this approach, the consistency ratio is introduced to the objective function of the glowworm swarm optimization, thus reducing the subjectivity and information loss in the aggregation process. Then, the improved GSO algorithm is applied to the solution of the deterministic matrix and the fuzzy matrix. The method optimization can provide an effective and relatively uniform aggregation method for matrix aggregation. Finally, through comparative analysis, it is shown that the method of this paper has certain advantages in terms of adaptability, accuracy, and stability to solving the matrix aggregation problems.

MSC:

90C59 Approximation methods and heuristics in mathematical programming

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