

عنوان مقاله:

A HYBRID IMPERIALIST COMPETITIVE ALGORITHM FOR THE BALANCED VEHICLE ROUTING PROBLEM

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خلاصه مقاله:

The balanced vehicle routing problem (BVRP) is one of the most famous research problems in operations, which has a very important position in combination optimization problems. In this problem, a fleet of vehicles with capacity Q starts moving from a node called the warehouse and returns to it after serving customers, provided that they visit each customer only once and never exceed the capacity Q . The goal is to minimize the paths traveled by vehicles provided that the distances traveled by the vehicles are the same as possible, for more justice in working time and income. This article presents the application of a hybrid imperialist competitive algorithm (HICA) to solve the problem. Unlike other optimization methods, this method is inspired by the socio-political process of societies and uses the competition between colonizing and colonized countries to reach the solution. To test the effectiveness of the algorithm, a set of standard examples are considered and the algorithm is implemented on it. The calculation results on these examples, which have a size of 50 to 200, show that the proposed algorithm has been able to compete well with well-known meta-heuristic algorithms in terms of the quality of the answers. In addition, the solutions close to the best answers obtained so far are generated for most of the examples.

کلمات کلیدی:

Balanced vehicle routing problem, meta-heuristic, rank based ant system, NP-hard, Metaheuristics

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