

Discrete Optimization

Two genetic algorithms for solving the uncapacitated single allocation *p*-hub median problem

Jozef Kratica ^a✉, Zorica Stanimirović ^b✉, Dušan Tošić ^b✉, Vladimir Filipović ^b✉

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<https://doi.org/10.1016/j.ejor.2006.06.056>

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Abstract

This paper deals with the Uncapacitated Single Allocation *p*-Hub Median Problem (USApHMP). Two new genetic approaches are proposed for solving this NP-hard problem. The first approach is based on the use of the standard genetic algorithm (GA) with a special crossover function. Both approaches keep the feasibility of individual solutions. The numerical experiments were carried out on the standard test problems. The results show that the proposed algorithms are efficient in solving USApHMP with up to 200 nodes and 20 hubs. The proposed algorithms achieve the best-known solutions on large-scale problems.

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Keywords

Genetic algorithms; Evolutionary computations; Location; *p*-Hub median problem; Single allocation

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