

عنوان مقاله:

Finding the Shortest Hamiltonian Path for Iranian Cities Using Hybrid Simulated Annealing and Ant Colony Optimization Algorithms

محل انتشار:

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خلاصه مقاله:

The traveling salesman problem is a well-known and important combinatorial optimization problem. The goal of this problem is to find the shortest Hamiltonian path that visits each city in a given list exactly once and then returns to the starting city. In this paper, for the first time, the shortest Hamiltonian path is achieved for 1071 Iranian cities. For solving this large-scale problem, two hybrid efficient and effective metaheuristic algorithms are developed. The simulated annealing and ant colony optimization algorithms are combined with the local search methods. To evaluate the proposed algorithms, the standard problems with different sizes are used. The algorithms parameters are tuned by design of experiments approach and the most appropriate values for the parameters are adjusted. The performance of the proposed algorithms is analyzed by quality of solution and CPU time measures. The results show high efficiency and effectiveness of the proposed algorithms.

کلمات کلیدی:

Iranian cities, Traveling salesman problem, Hamiltonian path, Simulated annealing algorithm, Ant colony optimization algorithm

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