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A two-phase metaheuristic for the cumulative capacitated vehicle routing problem. (English)

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Summary: The cumulative capacitated vehicle routing problem, which aims to minimize the total arrival time at customers, is a relatively new variant of vehicle routing problem. It can be used to model many real-world applications, e.g., the important application arisen from the humanitarian aid after a natural disaster. In this paper, an approach, called two-phase metaheuristic, is proposed to deal with this problem. This algorithm starts from a solution. At each iteration, two interdependent phases use different perturbation and local search operators for solution improvement. The effectiveness of the proposed algorithm is empirically investigated. The comparison results show that the proposed algorithm is promising. Moreover, for nine benchmark instances, the two-phase metaheuristic can find better solutions than those reported in the previous literature.

MSC:

90C59 Approximation methods and heuristics in mathematical programming

90B06 Transportation, logistics and supply chain management

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