Iterated local search for the workforce scheduling and routing problem

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Abstract

The combination of the general scheduling problem with the traditional vehicle routing problem gives rise to the Workforce Scheduling and Routing Problem (WSRP) that arises in practical applications. Given a number of service technicians with different skills and tasks at different locations with time windows and skill requirements, the WSRP consists of finding the assignment and ordering of technicians to tasks such that they only attend to tasks that they are skilled to perform, within the respective time windows, and that the total cost of the routing is minimised. This paper describes an iterated local search algorithm for solving the WSRP. The performance of the proposed algorithm is evaluated against an off-the-shelf optimizer and an existing adaptive large neighbourhood search algorithm on benchmark instances. The results indicate that the proposed algorithm can produce high-quality solutions in reasonable computational times. Keywords: workforce scheduling, vehicle routing, iterated local search

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