

A Self-Adaptive Differential Evolution for the Technician Routing and Scheduling Problem

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Abstract. In this paper, we study both an integer linear programming formulation and the Self-Adaptive Differential Evolution (SADE) for solving the technician routing and scheduling problem (TRSP). Technician teams are proficient in different skills to perform jobs. The jobs are skill constrained and have time windows. The TRSP objective is to minimize the total cost, including travel cost, penalty for late service, overtime and subcontracting costs. For validation, we designed numerical experiments in small-size problems to compare the proposed approaches using LINGO computational software. The SADE was also tested against the conventional differential evolution in medium and larger-size problems. The SADE yielded a solution with significantly better solution quality.

Keywords: Technician scheduling, Vehicle routing, Differential evolution.