時窗限制多車種回程取貨車輛路線問題之巨集啟發式解法研究

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摘要

The Heterogeneous Fleet Vehicle Routing Problem with Backhauls and Time Windows (HVRPBTW), an extent of the classical Vehicle Routing Problem, is a very complicated NP-hard problem and it is full of value in real world practices. In this paper, we combine Threshold Accepting Algorithm with classical heuristics to design a meta-heuristics, named as the Two-Phase Backtracking Threshold Accepting Algorithm (TBTA). In order to identify the feasibility and capability of our proposed TBTA meta-heuristics, we create forty-five HVRPBTW test instances that are modified from Gelinas' VRPBTW benchmark instances and Golden's HVRP benchmark instances. We code a TBTA program by C# language and execute it to solve the 45 HVRPBTW instances on a Pentium IV PC. Numerical result presents that new insertion criteria can generate better solutions than original insertion criterion, and TBTA can significantly improve the accuracy of initial solutions. Such a result implies that TBTA is an efficient and effective method to solve the HVRPBTW.

關鍵字：Vehicle Routing Problem, Heterogeneous Fleet, Time windows, Backhauls, Metaheuristic.