Experimental Analysis of Variable Neighborhood Search on Solving the Vehicle Routing Problem

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Abstract

The Variable Neighborhood Search (VNS), which sequentially changes neighborhoods with different size, is a depth-and-width oriented meta-heuristic approach. The purpose of this article is to combine the Generalized Insertion (GENI) with various neighborhood search methods into the VNS framework for solving the Vehicle Routing Problem (VRP). In order to identify the VNS' s performance, we selected thirty-five VRP benchmark instances to conduct a computational experiment. Results presented that the average percentage of errors among the 35 instances was merely 3.04%, and implied that the VNS has potential for solving the VRP.

Keyword：Variable Neighborhood Search (VNS), Vehicle Routing Problem (VRP), Generalized Insertion (GENI).