Real Time Vehicle Routing Problem with Time Window Simultaneously Delivery Products and Pick up Wastage Materials with Proposed Master-Slave Genetic Algorithm

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Abstract

The real-time vehicle routing problem with time windows and simultaneous delivery products and pickup wastage materials (RT-VRPTWDPPWM) is formulated as extension of VRP. The real-time delivery/pickup demands are served by capacitated vehicles with limited initial loads. Moreover, pickup services aren't necessarily done after delivery services in each route. A improved genetic algorithm (master-slave genetic algorithm) is proposed. To generate offspring for the next generation for crossover (Sub Route Sequence Crossover Method (SRSCM) and for mutation (Sub Route Alter Mutation Method (SRAMM) methods are introduced. The results shows that the proposed algorithm can efficiently decrease the total route cost. Results of comparative tests are presented showing that the improved algorithm performs well on large populations.

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Index Terms

Computer Science
Algorithm

Keywords
Genetic Algorithm (GA)  Multi Objective Genetic Algorithm (MOGA)  Sub Route Sequence Crossover Method (SRSCM)

Sub Route Alter Mutation Method (SRAMM)

Vehicle Routing Problem (VRP)