A differential evolution for optimization of multiobjective urban transit routing problem

ABSTRACT

In this paper,the urban transit routing problem is addressed by using a real-world urban transit network. Given the road network infrastructure and the demand, the problem consists in designing routes such that the service level as well as the operator cost are optimized. The optimality of the service level is measured in terms of average journey time and the route set length. A differential evolution approach is proposed to solve the problem. An improved sub-route reversal repair mechanism is introduced to deal with the in feasibility of route sets. Computational results on a real network produce solutions that are close to the lower bound values of the passenger and the operator costs. In addition, the proposed algorithm produces approximate Pareto fronts that enable the transit operator to evaluate the trade-off between the passenger and passenger costs

Keyword: Transit network design; Differential evolution; Repair mechanism; Urban routing