

A route minimization heuristic for rich Vehicle Routing Problems

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Abstract We are investigating methods for route minimization in a rich VRP solver. Experiments on standard VRPTW benchmarks have shown that relatively simple tour depletion procedures leave a significant gap relative to the competition. The successful work on the VRPTW by Bent and Van Hentenryck [1] has inspired us to develop improvements and extensions to their hierarchical tour reduction objective. The objective is applied in a separate tour reduction phase after construction. In experiments, we have observed that switching between alternative tour reduction objectives gives good diversification and faster convergence to a good result, regardless of the quality of the initial solution. Experiments on the 400 customer VRPTW instances of Gehring and Homberger show that results are highly competitive.

- [1] R. Bent and P. Van Hentenryck. A two stage hybrid local search for the vehicle routing problem with time windows. *TRANSPORTATION SCIENCE* Vol. 38, No. 4, November 2004, pp. 515–530.