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Vehicle Routing with Cross-Dock Selection

Yousef Maknoon[a,*], Gilbert Laporte[b]

[a] *Transport and Mobility Laboratory, School of Architecture, Civil and Environmental Engineering, École Polytechnique Fédérale de Lausanne, Switzerland*
[b] *Canada Research Chair in Distribution Management, HEC Montréal, Canada*

Abstract

The vehicle routing problem with cross-dock selection is a variant of the vehicle routing problem containing spatial and load synchronization constraints by which products are transferred and processed via at least one cross-dock. This paper presents a mathematical formulation of the problem and an adaptive large neighborhood search heuristic. Computational experiments on a set of benchmark instances demonstrate the efficiency of the proposed methodology.

Keywords: vehicle routing, cross-docking, adaptive large neighbohood search (ALNS)

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1. Introduction

The purpose of this paper is to present an adaptive large neighborhood search algorithm for the Vehicle Routing Problem with Cross-dock Selection (VRP-CS). The problem is to find a set of minimum-cost routes as well as the proper vehicle load synchronization at cross-docks to satisfy a set of

*Corresponding author
Email addresses: yousef.maknoon@epfl.ch (Yousef Maknoon), gilbert.laporte@cirrelt.ca (Gilbert Laporte)

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