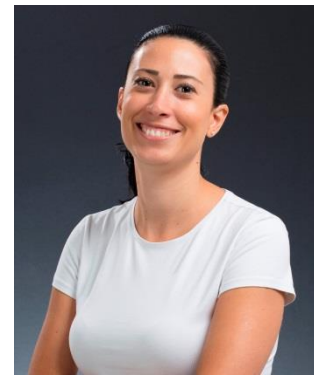




Séminaire conjoint / Joint Seminar
Chaire de recherche du Canada en logistique et en transport et
Chaire de recherche du Canada en distributique

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University of Waterloo, Ontario



Hub Location and the Design of Intermodal Hub Networks

Abstract: Hubs are special facilities that serve as switching, transshipment, and sorting points in many-to-many distribution systems. Hub location problems deal with choosing the sites of hub facilities and allocating demand nodes to hubs so as to effectively route the traffic between origin-destination pairs. Hub location problems arise in various application settings in transportation and telecommunications. In this study, we approach hub location problems from a network design perspective and allow using alternative transportation modes and different types of vehicles in the hub networks to be designed. The aim of the problem is to minimize total costs while determining the location and capacities of hubs, allocation of non-hub nodes to hubs, which hub links to establish, and how many vehicles of each type to operate on these hub links to route the demand between origin-destination pairs. There is a given fleet size and it is possible to rent additional vehicles to expand it. It is assumed that each vehicle operates on a single connection. Capacity of a hub is defined as the total number of vehicles of each type which can be handled at the hub. We develop a mixed-integer programming formulation of the problem. The objective function of the model includes hub establishment costs, transportation costs, vehicle operating costs, vehicle renting costs, and material handling costs at hubs. We propose a local search heuristic for the solution of this problem and present extensive computational analysis on the CAB and Turkish network data sets.

Note: Sibel Alumur Alev is an Assistant Professor in the Department of Management Sciences at the University of Waterloo. She received her Ph.D. degree in Industrial Engineering from Bilkent University. Her current research interests include hub location and hub network design, supply chain and reverse logistics network design, and hazardous materials logistics.

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MERCREDI / WEDNESDAY

3 décembre 2014 /
December 3rd, 2014
10h30

Salle / Room 5441
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