

Séminaire des étudiants du CIRRELT Students Seminar*

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sous la direction des professeurs Bernard Gendron et Jean-François Cordeau
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DYNAMIC FACILITY LOCATION WITH MODULAR CAPACITIES: MODELS, ALGORITHMS AND APPLICATIONS IN FORESTRY

ABSTRACT: This presentation elaborates on multi-period facility location problems that allow for dynamic capacity adjustment, in particular those with complex cost structures. We investigate such problems from different Operations Research perspectives, presenting and comparing several mixed-integer programming (MIP) models, assessing their use in practice and developing efficient solution algorithms. The presentation is divided into four parts. We first motivate our research by an industrial application, in which a logging company needs to locate camps to host the workers involved in forestry operations. We present a MIP model and assess the usefulness of the model by two case studies. The second part introduces the Dynamic Facility Location Problem with Generalized Modular Capacities (DFLPG). The model generalizes existing formulations for several dynamic facility location problems and provides stronger linear programming relaxations than the specialized formulations. The model can address facility location problems where the costs for capacity changes are defined for all pairs of capacity levels, as it is the case in the previously introduced industrial problem. Given the complexity of such models for large instances, the third part of the thesis proposes efficient Lagrangian heuristics. Based on subgradient and bundle methods, good quality solutions are found even for large-scale instances with up to 250 facility locations and 1000 customers. Finally, we adapt the Lagrangian heuristics to solve the industrial application.

<http://w1.cirrelt.ca/~jena/>

VENDREDI / FRIDAY

12 septembre 2014, à 12h

September 12th, 2014, at 12:00

Salle / Room 5441

Pavillon André-Aisenstadt

Université de Montréal

Pizza et boisson gazeuse fournies

Pizza and soft drink offered

Inscription obligatoire avant le 11 septembre / Registration required before September 11th

<https://symposia.cirrelt.ca/SeminairesEtudiants/fr/register>

*** Étudiants de 2^e et 3^e cycle intéressés à présenter / Graduate students interested in presenting : Antoine.Legrain@cirrelt.ca**



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