



## SÉMINAIRE CONJOINT AVEC / JOINT SEMINAR WITH

LA CHAIRE DE RECHERCHE DU CANADA EN DISTRIBUTIQUE ET LA CHAIRE DE RECHERCHE DU CANADA EN LOGISTIQUE ET EN TRANSPORT /  
THE CANADA RESEARCH CHAIR IN DISTRIBUTION MANAGEMENT AND THE CANADA RESEARCH CHAIR IN LOGISTICS AND TRANSPORTATION

# Thibaut Vidal

Université de Montréal et/and Université de Troyes, France



## “A hybrid genetic approach to tackle rich vehicle routing problems ”

### Résumé / Abstract

Although the vehicle routing problem (VRP) has been extensively studied in the last decades, significant challenges remain to address efficiently real-life applications. In particular, it becomes necessary to tackle complex VRP variants with many additional features called “attributes” (such as multiple depots, multiple periods of planning, time windows constraints or heterogeneous fleets only to name a few). Many efficient meta-heuristic approaches have been designed for the basic VRP and its closest variants. However, working in the same way on “rich problem settings” with many attributes can be time consuming. Hence, many authors proceed by decomposition and successive optimization of sub-problems, but pay the price in terms of solution quality.

During this presentation, a novel hybrid genetic algorithm dedicated to rich VRPs will be introduced. This method gathers an effective crossover operator with advanced education schemes based on local searches. To favor exploration and innovation, we manage the diversity during the very evaluation of individuals, which is driven by fitness together with contribution to the population diversity. All these operators work on the general problem, and contribute to obtain high quality solutions on very complex VRP variants like the multi-depot periodic VRP with time windows, but also on widely known problems like the periodic VRP.

Note : Thibaut Vidal effectue son doctorat en cotutelle entre l'Université de Montréal - département d'informatique et de recherche opérationnelle - et l'Université de Technologie de Troyes, en France - École doctorale "Sciences des Systèmes Technologiques et Organisationnels". Il est membre du CIRRELT. / Thibaut Vidal is doing his Ph.D. at the two following institutions: Université de Montréal - Department of Computer Science - and the Université de Technologie de Troyes - Doctoral School « Sciences des Systèmes Technologiques et Organisationnels ». He is a member of CIRRELT.  
[Thibaut.Vidal@cirrelt.ca](mailto:Thibaut.Vidal@cirrelt.ca) et/and <http://w1.cirrelt.ca/~vidalt/accueil-thibaut-vidal.html>

**MERCREDI / WEDNESDAY**

**14 April 2010, 10h30 /  
April 14th, 2010, 10:30**

**Salle / Room 5441  
Pavillon André-Aisenstadt  
Université de Montréal**

**Bienvenue à tous / Welcome to all**

*Responsable/Organizer : Gilbert Laporte*

*Information : Pierre Marchand  
Responsable des communications du CIRRELT  
[pierre.marchand@cirrelt.ulaval.ca](mailto:pierre.marchand@cirrelt.ulaval.ca)*

