

Colloque du
Département d'Informatique et de Recherche Opérationnelle

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***Branch-and-Price Guided Search for Integer Programs
with Application to the Multicommodity Fixed Charge
Network Flow and Maritime Inventory Routing Problems***

Abstract: We develop an exact algorithm for integer programs that uses restrictions of the problem to produce high-quality solutions quickly. Column generation is used both for generating these problem restrictions and for producing bounds on the value of the optimal solution. The performance of the algorithm is greatly enhanced by using structure to help define the restrictions that are solved. In addition, local search around the current best solution is incorporated to enhance overall performance. The approach is parallelized and computational experiments on both a classical problem in network design and a maritime inventory routing problem faced by an industrial collaborator demonstrate its efficacy.

Biosketch: Dr. Hewitt's research includes developing quantitative models of decisions found in the transportation and supply chain management domains, particularly in freight transportation and home delivery. His work has assisted the decision-making of companies such as Exxon Mobil, Saia Motor Freight, and Yellow Roadway. Currently, with funding from the New York State Health Foundation, he is working on developing open source technology to automate and improve the scheduling and routing of home health care professionals. He complements these quantitative models with solution approaches that integrate exact optimization, heuristic search, and machine learning techniques. Since coming to RIT in 2009 he has received over \$300,000 in external support for his work, and has published in leading journals such as INFORMS Journal on Computing. Before entering the PhD program at Georgia Tech, Dr. Hewitt worked as a software engineer, contributing to the development of software to support consumer set-top boxes and content delivery to LED signs in mass transit stations.



Le lundi 6 février 2012, 11h15, pavillon Aisenstadt, salle 5340

Information : Pierre L'Ecuyer, <http://www.iro.umontreal.ca/~lecuyer/>