Local Branching Cuts for the 0–1 Integer L-Shape Algorithm

Michel Gendreau[1, 2], Walter Rei[1, 2] and Patrick Soriano[2, 3]

1. Département d'informatique et de recherche opérationnelle
   Université de Montréal
   C.P. 6128, succursale Centre-ville, Montreal, Canada, H3C 3J7

2. Centre interuniversitaire de recherche sur les réseaux d'entreprise, la logistique et le transport (CIRRELT)
   Université de Montréal
   C.P. 6128, succursale Centre-ville, Montreal, Canada, H3C 3J7

3. Services de méthodes quantitatives de gestion
   HEC Montréal
   3000 chemin de la Côte Sainte-Catherine, Montreal, Canada, H3T 2A7

Abstract

Local branching has been presented as a new solution strategy for hard to solve mixed integer problems. Research has recently been performed on using local branching as a way to generate optimality cuts in the case of Benders decomposition. In this presentation, local branching will be used to produce a new type of valid inequalities for the case of the 0-1 integer L-shape algorithm. Numerical tests were conducted on a series of stochastic routing problems. Results proving the usefulness of these new inequalities will be presented

Keywords: Stochastic programming, local branching, valid inequalities.