

Branch-and-Price Guided Search

Mike Hewitt

Rochester Institute of Technology

George Nemhauser

Georgia Institute of Technology

Martin Savelsbergh

CSIRO Mathematics, Informatics, and Statistics

Martin.Savelsbergh@csiro.au

Jin-Hwa Song

ExxonMobil Research and Engineering

Abstract

We present an exact solution approach for integer programs in which well-chosen restrictions are solved to produce high-quality solutions early in the search. Column generation is used for generating the restrictions and for producing bounds on the value of an optimal solution. A local search scheme is embedded to explore neighbours of the current best solution. The approach is designed to be implemented on a multi-processor architecture. The efficacy of the approach is demonstrated on the integer multi-commodity fixed-charge network flow problem and a complex maritime inventory routing problem with varying storage capacities and production/consumption rates at facilities.
