

Implementing Mixed Integer Column Generation

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Abstract

We review the main issues that arise when implementing a column generation approach to solve a mixed integer program: setting-up the Dantzig-Wolfe reformulation, adapting standard MIP techniques to the context of column generation (branching, preprocessing, primal heuristics), and dealing with issues specific to column generation (initialization, stabilization, column management strategies). The description of the different features is done in generic terms to emphasize their applicability across problems. More hand-on experiences are reported in the literature in application specific context, f.i., see Desaulniers, Desrosiers and Solomon (2001) for vehicle routing and crew scheduling applications. This paper summarizes recent work in the field, in particular that of Vanderbeck (2002) and (2003).