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**A first look at picking dual variables for maximizing reduced cost fixing.** (English)

Zbl 06756588

Salvagnin, Domenico (ed.) et al., Integration of AI and OR techniques in constraint programming. 14th international conference, CPAIOR 2017, Padua, Italy, June 5–8, 2017. Proceedings. Cham: Springer. Lect. Notes Comput. Sci. 10335, 221–228 (2017)

Summary: Reduced-cost-based filtering in constraint programming and variable fixing in integer programming are techniques which allow to cut out part of the solution space which cannot lead to an optimal solution. These techniques are, however, dependent on the dual values available at the moment of pruning. In this paper, we investigate the value of picking a set of dual values which maximizes the amount of filtering (or fixing) that is possible. We test this new variable-fixing methodology for arbitrary mixed-integer linear programming models. The resulting method can be naturally incorporated into existing solvers. Preliminary results on a large set of benchmark instances suggest that the method can effectively reduce solution times on hard instances with respect to a state-of-the-art commercial solver.

For the entire collection see [Zbl 1364.68017].

**MSC:**

**68T20** Problem solving in the context of artificial intelligence (heuristics, search strategies, etc.) Cited in 3 Documents

**90C27** Combinatorial optimization

**Keywords:**

mixed-integer programming; variable fixing methodology; reduced-cost based filtering

**Software:**

MIPLIB; SIMPL

**Full Text:** DOI

**References:**

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