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Call For Papers - Annals of Operations Research

Special Issue

Recent Advances in Decomposition Methods
for Hard Optimization Problems
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Motivation

Divide and conquer, from Latin *divide et impera*, is one of the key techniques for tackling combinatorial optimization problems. It relies on the idea of decomposing complex problems into a sequence of subproblems that are then easier to handle. Decomposition techniques (such as Dantzig-Wolfe, Lagrangian, or Benders decomposition) are extremely effective in a wide range of applications, including cutting and packing, production and scheduling, routing and logistics, telecommunications, transportation, and many others. Moreover, decomposition techniques are playing an important role in many different fields of mixed-integer linear and nonlinear optimization, multi objective optimization, optimization under uncertainty, bilevel optimization, etc. Despite the tremendous amount of research on these topics, the mathematical optimization community is constantly faced with new challenges coming from theoretical aspects and real-world applications that require the development of new advanced tools.

This special issue will be a point of reference for researchers and practitioners that want to learn more about the recent advances in decomposition techniques for hard combinatorial optimization problems. We solicit original, high-quality papers presenting the latest improvements in the field.

Topics

The purpose of this issue is to provide a view of the state of the art of decomposition methods in the field of mathematical optimization. We will consider high-quality manuscripts addressing the development of new theoretical insights, algorithmic approaches, and computational studies in the context of exact and heuristic methods based on decomposition techniques.

Topics of interest include (but are not limited to):

- Dantzig-Wolfe decomposition
- Stabilization techniques
- Row and column generation
- Column generation
- Branch-and-price
- Branch-and-cut-and-price
- Branch-and-cut
- Benders decomposition
- L-shaped method
- Generalized Benders decomposition
- Lagrangian decomposition

- Cross decomposition
- Decomposition for nonlinear programming
- Decomposition for robust and stochastic combinatorial optimization
- Heuristic methods derived from exact methods based on decomposition
- Applications to challenging real-world problems involving some of the above techniques

We strongly encourage participants of the EURO 2016 conference to submit full, expanded versions of their presented papers to this special issue. This Call for Papers is also open to the entire community of academics and practitioners working in the field of mathematical optimization.

Submission

Prospective authors are asked to follow the *Annals of Operations Research* guide for authors and submit their papers via Springer's web-based system, *Editorial Manager.* Be sure to note when leaving a comment that your work is intended for the special issue and to select the article type "S.I. : Decomposition Methods for Hard Optimization Proplems." Submitted papers will undergo a regular review process according to the high standard of the *Annals of Operations Research*.

Submission Deadline: January 15, 2017

Guest Editors

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