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# Computational Geometry: Theory and Applications

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## Editorial

This special issue on Geometry and Optimization is intended to celebrate and encourage the fruitful interaction between the fields of discrete and computational geometry and optimization. This interaction has a rich history, going back at least to the nineteenth century. The papers in this volume provide a snapshot of a lively and developing synthesis of geometric approaches to optimization problems and optimization approaches to geometric problems. The topics of the selected papers range over applications, algorithms and complexity theory, and optimization methods.

Geometric optimization problems are perhaps the first topic that springs to mind when considering the interplay of geometry and optimization. Ahipasaoglu and Todd give an optimization approach to the geometric optimization problem of minimum enclosing cylinder. Laarhoven and Anstreicher develop geometric conditions to help speed up the branch and bound solution of the Euclidean Steiner Tree problem. Bokowski and Schewe's paper applies optimization techniques to problems of geometric configurations.

Problems related to non-parametric statistics, particularly those related to data depth, are another area of common interest for the optimization and computational geometry communities, probably because of their relationship with minimum infeasible subsystem problems. In this volume the papers of Ahipasaoglu and Todd, Chen, Morin, and Wagner, and Schulz and Tóth are all connected to this theme.

Convex polyhedra are central objects in both optimization and in discrete geometry. Herrmann, Joswig, and Pfetsch study a representation transformation problem for convex polyhedra. Ahn, Cheng, and Reinbacher present new algorithms for maximizing the overlap of two bounded convex polyhedra. Schulz and Tóth study the union of certain simplices, and derive both structural and algorithmic results.

We would like to thank the contributors for their high-quality papers, as well as the referees for their thorough reviewing job. We would also like to offer special thanks to Jörg-Rüdiger Sack, Editor-in-Chief of the Computational Geometry: Theory and Applications, for his continuous support.

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