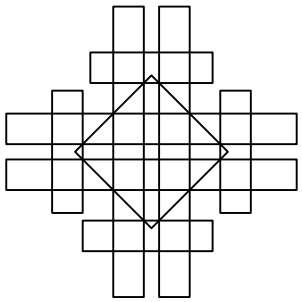
40th International Symposium on Computational Geometry

SoCG 2024, June 11-14, 2024, Athens, Greece

Edited by

Wolfgang Mulzer

Jeff M. Phillips



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CG Challenge

Media Expositions

Preface

The 40th International Symposium on Computational Geometry (SoCG 2024) was held at the Eugenides Foundation in Athens, Greece, June 11–14, 2024, as part of the Computational Geometry Week (CG Week 2024).

The conference received a record 235 submissions, and after a thorough review process, in which each paper was evaluated by three or more independent reviewers, the program committee accepted 82 papers for presentation. Two submissions were merged into a single paper for presentation. These proceedings contain extended abstracts of the accepted papers, limited to 500 lines (excluding references). If any supporting material does not fit in the line limit, the full paper is available at a public repository and referenced in the corresponding extended abstract.

The **Best Paper Award** of SoCG 2024 went to the paper "An $O(n \log n)$-Time Approximation Scheme for Geometric Many-to-Many Matching" by Sayan Bandyapadhyay and Jie Xue; this paper has been invited to submit an extended version to the Journal of the ACM. The **Best Student Paper Award** of SoCG 2024 went to the paper "Practical Software for Triangulating and Simplifying 4-Manifolds" by Rhuaidi Burke. This was the first year bestowing a best student paper award; all authors of the paper needed to be students at time of submission (or very recently graduated) to be eligible. The **Best Student Presentation Award** was determined and announced at the symposium, based on ballots cast by the attendees. For the first time, a paper was selected for submission to the newly-established diamond open access journal TheoretiCS: "Optimal Algorithm for the Planar Two-Center Problem" by Kyungjin Chu, Eunjin Oh, Haitao Wang, and Jie Xue. Additionally, a selection of papers was invited to submit an extended version to forthcoming special issues of Discrete & Computational Geometry and the Journal of Computational Geometry dedicated to the symposium.

The **SoCG Test of Time Awards** of this year go to "Surface Reconstruction by Voronoi Filtering" by Nina Amenta and Marshall W. Bern, which was published in SoCG 1998, and to "A Pivoting Algorithm for Convex Hulls and Vertex Enumeration of Arrangements and Polyhedra" by David Avis and Komei Fukuda, which was published in SoCG 1991.

The scientific program of CG Week 2024 was enriched by two distinguished invited speakers. An invited talk, entitled "The Particle and Wave Theories of Shape", was given by Leonidas J. Guibas from Stanford University. A second invited talk, entitled "Sketching Techniques for Metric Data", was delivered by Edith Cohen from Google Research and Tel Aviv University. We thank the plenary speakers for kindly accepting our invitation.

In addition to the technical papers, there were six submissions to the multimedia exposition. Submissions were reviewed and six of them were accepted for presentation. The extended abstracts that describe these submissions are included in this proceedings volume. The multimedia content can be found at `https://www.computational-geometry.org`.

The 6th Computational Geometry Challenge was part of CG Week 2024. The challenge problem was to pack as many polygons from a provided set inside of a given convex polygon. This year, there were nine teams participating in the challenge, and these proceedings contain contributions by the four top-placed teams describing their winning approaches.

We thank the authors of all submitted works. We are most grateful to the members of the SoCG Program Committee, the Media Exposition Committee, and the CG Challenge Committee for their dedication, expertise, and hard work that ensured the high quality of

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the works in these proceedings. We are grateful for the assistance provided by the hundreds of reviewers; without their help, it would have been nearly impossible to run the selection process. Finally, we thank Philipp Kindermann for meticulous work as Proceedings Chair.

Many other people contributed to the success of SoCG 2024 and the entire CG Week. We are very grateful to the local organization committee for their work in organizing the event. Finally, we thank all the members of the Test of Time Award, Workshop, and Young Researchers Forum Committees, the CG Challenge Advisory Board, and the Computational Geometry Steering Committee.

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