

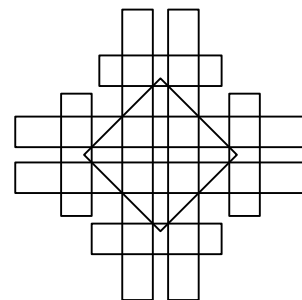
# 37th International Symposium on Computational Geometry

SoCG 2021, June 7–11, 2021, Buffalo, NY, USA  
(Virtual Conference)

Edited by

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## ■ Preface

The 37th International Symposium on Computational Geometry (SoCG 2021) was held online, June 7–11, 2021, as part of the Computational Geometry Week (CG Week 2021). The event was planned to take place in Buffalo, NY, USA, but eventually it was organized online because of the COVID-19 pandemic.

Altogether, 164 papers have been submitted to SoCG 2021. After a thorough review process, in which each paper has been evaluated by three or more independent reviewers, the Program Committee accepted 58 papers for presentation at SoCG 2021. These proceedings contain extended abstracts of the accepted papers, limited to 500 lines (excluding references). If any supporting material (e.g., proofs or experimental details) 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 2021 goes to the paper “*Lower bounds for semialgebraic range searching and stabbing problems*” by Peyman Afshani and Pingan Cheng; this paper will be invited for possible publication in the *Journal of the ACM*. The Best Student Presentation Award will be determined and announced at the symposium, based on ballots cast by the attendees. A few selected papers with very positive reviews will be invited to forthcoming special issues of *Discrete & Computational Geometry* and the *Journal of Computational Geometry* dedicated to the symposium.

The SoCG Test of Time Award goes, this year, to the papers “*The analysis of a simple k-means clustering algorithm*”, by Tapas Kanungo, David M. Mount, Nathan S. Netanyahu, Christine D. Piatko, Ruth Silverman, Angela Y. Wu, presented at SoCG 2000, and “*Constrained Delaunay triangulations*”, by L. Paul Chew, presented at SoCG 1987.

The scientific program of CG Week 2021 was enriched by two distinguished invited speakers. An invited talk, entitled “*3SUM and related problems in fine-grained complexity*”, was delivered by Virginia Vassilevska Williams, from the Massachusetts Institute of Technology. A second invited talk, entitled “*On Laplacians*”, was delivered by Robert Ghrist, from the University of Pennsylvania. We thank these plenary speakers for kindly accepting our invitation.

In addition to the technical papers, there were two submissions to the multimedia exposition: one video and one applet. The submissions were reviewed, and both were accepted for presentation. The extended abstracts that describe these submissions are included in this proceedings volume. The multimedia content can be found at <http://www.computational-geometry.org>.

A continuing feature in this year’s proceedings is the CG Challenge, now in its second year being included in the proceedings. The challenge problem this year was a coordinated motion planning problem for moving multiple labeled unit square “robots” within a regular square grid, from specified starting points to specified goal positions, in order to minimize the time when all robots have reached their goals (the makespan) or the total movement of all robots. This year there were 17 teams submitting verified solutions, and these proceedings contain contributions by the three 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 the works in these proceedings. We are grateful to the assistance provided by 242 reviewers;



without their help it would be nearly impossible to run the selection process. Finally, we would like to thank Irina Kostitsyna, who kindly accepted to be the Proceedings Chair and did a meticulous work.

Many other people contributed to the success of SoCG 2021 and the entire CG Week. We are very grateful to the local organization committee for their work in organizing the event, and for switching to an online setting because of the situation. 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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Marco Pellegrini	Primož Skraba	Marcin Wrochna
Martin Pergel	Kelly Spendlove	Jinhui Xu
Ioannis Psarros	Boris Springborn	Ling Zhou
Jessica Purcell	Raphael Steiner	Binhai Zhu
Sharath Raghvendra	Sebastian Urban Stich	
Benjamin Raichel	Andrew Suk	