

28th International Conference on Principles and Practice of Constraint Programming

CP 2022, July 31–August 8, 2022, Haifa, Israel

Edited by

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■ Preface

This volume contains the proceedings of the *28th International Conference on Principles and Practice of Constraint Programming* (CP 2022), which was held in Haifa, Israel, August 1-5, 2022. Detailed information about the conference are available at <https://cp2022.a4cp.org>. CP 2022 was part of the *Federated Logic Conference* (FLoC) which is held every four years and brings together several leading international conferences related to logic for computer science. FLoC 2022 included 12 conferences, and CP was colocated with the *25th International Conference on Theory and Applications of Satisfiability Testing* (SAT 2022) and the *38th International Conference on Logic Programming* (ICLP 2022), among other conferences.

Held annually, CP is the premier international conference on constraint programming. As is customary for CP, papers could be submitted to multiple tracks. A first technical track was concerned with all aspects of computing with constraints, including theory, algorithms, environments, languages, models, and systems. A second track, chaired by Helmut Simonis (University College Cork), was dedicated to applications of CP. The last three tracks were dedicated to interdisciplinary research at the intersection between constraint programming and other directly related fields: a *Machine Learning* track, chaired by Andrea Lodi (Cornell Tech), an *Operations Research* track, chaired by Sophie Demassey (Mines ParisTech), and a *Trustworthy Decision Making* track, co-chaired by Nadjib Lazaar (LIRMM), Pierre Marquis (Université d'Artois), and Barry O'Sullivan (University College Cork).

78 papers have been submitted to these tracks, and 40 of them have been accepted. Each paper has been reviewed by at least three members of the program committee. We considered a double blind reviewing process, meaning that authors and reviewers were anonymous to each other. Authors had the opportunity to answer reviewers and clarify possible misunderstandings through a rebuttal phase. For each paper, a senior program committee member was in charge of conducting a discussion with reviewers to find a consensus, and of writing a meta-review that summarised pros and cons. Finally, virtual meetings were organised between meta-reviewers, track chairs, and the program chair to agree on final decisions.

Four papers that had an average score greater than or equal to 2 (possible scores ranged from 3, corresponding to a strong accept, to -3 , corresponding to a strong reject) were nominated by at least one program committee member for receiving a best paper award:

- *Selecting SAT Encodings for Pseudo-Boolean and Linear Integer Constraints*, from Felix Ulrich-Oltean, Peter Nightingale and James Alfred Walker;
- *A Constraint Programming Approach to Ship Refit Project Scheduling*, from Raphaël Boudreault, Vanessa Simard, Daniel Lafond and Claude-Guy Quimper;
- *Exploiting Functional Constraints in Generating Dominance Breaking Nogoods for Constraint Optimization*, from Jimmy H. M. Lee and Allen Z. Zhong;
- *Peel-and-Bound: Generating Stronger Relaxed Bounds with Multivalued Decision Diagrams*, from Isaac Rudich, Quentin Cappart and Louis-Martin Rousseau.

The best two of them have been selected by a vote of senior PC members: the best paper prize was awarded to Isaac Rudich, Quentin Cappart and Louis-Martin Rousseau, and the best student paper prize was awarded to Jimmy H. M. Lee and Allen Z. Zhong.

We had the great honour and pleasure to have an invited talk given by Donald E. Knuth (Stanford University), whose next fascicle of *The Art of Computer Programming* is intended to be a solid introduction to techniques for solving Constraint Satisfaction Problems. An



abstract of this talk is included in these proceedings. There was also two plenary FLoC invited speakers: Catuscia Palamidessi (INRIA Saclay, France), and Orna Kupferman (Hebrew University of Jerusalem, Israel).

Besides the paper tracks and invited talks, CP also had many other events, handled by special chairs: Ciaran McCreesh (University of Glasgow) organised the three workshops on the first day of the conference; Clément Carbonnel (LIRMM) selected tutorials for the main conference; H el ene Verhaeghe (Polytechnique Montr eal) organised the Doctoral Program; Andrea Rendl (Satalia) organised a special event on diversity, equity, and inclusion; Eugene Freuder organised a CP App competition; Jason Nguyen, Peter J. Stuckey and Guido Tack (Monash University) organised the MiniZinc challenge; and Gilles Audemard, Christophe Lecoutre, and Emmanuel Lonca (Universit e d'Artois) organised the XCSP3 competition (both MiniZinc and XCSP3 competitions were part of the FLoC Olympic Games).

Many people have contributed to make this conference such a success, and I am grateful to all of them. First of all, I wish to thank all authors for their submission of high-quality scientific work, thus providing the material from which the conference is made. I am also very grateful to all chairs, who managed dedicated tracks and special events, to the senior Program Committee members who conducted numerous discussions with reviewers to reach consensual decisions, among other things, and to the Program Committee members who wrote 243 high-quality reviews and participated to numerous discussions. I would also like to thank the *Association for Constraint Programming* (ACP) for its trust and its very helpful organisation support, with a more specific thank to the ACP president, J. Christopher Beck (University of Toronto), and the ACP conference coordinator, Emmanuel Hebrard (LAAS-CNRS).

Finally, the conference would not have been possible without the great job done by all the people involved in the local organisation chaired by Alexandra Silva (Cornell University). I heavily relied on Roie Zivan (Ben Gurion University) and Ferdinando Fioretto (Syracuse University) for making the many necessary arrangements related to the CP 2022 program and to speedily announce program updates on the conference website.

May 2022, Lyon, France

Christine Solnon

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