

Preface

This volume contains the proceedings of the 23rd International Conference on the Principles and Practice of Constraint Programming (CP 2017) held from August 28 to September 1, 2017 in Melbourne, Australia and colocated with the 20th International Conference on Theory and Applications of Satisfiability Testing (SAT 2017) and the 33rd International Conference on Logic Programming. Detailed information about the CP 2017 conference with links to the colocated conferences can be found at <http://cp2017.a4cp.org>.

The CP conference is the annual international conference on all aspects of computing with constraints including theory, algorithms, environments, languages, models, systems, and applications such as decision making, resource allocation, scheduling, configuration, and planning. In addition to the main technical track and long-standing applications track, and as a continuation of the effort of the CP community to reach out to other research fields that intersect with constraint programming, CP 2017 featured thematic tracks in Machine Learning and CP, Operations Research and CP, Satisfiability and CP, and Test and Verification and CP. Each track had its own Track Chair(s) and Program Committee to ensure that the papers would be peer reviewed by expert reviewers with specific knowledge of the intersecting area.

The conference received 115 submissions across all tracks, including eight submissions to the Journal and Sister Conferences Track. Each paper was assigned to a Senior Program Committee member or the appropriate Track Chair and to three Program Committee members from either the technical track Program Committee or the relevant thematic track Program Committee. All papers received at least three reviews, following which the authors had an opportunity to respond. Detailed discussions were held on each paper by the PC members, led by the SPC member, Track Chair, and Program Chair. The Senior Program Committee, including Track Chairs, met in Padova, Italy, on June 5, 2017 with participation both in person and via video link. Each paper was discussed by the SPC with the decisions taken by consensus. The Journal and Sister Conferences Track papers followed a separate process, led by the Track Chair, to evaluate the relevance and significance of submitted papers that had been previously published in journals or other conferences. The Journal and Sister Conferences Track Program Committee met in Cupar, Scotland, UK on June 18, 2017 to make the final decisions. The final outcome of these meetings was the acceptance of 46 papers across all technical and thematic tracks, resulting in an acceptance rate of approximately 44%, and the acceptance of all eight papers submitted to the Journal and Sister Conferences Track.

The Senior Program Committee awarded four best paper awards, generously supported by Springer.

- Best Paper Award: Grigori German, Olivier Briant, Hadrien Cambazard, and Vincent Jost, “Arc Consistency via Linear Programming”

- Distinguished Paper Award: Fahiem Bacchus, Antti Hyttinen, Matti Järvisalo, and Paul Saikko, “Reduced Cost Fixing in MaxSAT”
- Best Student Paper Award: Adrian Goldwaser and Andreas Schutt, “Optimal Torpedo Scheduling”
- Distinguished Student Paper Award: Guillaume Derval, Jean-Charles Regin, and Pierre Schaus, “Improved Filtering for the Bin-Packing with Cardinality Constraint”

The Program Chair and the Journal-Publication-Fast-Track Chair, Louis-Martin Rousseau, invited four papers from across the technical and thematic tracks to participate in the *Constraints* journal fast-track process to publish an extended version in the journal at the same time as the conference, while also presenting the work at the conference. Due to the tight editorial deadlines, one paper accepted this invitation and so appears in this volume as an abstract with the full paper in *Constraints*.

The conference program included five invited talks in coordination with SAT 2017 and ICLP 2017 by Agostino Dovier, Holger Hoos, Nina Narodytska, Enrico Pontelli, and Mark Wallace. The conference also shared the workshop program with the two colocated conferences, resulting in seven workshops overseen by the Joint Workshop Chairs: Charlotte Truchet, Enrico Pontelli, and Stefan Rümmele. The tutorial program, also chaired by Charlotte Truchet with support from the SAT 2017 and ICLP 2017 Program Chairs, consisted of four tutorials on CP, SAT, Mixed Integer Nonlinear Programming, and Machine Learning and Data Science. The Doctoral Program, jointly organized by CP 2017 and ICLP 2017 and chaired by Chris Mears and Neda Saeedloei, hosted 24 students from around the world. The students had an opportunity to present their work, meet one-on-one with a senior researcher mentor, and attend invited talks targeted to the experiences of a PhD student.

The program for the conference is the result of a substantial amount of work by many people to whom I am grateful. I would like to thank the authors for their submission of high-quality scientific work and the substantial efforts of the Program Committees and external reviewers, who jointly prepared 341 high-quality reviews. The Senior Program Committee and Track Chairs played a crucial role in managing the reviews and discussions, in writing meta-reviews and recommendations for each submission, and in making the final decisions. I would like to specifically acknowledge the efforts of the Track Chairs to attract new contributors to the conference: Yael Ben-Haim and Yehuda Naveh (Satisfiability and CP Track Chairs), David Bergman and Andre Cire (Operations Research and CP Track Chairs), Ken Brown (Application Track Chair), Arnaud Gotlieb and Nadjib Lazaar (Test and Verification and CP Track Chairs), Tias Guns and Michele Lombardi (Machine Learning and CP Track Chairs), Karen Petrie (Journal and Sister Conferences Track Chair), Enrico Pontelli (Biology and CP Track Chair), and Louis-Martin Rousseau (Journal-Publication-Fast-Track Chair).

Beyond the peer review process, there is a substantial team that made the program and conference possible. I would like to particularly thank: Peter Stuckey and Guido Tack (CP 2017 Conference Chairs), Christopher Mears and Neda Saeedloei (Doctoral Program Chairs), Charlotte Truchet (Tutorial Chair), Charlotte Truchet, Enrico Pontelli, and Stefan Rümmele (Joint CP/SAT/ICLP Workshop Chairs), Tommaso Urli (Publicity Chair), Maria Garcia de la Banda (ICLP 2017 Conference Chair), Serge

Gaspers and Toby Walsh (SAT 2017 Conference and Program Chairs), and Ricardo Rocha and Tran Cao Son (ICLP 2017 Program Chairs).

I would also like to thank the sponsors of the conference for their generous support. At the time of writing, these sponsors include: the Artificial Intelligence Journal Division (AIJD) of IJCAI, the Association for Constraint Programming, the Association for Logic Programming, the City of Melbourne, CompSustNet, Cosling, Cosytec, CSIRO Data61, the European Association for Artificial Intelligence, IBM, Monash University, Satalia, Springer, and the University of Melbourne.

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