

# Preface

This volume contains the proceedings of the 22<sup>nd</sup> International Conference on the Principles and Practice of Constraint Programming (CP 2016), which was held in Toulouse, France, during September 5–9, 2016. Detailed information about the conference is available at <http://cp2016.a4cp.org>.

The CP conference is the annual international conference on constraint programming. It is concerned with 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. The CP community is very keen to ensure it remains open to interdisciplinary research at the intersection between constraint programming and related fields. Hence, in addition to the usual technical and application tracks, the CP 2016 conference featured the following new thematic tracks: “Computational Sustainability”, “CP and Biology”, “Preferences, Social Choice and Optimization”, and “Testing and Verification”. Each track had a specific sub-committee to ensure that specialist reviewers from the relevant domains vetted papers in the respective tracks. CP 2016 also introduced a challenge based on a realistic industrial-grade optimization problem.

For the purpose of the conference’s scientific programming, we invited submissions to all tracks, and we received 154 submissions, including 17 submissions for the “Journal-First and Sister Conferences Paper” track. The review process for CP 2016 relied on a multi-tier approach involving one senior Program Committee, dedicated regular Program Committees for all tracks, along with a set of additional reviewers recruited by Program Committee members. Authors submitted either long or short papers. All submissions were assigned to a senior Program Committee member and three members of the relevant track Program Committee. Authors were given an opportunity to respond to reviews before a detailed discussion was undertaken at the level of the Program Committees, overseen by the program chair, the senior Program Committee member, and the track chairs. The “Journal-First and Sister Conferences” track gives an opportunity to discuss important results in the area of constraint programming that appeared recently in relevant journals and sister conferences. Submissions were evaluated by a separate Program Committee for relevance and significance. A meeting of the senior Program Committee was held at Banff –with participation by video conference– at the end of May, chaired by the program chair, where the reviews, author feedback, and discussions on every paper were revisited in detail. The result of this was that the acceptance rate for the technical track was a little under 45%. The senior Program Committee awarded the Best Conference Paper Prize to Krishnamurthy Dvijotham, Pascal Van Hentenryck, Michael Chertkov, Sidhant Misra, and Marc Vuffray for “Graphical Models for Optimal Power Flow”, the Distinguished Conference Paper Prize to David Manlove, Iain McBride, and James Trimble for “Almost-Stable Matchings in the Hospitals/Residents Problem with Couples”, the Best Student Paper Prize to Clément Carbonnel for “The Dichotomy for Conservative Constraint

Satisfaction Is Polynomially Decidable”, and the Distinguished Student Paper Prize to Kyle E.C. Booth, Goldie Nejat, and J. Christopher Beck for “A Constraint Programming Approach to Multi-Robot Task Allocation and Scheduling in Retirement Homes”. The program chair, the journal publication fast track chair, Willem-Jan van Hoeve, and the *Constraints* journal editor-in-chief, Michela Milano, also invited four papers from the technical and application tracks for direct publication in that journal. These were presented at the conference like any other paper and they appear in the proceedings as a one-page abstract.

The conference program featured four invited talks by Pascal Van Hentenryck, David Manlove, Andrey Rybalchenko, and Zico Kolter. This volume includes one-page abstracts of their talks. The conference also featured four tutorials and six satellite workshops, whose topics are listed in this volume. The conference also featured four tutorials and five satellite workshops, whose topics are listed in this volume. The Doctoral Program gave PhD students an opportunity to present their work to more senior researchers, to meet with an assigned mentor for advice on their research and early career, to attend special tutorials, and to interact with one another.

I am grateful to many people who made this conference such a success. First of all, to the authors who provided excellent material to select from. Then to the members of the Program Committees and additional reviewers who worked hard to provide constructive, high-quality reviews, to members of the senior Program Committee who helped me ensure that each paper was adequately discussed, wrote meta-reviews for their assigned papers, and participated in live remote deliberations — for some, quite early or late in the day. Of course there is a whole team standing with me, who chaired various aspects of the conference: Thomas Schiex (Conference Chair), Laurent Michel (Application Track Chair), Carla Gomes, Michela Milano and Christine Solnon (Computational Sustainability Track Chairs), Agostino Dovier and Alessandro Dal Palù (CP and Biology Track Chairs), Charlotte Truchet (Music Track Chair), Andreas Podelski and Arnaud Gotlieb (Testing and Verification Track Chair), Michela Milano (Published Journal and Sister Conferences Paper Track Chair), Willem-Jan van Hoeve (Journal Publication Fast-Track Chair), Pierre Flener (Workshop and Tutorial Chair), Pierre Schaus (ACP Challenge Chair), Tias Guns and Laura Climen (Doctoral Program Chairs), Helmut Simonis (Industry Outreach Chair), and Louis Martin Rousseau (Publicity Chair).

The conference would not have been possible without the great job done by all the people involved in the local organization: Lotte Berghman, Paul Gaborit, Simon de Givry, Emmanuel Hebrard, Élise Vareilles, Matthias Zytynicki, Alain Pérault, Fabienne Aygnac, Marie-José Huguet, David Allouche, Nathalie Julliand, George Katsirelos, Pierre Lopez, Alain Haït, Frédéric Maris, Cédric Pralet, Gérard Verfaillie, Nicolas Barnier, Frédéric Messine, and Vincent Vidal. We also want to thank the institutions that supported them during the organization: the Toulouse Business School (for hosting us too), the “École nationale supérieure des mines d’Albi-Carmaux” (also for website hosting and management), the National Institute for Agronomical Research (INRA – MIAT), the National Center for Scientific Research (CNRS – LAAS), the National Applied Sciences Institute (INSA Toulouse), the Higher Institute for Aeronautics and Space (ISAE), the Toulouse Computing Research Institute (IRIT – Toulouse University), the National Office for Aerospace Research and Studies (ONERA), the Civil

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