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Principles and Practice of Constraint Programming – CP 2011

17th International Conference, CP 2011
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Proceedings



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Preface

This volume contains the proceedings of the 17th International Conference on Principles and Practice of Constraint Programming (CP 2011), held in Perugia, Italy, during September 12-16, 2011. Detailed information about the 2011 conference can be found on the conference website (<http://www.dmi.unipg.it/cp2011/>). We would like to thank our sponsors for their generous support in various forms for this event. Held annually, the CP conference is the premier international forum on constraint programming. The conference is concerned with all aspects of computing with constraints, including: theory, algorithms, environments, languages, models and systems, applications such as decision making, resource allocation, and agreement technologies. CP 2011 was organized by the Università degli Studi di Perugia and Dipartimento di Matematica e Informatica on behalf of the Association for Constraint Programming (ACP). Information about ACP can be found at <http://www.a4cp.org/> and that of the conferences in the series can be found at <http://www.a4cp.org/events/cp-conference-series>.

CP 2011 included two calls for contributions: one for research papers, describing fundamental innovations in the field, and one for application papers, describing uses of constraint technology in real-life scenarios. We received a total of 159 submissions (139 to the Research Track and 20 to the Application Track). We did not differentiate between long and short submissions. They were both evaluated to the same high standard in terms of quality. In particular, no long submissions were accepted as short papers. Every paper received at least three reviews. An author rebuttal process was implemented, allowing authors to provide responses to the initial reviews of their papers. In many cases, several rounds of intense discussions among the Program Committee members in charge of the papers were carried out before final decisions were made. Where necessary, additional reviews were solicited for individual papers. There were separate Research Track and Application Track Program Committees. Eventually, 51 (37%) research papers (7 short) and 7 (35%) application papers were accepted. All papers, long and short, were presented at the main conference.

The conference program featured three invited talks by distinguished scientists: Leonardo de Moura, Laurent Perron and Jean-Charles Régin. The abstracts of the talks are included in these proceedings. Winners of the 2011 ACP Research Excellence and Doctoral Research Awards presented their award talks. In addition to regular paper presentations, the conference encompassed pre-conference workshops, tutorials, a panel and social activities.

CP 2011 continued the tradition of the CP Doctoral Program, in which PhD students presented their work, attended tutorials and discussed their work with senior researchers via a mentoring scheme. This year, the Doctoral Program received 39 submissions and selected 30 of them for financial support (2 of whom were supported in the form of an AI*IA scholarship).

The conference management system, EasyChair, made our life a lot easier from paper submission to reviewing to discussions and to producing the proceedings. We are grateful to Andrei Voronkov for providing such a nice platform to the community for free.

A successful conference is the result of hard work by many people. I thank Stefano Bistarelli, the Conference Chair, who had the huge task of planning the whole event. He and his team put in much time and effort in budgeting, logistical planning, booking, maintaining the conference website, and essentially making everything work. I thank Helmut Simonis, the Application Track Chair, for assembling the Program Committee and taking care of papers of the application track. I thank Christian Schulte, the Workshop and Tutorial Chair, for soliciting and putting together an interesting workshop and tutorial program. I thank Christopher Jefferson and Guido Tack, the Doctoral Program Chairs, for composing a fantastic program for our future generation. My applause to Ian Miguel, the Sponsorship Chair, for his relentless pursuit of various sponsorship possibilities. As usual, Helmut Simonis took great photos of the conference for our fond memories.

The conference would not have been possible without the high-quality and interesting submissions from authors, who made the decision process so challenging. I must thank all Program Committee (PC) members for their dedication over the past months. They all reviewed papers in a timely and professional manner. Of course, we could not leave out the additional reviewers recruited by our PC members. Together, these wonderful colleagues helped to assemble an excellent conference program. Pedro Meseguer was kind enough to oversee submissions from CUHK, assign PC members and make final decisions. I am also indebted to many of my “secret agents” (who should remain anonymous for obvious reasons) who offered last-minute help with additional reviews and arbitration. I would like to salute my mentors: Peter Stuckey, Ian Gent and David Cohen, who were the Program Chairs of CP 2008, 2009 and 2010, respectively. They were always good sources of advice and inspiration. Barry O’Sullivan was always there to answer my many questions.

I also acknowledge local assistance from Ivy Chau, Jingying Li, Lirong Liu, Terrence Mak, Irwin Shum, Charles Siu, May Woo and Yi Wu.

Last but not least, I would like to thank members of the Executive Committee of the Association for Constraint Programming for entrusting me with the responsibility of being the Program Chair, thus giving me an opportunity for a thriving and rewarding experience. I hope I met at least some of their expectations for CP 2011.

Distinguished Papers

Separate small subcommittees were formed to help decide on the papers deserving recognition as the highest standard of those submitted for each submission category.

Best Application Track Paper

“The Design of Cryptographic Substitution Boxes Using CSPs,” by Venkatesh Ramamoorthy, Marius Silaghi, Toshihiro Matsui, Katsutoshi Hirayama and Makoto Yokoo

Runner-Up

“Optimal Carpet Cutting,” by Andreas Schutt, Peter J. Stuckey and Andrew R. Verden

Best Research Track Paper

“On Minimal Constraint Networks,” by Georg Gottlob

Best Student Paper¹

“Octagonal Domains for Continuous Constraints,” by Marie Pelleau, Charlotte Truchet and Frédéric Benhamou

¹ Student papers were those papers declared by the authors to be mainly the work (both in research and writing) of PhD or other students.

Workshops and Tutorials

Workshops

A range of workshops affiliated with the conference took place the day before the main conference on September 11, 2011. The accepted workshops were as follows.

- Preferences and Soft Constraints (Soft 2011)
- Local Search Techniques in Constraint Satisfaction (LSCS 2011)
- Constraint-Based Methods for Bioinformatics (WCB 2011)
- Logics for Component Configuration (Lococo 2011)
- Symmetry in Constraint Satisfaction Problems (SymCon 2011)
- Constraint Modelling and Reformulation (ModRef 2011)
- Parallel Methods for Constraint Solving (PMCS 2011)
- MiniZinc (MZN 2011)

Tutorials

Three tutorial presentations were given during the main program of the conference as follows.

- *Automatic Solver Configuration and Solver Portfolios*, by Meinolf Sellmann (IBM, USA)
- *Integer Programming for Constraint Programmers*, by Chris Beck (University of Toronto, Canada), Timo Berdhold, Ambros Gleixner, Stefan Heinz, Kati Wolter (Zuse Institute Berlin, Germany)
- *Machine Learning and Data Mining: Challenges and Opportunities for Constraint Programming*, by Luc De Raedt, Siegfried Nijssen (Katholieke Universiteit Leuven, Belgium)

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The Association for Constraint Programming (ACP) aims at promoting constraint programming in every aspect of the scientific world, by encouraging its theoretical and practical developments, its teaching in academic institutions, its adoption in the industrial world, and its use in applications. The ACP is a non-profit association, which uses the surplus of the organized events to support future events or activities.

The ACP is led by an Executive Committee (EC), which takes all the decisions necessary to achieve the goals of the association. In particular, the ACP EC organizes a summer school in CP and the ACP Research Excellence Award and the ACP Doctoral Research Award. The ACP EC also organizes an annual international conference on constraint programming, and decides the venue of the conference, as well as its program and conference chairs.

The ACP EC maintains a website (<http://www.a4cp.org/>) about all aspects of CP, and publishes a quarterly newsletter about CP events.

Executive Committee

President: Barry O’Sullivan, Ireland

Secretary: Jimmy Lee, Hong Kong

Treasurer: Thomas Schiex, France

Other Members:

- Yves Deville, Belgium
- John Hooker, USA
- Helmut Simonis, Ireland
- Peter Stuckey, Australia
- Roland Yap, Singapore

Also supporting the EC is Pedro Meseguer, Spain, acting as Conference Coordinator.

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