

*Technical Communications of the 31st  
International Conference on Logic Programming*

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*Editorial*

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The 31st edition of the International Conference of Logic Programming (ICLP 2015) took place in Cork, Ireland, from the 31st of August 2015 to the 4th of September 2015. It was co-located with the 21st International Conference on Principles and Practice of Constraint Programming (CP 2015) and it was also a part of *George Boole 200*, a celebration of the life and work of George Boole who was born in 1815 and worked at the University College of Cork.

The conference featured a number of different events. Besides the presentation of technical papers, the agenda included three invited talks, four advanced tutorials, two panels (*The Future Publication of ICLP Proceedings*, chaired by Torsten Schaub, and *Teaching Computer Science and Declarative Programming in Schools and Universities*, chaired by Manuel Hermenegildo), several pre-conference workshops, an LP/CP Programming Contest, organised by Neng-Fa Zhou, Peter Stuckey, and Antonius Weinzierl, and the ICLP Doctoral Consortium.

Regarding the scope of the conference, we solicited papers in all areas of logic programming including but not restricted to:

- Theory: Semantic Foundations, Formalisms, Nonmonotonic Reasoning, Knowledge Representation;
- Implementation: Compilation, Virtual Machines, Parallelism, Constraint Handling Rules and Tabling;

- Environments: Program Analysis, Transformation, Validation, Verification, Debugging, Profiling, Testing;
- Language Issues: Concurrency, Objects, Coordination, Mobility, Modes, Types, Higher Order, Assertions, Programming Techniques;
- Related Paradigms: Inductive and Coinductive Logic Programming, Constraint Logic Programming, Answer-Set Programming, SAT, Constraints, Computational Argumentation, Abductive Logic Programming, Functional Logic Programming;
- Applications: Databases, Data Integration and Federation, Software Engineering, Natural Language Processing, Web and Semantic Web, Agents, Artificial Intelligence, Bioinformatics, Social Networks and Social Choice.

There were two categories for submissions:

- i) regular papers, including: (1) technical papers for describing technically sound, innovative ideas that can advance the state of logic programming; (2) application papers, with emphasis on impact on some application domains; (3) system and tool papers, with emphasis on novelty, practicality, usability and availability of the systems and tools described;
- ii) technical communications, aimed at describing recent developments, new projects, and other materials not ready for publication as regular papers.

All submissions were required to be written in English, to describe original, previously unpublished research, and not be simultaneously submitted for publication elsewhere.

We received 89 submissions of abstracts (88 regular papers, 1 technical communication) of which 74 resulted in submissions of papers. The program chairs organized the refereeing process with the help of the Program Committee and external reviewers. Each paper was reviewed by at least three anonymous referees who provided full written evaluations. Out of the 74 submissions, 21 have been accepted as regular papers, which appear in a special issue of the journal *Theory and Practice of Logic Programming (TPLP)* and are listed below:

- *Tabling as a Library with Delimited Control* by Benoit Desouter, Marko Van Dooren, Tom Schrijvers  
(published in TPLP with doi:10.1017/S1471068415000137)
- *Improved Answer-Set Programming Encodings for Abstract Argumentation* by Sarah A. Gaggl, Norbert Manthey, Alessandro Ronca, Johannes P. Wallner, Stefan Woltran  
(published in TPLP with doi:10.1017/S1471068415000149)
- *Abstract Gringo* by Martin Gebser, Amelia Harrison, Roland Kaminski, Vladimir Lifschitz, Torsten Schaub  
(published in TPLP with doi:10.1017/S1471068415000150)
- *Knowledge Compilation of Logic Programs Using Approximation Fixpoint Theory* by Bart Bogaerts, Guy Van Den Broeck  
(published in TPLP with doi:10.1017/S1471068415000162)

- *A Logic Programming Approach to Predict Effective Compiler Settings for Embedded Software* by Craig Blackmore, Oliver Ray, Kerstin Eder (published in TPLP with doi:10.1017/S1471068415000174)
- *Dual-normal Logic Programs the Forgotten Class* by Johannes K. Fichte, Mirosław Trzuszczynski, Stefan Woltran (published in TPLP with doi:10.1017/S1471068415000186)
- *Learning Weak Constraints in Answer Set Programming* by Mark Law, Alessandra Russo, Krysia Broda (published in TPLP with doi:10.1017/S1471068415000198)
- *Horn Clauses as an Intermediate Representation for Program Analysis and Transformation* by Graeme Gange, Jorge A. Navas, Peter Schachte, Harald Søndergaard, Peter J. Stuckey (published in TPLP with doi:10.1017/S1471068415000204)
- *Planning as Tabled Logic Programming* by Neng-Fa Zhou, Roman Barták, Agostino Dovier (published in TPLP with doi:10.1017/S1471068415000216)
- *Rewriting Recursive Aggregates in Answer Set Programming: Back to Monotonicity* by Mario Alviano, Wolfgang Faber, Martin Gebser (published in TPLP with doi:10.1017/S1471068415000228)
- *Complexity and Compilation of GZ-Aggregates in Answer Set Programming* by Mario Alviano, Nicola Leone (published in TPLP with doi:10.1017/S147106841500023X)
- *Fuzzy Answer Set Computation via Satisfiability Modulo Theories* by Mario Alviano, Rafael Peñaloza (published in TPLP with doi:10.1017/S1471068415000241)
- *Optimizing Phylogenetic Supertrees Using Answer Set Programming* by Laura Koponen, Emilia Oikarinen, Tomi Janhunen, Laura Säilä (published in TPLP with doi:10.1017/S1471068415000265)
- *A Denotational Semantics for Equilibrium Logic* by Felicidad Aguado, Pedro Cabalar, David Pearce, Gilberto Pérez, Concepción Vidal (published in TPLP with doi:10.1017/S1471068415000277)
- *Proving Correctness of Imperative Programs by Linearizing Constrained Horn Clauses* by Emanuele De Angelis, Fabio Fioravanti, Alberto Pettorossi, Maurizio Proietti (published in TPLP with doi:10.1017/S1471068415000289)
- *Adding Partial Functions to Constraint Logic Programming with Sets* by Maximiliano Cristiá, Gianfranco Rossi, Claudia Frydman (published in TPLP with doi:10.1017/S1471068415000290)
- *An Infinitary Encoding of Temporal Equilibrium Logic* by Pedro Cabalar, Martín Diéguez, Concepción Vidal (published in TPLP with doi:10.1017/S1471068415000307)
- *Semantics of Templates in a Compositional Framework for Building Logics* by Ingmar Dasseville, Matthias Van Der Hallen, Gerda Janssens, Marc Denecker (published in TPLP with doi:10.1017/S1471068415000319)
- *Taming Primary Key Violations to Query Large Inconsistent Data via ASP* by Marco Manna, Francesco Ricca, Giorgio Terracina

- (published in TPLP with doi:10.1017/S1471068415000320)
- *Concolic Testing in Logic Programming* by Fred Mesnard, Étienne Payet, Germán Vidal  
(published in TPLP with doi:10.1017/S1471068415000332)
- *Practical Run-time Checking via Unobtrusive Property Caching* by Nataliia Stulova, José F. Morales, Manuel V. Hermenegildo  
(published in TPLP with doi:10.1017/S1471068415000344)

Furthermore, 25 submissions have been accepted as technical communications with the understanding that these are valuable papers but not mature for publication in a journal yet.

This volume consists of (i) the technical communications accepted for oral and poster presentations at ICLP 2015 (of the 25 accepted papers, 23 appear in this volume whereas 2 were withdrawn), (ii) the contributions of the participants of the ICLP Doctoral Consortium, and (iii) the abstracts of the invited presentations (3 talks and 4 tutorials).

The ICLP Doctoral Consortium was held for the eleventh time, on 31st of August 2015, encouraged by the very positive experience of the previous events held in Sitges, Spain (2005); in Seattle, USA (2006); in Porto, Portugal (2007); in Udine, Italy (2008); in Pasadena, CA, USA (2009); in Edinburgh, Scotland (2010); in Lexington, KY, USA (2011); in Budapest, Hungary (2012); in Istanbul, Turkey (2013); and in Vienna, Austria (2014). Its aims were

- To provide doctoral students working in the fields of logic and constraint programming with a friendly and open forum to present their research ideas, listen to ongoing work from peer students, and receive constructive feedback.
- To provide students with relevant information about important issues for doctoral candidates and future academics.
- To develop a supportive community of scholars and a spirit of collaborative research.
- To support a new generation of researchers with information and advice on academic, research, industrial, and non-traditional career paths.

The chairs of the Doctoral Consortium received seven submissions, of which six were accepted as regular contributions and one as an abstract. Furthermore, they selected the submission by Amelia Harrison, entitled *Formal Methods for Answer Set Programming*, as the best ICLP Doctoral Consortium submission of this year.

In conclusion, we would like to thank the members of the ICLP 2015 Program Committee and the external referees for their professionalism, enthusiasm, hard work, and promptness, despite the demanding review schedule. The ICLP 2015 Program Committee members were:

Slim Abdennadher, Elvira Albert, Chitta Baral, François Bry, Pedro Cabalar, Manuel Carro, Michael Codish, Stefania Costantini, Alessandro Dal Palù, Marina De Vos, Marc Denecker, Agostino Dovier, Thomas Eiter, Esra Erdem, Wolfgang Faber, François Fages, Michael Fink, Thom Fruehwirth, Sarah Alice Gaggl, Maria Garcia De La Banda, Laura Giordano, Gopal Gupta, Michael Hanus, Tomi Janhunen, Michael Kifer, Angelika Kimmig, Evelina Lamma, Joohyung Lee, Joao Leite,

Michael Leuschel, Francesca Alessandra Lisi, Thomas Lukasiewicz, Michael Maher, Alessandra Mileo, Barry O’Sullivan, Emilia Oikarinen, Mauricio Osorio, Enrico Pontelli, Maurizio Proietti, Francesco Ricca, Alessandra Russo, Chiaki Sakama, Vítor Santos Costa, Torsten Schaub, Tom Schrijvers, Yi-Dong Shen, Guillermo R. Simari, Francesca Toni, Paolo Torroni, Irina Trubitsyna, Mirek Truszczyński, Kewen Wang, Jan Wielemaker, Stefan Woltran, Roland Yap, Jia-Huai You, Neng-Fa Zhou.

The external referees were: Hazem Abbas, Bernhard Bliem, Veronica Borja, Maurice Bruynooghe, Shaowei Cai, Tran Cao Son, Jose Luis Carballido, Juan Carlos Nieves, Ingmar Dasseville, Bart Demoen, Martín Diéguez, Carmine Dodaro, Gregory Duck, Sandra Dylus, Alia El Bolock, Mohamed Elmahdy, Jorge Fandiño, Johannes Klaus Fichte, Fabio Fioravanti, Ferdinando Fioretto, Daniel Gall, Feng Gao, Marco Gavanelli, Martin Gebser, Carmen Gervet, Rémy Haemmerlé, Joaquin Arias Herrero, Roland Kaminski, Arash Karimi, Arun Konagurthu, Manos Koukoutsos, Vitaly Lagoon, Pierre Lescanne, Fangfang Liu, Theofrastos Mantadelis, J. Raymundo Marcial-Romero, Alberto Martelli, Rob Miller, Jose F. Morales, Matthias Nickles, Philipp Obermeier, Max Ostrowski, Björn Peemöller, Alberto Pettorossi, Carla Piazza, Fabrizio Riguzzi, Enric Rodríguez Carbonell, C. R. Ramakrishnan, Emanuel Sallinger, João Santos, Lukas Schweizer, Nada Sharaf, Kostyantyn Shchekotykhin, Jaime Sánchez-Hernández, Jon Sneyers, Md Solimul Chowdhury, Martin Suda, Theresa Swift, Shahab Tasharrofi, Daniele Theseider Dupré, Jan Rasmus Tikovsky, Matthias van der Hallen, Concepción Vidal, Antonius Weinzierl, Amira Zaki, Zhiqiang Zhuang.

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Finally, we would also like to express our thanks and great appreciation to the members of the ALP Executive Committee, and in particular Manuel Carro as the ALP Conference Coordinator, for their continued support.

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Thomas Eiter and Francesca Toni / Marina De Vos and Yuliya Lierler  
Program Committee Chairs / Doctoral Consortium Chairs