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Marcello Balduccini · Tomi Janhunen (Eds.)

# Logic Programming and Nonmonotonic Reasoning

14th International Conference, LPNMR 2017  
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# Preface

This volume contains the papers presented at the 14th International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR 2017) that was held July 3–6, 2017, in Espoo, Finland. The newly renovated Hanasaari Cultural Center served as the idyllic and scenic venue of the conference.

The LPNMR conference is a forum for exchanging ideas on declarative logic programming, nonmonotonic reasoning, and knowledge representation. The aim of the LPNMR conference series is to facilitate interactions between researchers and practitioners interested in the design and implementation of logic-based programming languages and database systems, and researchers who work in the areas of knowledge representation and nonmonotonic reasoning. The conference strives to encompass theoretical and experimental studies that have led or will lead to advances in declarative programming and knowledge representation, as well as their deployment in practical applications. The past editions of LPNMR were held in Washington, D.C., USA (1991), Lisbon, Portugal (1993), Lexington, Kentucky, USA (1995), Dagstuhl, Germany (1997), El Paso, Texas, USA (1999), Vienna, Austria (2001), Fort Lauderdale, Florida, USA (2004), Diamante, Italy (2005), Tempe, Arizona, USA (2007), Potsdam, Germany (2009), Vancouver, Canada (2011), Coruña, Spain (2013), and Lexington, Kentucky, USA (2015).

The 2017 edition received 47 submissions in three categories: technical papers, system descriptions, and application descriptions. Submissions as both long and short papers were considered and each submission was evaluated and reviewed by at least three Program Committee members. The final list of 27 accepted papers consists of 16 long and 11 short contributions, further divided into 15 technical papers, seven system descriptions, and five application descriptions.

The scientific program featured invited talks by João Leite, Tran Cao Son, and Francesca Toni, as well as the oral presentations of the technical papers mentioned above. In addition, the program included sessions dedicated to the 7th Answer Set Programming Competition, the Doctoral Consortium of the conference, and a panel on the past and future of LPNMR. The main conference was preceded by five workshops offering an inspiring start for the conference. The conference proceedings contain extended abstracts for the invited talks, the 27 technical papers, and the report on the 7th Answer Set Programming competition. The social program of the conference included an informal get-together at Hanasaari, the official reception of Espoo City at Karhusaari Art Center, and a conference dinner served at Haltia Nature Center in Nuukio National Park.

Many people played an important role in the success of LPNMR 2017 and deserve our warmest thanks and acknowledgments as follows. The Program Committee and the additional reviewers worked hard for the fair and thorough evaluation of submissions. The technical program is an essential contribution of the invited speakers and the authors of the accepted papers. The organizers of the programming competition,

Martin Gebser, Marco Maratea, and Francesco Ricca, have dedicated themselves to a long-term effort pushing ahead the improvement of state-of-the-art LPNMR systems. Marina De Vos took care of the organization of an excellent Doctoral Consortium program, guiding young researchers to plan their research and careers. Joohyung Lee's contribution was invaluable in coordinating the selection and organization of workshops for the conference. Peter Schüller advertised the conference and its workshops through a number of channels. Finally, the members of the Organizing Committee and volunteers deserve our special thanks for the success of the event.

The LPNMR 2017 conference received generous support from several organizations. We gratefully acknowledge our sponsors, the Finnish Cultural Foundation, the Foundation for Knowledge Representation and Reasoning (KR Inc), the Association for Logic Programming (ALP), and the European Association for Artificial Intelligence (EurAI). The Association for the Advancement of Artificial Intelligence (AAAI) helped to advertise the event through its channels. The possibilities for fast-track journal publications in the *Artificial Intelligence Journal and Theory and Practice of Logic Programming*, as well as the best paper prize offered by Springer, brought additional value and motivation. The functions of the EasyChair system were an indispensable help in the management of submissions and of the reviewing process. The representatives of Espoo City and Hanasaari Cultural Center kindly advised us of different possibilities and attractions that Espoo, the hometown of Aalto University, can offer for the organization of a scientific conference. The hosting university helped with practical matters such as payment transactions and accounting.

May 2017

Marcello Balduccini  
Tomi Janhunnen

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Sampling and Search Space with Answer  
Set Programming

Markus Hecher

Structure-Driven Answer-Set Solving - Extended  
Abstract

Tobias Kaminski

Answer Set Programs with External Source Access:  
Integrated Evaluation and New Applications

Patrick Lühne

Discovering and Proving Invariants in Answer  
Set Programming and Planning

Max Ostrowski

Modern Constraint Answer Set Solving

Javier Romero

Extending Answer Set Programming with Declarative  
Heuristics, Preferences, and Online Planning

Sebastian Schellhorn

Theory Reasoning with Answer Set Programming

Richard Taupe

Lazy Grounding and Heuristic Solving in Answer  
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