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Nicolas Lachiche · Christel Vrain (Eds.)

# Inductive Logic Programming

27th International Conference, ILP 2017  
Orléans, France, September 4–6, 2017  
Revised Selected Papers

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# Preface

This volume contains the revised versions of selected papers presented at the 27th International Conference on Inductive Logic Programming (ILP 2017). ILP 2017 was held in Orléans, France, during September 4–6, 2017.

Inductive logic programming (ILP) is a subfield of machine learning, which originally relied on logic programming as a uniform representation language for expressing examples, background knowledge, and hypotheses. Due to its strong representation formalism, based on first-order logic, ILP provides an excellent means for multi-relational learning and data mining, and more generally for learning from structured data. The ILP conference series, started in 1991, is the premier international forum for learning from structured or semi-structured relational data. Originally focusing on the induction of logic programs, over the years it has expanded its research horizon significantly and welcomes contributions to all aspects of learning in logic, including exploring intersections with probabilistic approaches.

Three kinds of papers were submitted, and the reviewing process was quite complicated:

1. Regular papers describing original mature work representing a self-contained theoretical contribution and/or supported by appropriate experimental evaluation. In all, 17 regular papers were submitted. These papers were reviewed by at least three members of the Program Committee. Seven papers were rejected. Ten papers were accepted for presentation at the conference. Although four were directly accepted for publication in the proceedings, only three are published in these proceedings. Six were invited to submit a revised version. After a second round of reviewing, four were accepted.
2. Late-breaking papers describing original work in progress, brief accounts of original ideas without conclusive experimental evaluation, and other relevant work of potentially high scientific interest but not yet qualifying for the regular paper category. In total, 14 late-breaking papers were accepted/rejected by the PC chairs, on the grounds of relevance, to be presented at the conference. Each late-breaking paper was reviewed by at least three members of the Program Committee taking also into account the oral presentation. This allowed us to nominate candidates for the most promising student late-breaking paper. Ten out of 14 late-breaking papers were invited to submit an extended version, which was evaluated a second time by three reviewers. Five of them were selected to be included in these proceedings.
3. Recently published papers. Five papers relevant to the conference topics and recently published or accepted for publication in a first-class conference were presented at the conference. These papers do not appear in this Springer LNAI conference proceedings.

In these proceedings, the articles are sorted according to the name of the first author. We identified several trends during this conference:

- Extension of the foundations of ILP (Bekker & Davis, Ribeiro et al., and Svatoš et al.)
- Parallelization (Katzouris et al., and Nishiyama & Ohwada)
- Applications of ILP to robotics, breast cancer and vision, respectively (Antanas et al., Côte-Real et al., and Dai et al.)
- A new trend exploring connections with deep learning (Dumančić et al., Kaur et al., Šourek et al., and Vig et al.)

We had the pleasure to welcome four invited speakers at ILP 2017:

- Alan Bundy, Professor at the University of Edinburgh: “Can Computers Change Their Minds?”
- Marc Boullé, Senior Researcher at Orange Labs: “Automatic Feature Construction for Supervised Classification from Large Scale Multi-Relational Data”
- Jennifer Neville, Associate Professor at Purdue University: “Learning from Single Networks—The Impact of Network Structure on Relational Learning and Collective Inference”
- Mathias Niepert, Senior Researcher at NEC Labs Europe in Heidelberg: “Learning Knowledge Base Representations with Relational, Latent, and Numerical Features”

Three prizes were awarded:

- Best paper (supported by Springer): Gustav Šourek, Martin Svatoš, Filip Železný, Steven Schockaert and Ondřej Kuželka. “Stacked Structure Learning for Lifted Relational Neural Networks”
- Best student paper (supported by *Machine Learning Journal*) Sebastijan Dumančić. “Demystifying Relational Latent Representations” (co-author Hendrik Blockeel)
- Most promising “late-breaking” student paper (supported by *Machine Learning Journal*): Jessa Bekker. “Positive and Unlabeled Relational Classification Through Label Frequency Estimation” (co-author Jesse Davis)

We would like to thank all the persons who contributed to the success of ILP 2017: the members of the Organizing Committee, the members of the Program Committee, the additional reviewers, and the sponsors.

February 2018

Nicolas Lachiche  
Christel Vrain

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In the original version of the Preface starting on page V, the wrong contribution was named as the most promising “late-breaking” student paper and there was a typo in the first-name of Hendrik Blockeel. The errors have been corrected.

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- University of Orléans
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- ICVL Fédération de recherche Informatique Centre Val de Loire
- Springer
- *Machine Learning* - Springer
- *Artificial Intelligence*
- EGC Association Internationale Francophone d'Extraction et de Gestion des Connaissances
- AFIA Association Française pour l'Intelligence Artificielle
- Région Centre - Val de Loire - French administrative region
- Département du Loiret - Loiret department
- Orléans métropole - Orléans city





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