

Preface

This volume contains the revised versions of selected papers presented at ILP 2015: The 25th International Conference on Inductive Logic Programming. ILP 2015 was held in Kyoto University, Kyoto, Japan, during August 20–22, 2015. The ILP conference series has been the premier international forum on ILP. Topics in ILP conferences address theories, algorithms, representations and languages, systems and applications of ILP, and cover all areas of learning in logic, relational learning, relational data mining, statistical relational learning, multi-relational data mining, relational reinforcement learning, graph mining, connections with other learning paradigms, among others.

We solicited three kinds of papers: (1) long papers describing original mature work containing appropriate experimental evaluation and/or representing a self-contained theoretical contribution, (2) short 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 long paper category, and (3) papers relevant to the conference topics and recently published or accepted for publication by a first-class conference or journal.

There were 44 submissions in total, 24 long papers, 18 short papers, and two published papers. Long papers were reviewed by at least three members of the Program Committee (PC), and 13 papers were accepted for oral presentation at ILP 2015. Among them, five long papers were invited to submit a final version to the LNAI conference proceedings (without a further review) during the first round of reviews, and the other eight papers were invited to submit a full version to the proceedings after another review round. Short papers were firstly reviewed on the grounds of relevance by PC co-chairs, and 17 papers were accepted for short oral presentation. Each short paper was reviewed by at least three members of the PC, and 11 papers were invited to submit a full version to the proceedings after another review round. Among the 19 invited papers that needed second reviews, 16 papers were finally submitted. Each submission was reviewed again by at least three PC members, and nine papers were accepted finally. Hence, together with the five long papers without the second reviews, the PC co-chairs finally decided to include 14 papers in this volume. This is a rather complicated review process with the three review rounds (long, short, and proceedings), but we believe that we can select high-quality papers this way. We thank the members of the PC for providing high-quality and timely reviews.

There were 10 technical sessions at ILP 2015: Nonmonotonic Semantics, Logic and Learning, Complexity, Action Learning, Distribution Semantics, Implementation, Kernel Programming, Data and Knowledge Modeling, and Cognitive Modeling. Two proceedings are published for ILP 2015: a volume of Springer's LNAI series for selected papers (this volume) and an electronic volume of CEUR-WS.org for late-breaking papers. Moreover, there will be a special issue on ILP in the journal *Machine Learning*.

The program of ILP 2015 also included three excellent invited talks given by Stephen Muggleton from Imperial College London, Taisuke Sato from Tokyo Institute of Technology, and Luc De Raedt from Katholieke Universiteit Leuven. Stephen Muggleton gave the talk “Meta-Interpretive Learning: Achievements and Challenges,” and detailed their work on meta-interpretive learning, which is a recent ILP technique aimed at supporting learning of recursive definitions and predicate invention. Taisuke Sato first published the distribution semantics for probabilistic logic programming (PLP) in 1995, and ILP 2015 celebrated the 20th anniversary of the distribution semantics in the form of Sato’s talk “Distribution Semantics and Cyclic Relational Modeling,” which was followed by a session of probabilistic ILP. Luc De Raedt reported in his invited talk “Applications of Probabilistic Logic Programming” their recent progress in applying PLP to challenging applications.

At ILP 2015, the *Machine Learning* journal generously continued its sponsorship of the best student paper award. The two best student paper awards of ILP 2015 were given to Golnoosh Farnadi for her paper “Statistical Relational Learning with Soft Quantifiers” (co-authored with Stephen H. Bach, Marjon Blondeel, Marie-Francine Moens, Martine De Cock, and Lise Getoor), and Francesco Orsini for his paper “kProlog: An Algebraic Prolog for Kernel Programming” (co-authored with Paolo Frasconi and Luc De Raedt).

To celebrate the 25th anniversary of the ILP conference series, ILP 2015 organized a panel discussion on the past and future progress of ILP. The panelists were Stephen Muggleton, Fabrizio Riguzzi, Filip Zelezny, Gerson Zaverucha, Jesse Davis, and Katsumi Inoue, who are all chairs of the last five years of ILP conferences (2011–2015), and Taisuke Sato.

A survey of ILP 2015 including the abstracts of these three invited talks and “ILP 25 Years Panel” as well as recent trends in ILP was presented at AAAI-16 as a “What’s Hot” talk—Katsumi Inoue, Hayato Ohwada, and Akihiro Yamamoto, “Inductive Logic Programming: Challenges,” in: *Proceedings of the 30th AAAI Conference on Artificial Intelligence* (AAAI-16; Phoenix, Arizona, USA, February 14, 2016), pp. 4330–4332, 2016.

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