Preface

The 11th international conference on Inductive Logic Programming, ILP 2001, was held in Strasbourg, France, September 9–11, 2001. ILP 2001 was co-located with the 3rd international workshop on Logic, Learning, and Language (LLL 2001), and nearly co-located with the joint 12th European Conference on Machine Learning (ECML 2001) and 5th European conference on Principles and Practice of Knowledge Discovery in Databases (PKDD 2001).

Continuing a series of international conferences devoted to Inductive Logic Programming and Relational Learning, ILP 2001 is the central annual event for researchers interested in learning structured knowledge from structured examples and background knowledge.

One recent one major challenge for ILP has been to contribute to the exponential emergence of Data Mining, and to address the handling of multi-relational databases. On the one hand, ILP has developed a body of theoretical results and algorithmic strategies for exploring relational data, essentially but not exclusively from a supervised learning viewpoint. These results are directly relevant to an efficient exploration of multi-relational databases.

On the other hand, Data Mining might require specific relational strategies to be developed, especially with regard to the scalability issue. The near-colocation of ILP 2001 with ECML 2001-PKDD 2001 was an incentive to increase cross-fertilization between the ILP relational *savoir-faire* and the new problems and learning goals addressed and to be addressed in Data Mining.

Thirty-seven papers were submitted to ILP, among which twenty-one were selected and appear in these proceedings. Several – non-disjoint – trends can be observed, along an admittedly subjective clustering.

On the theoretical side, a new mode of inference is proposed by K. Inoue, analog to the open-ended mode of Bayesian reasoning (where the frontier between induction and abduction wanes). New learning refinement operators are proposed by L. Badea, while R. Otero investigates negation-handling settings. Rule stretching (M. Eineborg and H. Boström) can also be considered a new inductive-deductive operator.

Several hybrid frameworks are proposed, either bridging the gap between ILP and other learning paradigms, e.g. Bayesian inference (K. Kersting and L. De Raedt), Neural Nets (R. Basilio, G. Zaverucha, and V. C. Barbosa) or Feature Selection (T. Ozabaki and K. Furukawa) – or exploiting other search paradigms, e.g. Constraint Satisfaction (J. Maloberti) or Genetic Algorithms (A. Braud and C. Vrain), to address particular ILP tasks.

Among the tasks addressed, changes of representation take an increasing importance, ranging from propositionalization (A. Braud and C. Vrain, already

mentioned) and construction of structural features (S. Kramer), to aggregation-based transformations (M.-A. Krogel and S. Wrobel).

Committee-based and statistical machine learning interestingly pervade ILP through boosting-based approaches (S. Hoche and S. Wrobel), positive-only learning (F. Zelezny), and transductive inference (M. Eineborg and H. Boström, already mentioned). Last but not least, an efficient relational cross-validation procedure is proposed by J. Struyf and H. Blockeel.

The application papers deserve a special mention as they demonstrate when and how relational representations can make the difference. Language-related applications range from Natural Language (M. Nepil) to XML documents (A. Yamamoto, K. Ito, A. Ishino, and H. Arimura), and shell logs (N. Jacobs and H. Blockeel). Bio-informatics offers many challenging relational problems (A. Karwath and R. D. King), in the spirit of the founding ILP application, i.e. the mutagenesis problem[1]. Other applications are concerned with medical control (R. Quiniou, M.-O. Cordier, G. Carrault, and F. Wang) and spatial data mining (D. Malerba and F. A. Lisi).

The invited talks, one joint conference with LLL, given by D. Roth, Univ of Illinois, USA and one by H. T. T. Toivonen, Nokia, Finland, described the challenges a in two of the hottest fields for Machine Learning and ILP: Natural Language, and the Genome[2].

We wish to thank all researchers who submitted their papers to ILP 2001, all external referees whose kind help was very welcome, and the members of the Program Committee for their commitment to making ILP 2001 an open and lively high scientific venue.

July 2001   Céline Rouveirol and Michèle Sebag
                                                                        Program Chairs

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[1] R.D. King, A. Srinivasan, and M.J.E. Sternberg, *Relating chemical activity to structure: an examination of ILP successes*, New Gen. Comput., 13, 1995.

[2] Available at: `http://www.lri.fr/ ilp2001/`

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