

Preface

This volume contains the papers presented at the 27th International Conference on Algorithmic Learning Theory (ALT 2016). ALT 2016 was co-located with the 19th International Conference on Discovery Science (DS 2016). Both conferences were held during October 19–21 in the beautiful city of Bari, Italy.

The technical program of ALT 2016 had five invited talks (presented jointly to both ALT 2016 and DS 2016) and 24 papers selected from 45 submissions by the ALT Program Committee. ALT is dedicated to the theoretical foundations of machine learning and provides a forum for high-quality talks and scientific interaction in areas such as statistical learning theory, online learning, inductive inference, query models, unsupervised learning, clustering, semi-supervised and active learning, stochastic optimization, high-dimensional and non-parametric inference, exploration–exploitation trade-off, bandit theory, reinforcement learning, planning, control, and learning with additional constraints. ALT is furthermore concerned with the analysis of the theoretical properties of existing algorithms such as boosting, kernel-based methods, SVM, Bayesian methods, graph- or manifold-based methods, methods for latent-variable estimation or clustering, decision tree methods, and information-based methods.

The present volume of LNAI contains the text of the 24 papers presented at ALT 2016 as well as the abstracts of the invited talks:

- Avrim Blum (Carnegie Mellon University, Pittsburgh):
“Learning About Agents and Mechanisms from Opaque Transactions”
(Invited talk for ALT 2016)
- Gianluca Bontempi (Interuniversity Institute of Bioinformatics, Brussels):
“Perspectives of Feature Selection in Bioinformatics: From Relevance to Causal Inference”
(Invited tutorial for DS 2016)
- Kristian Kersting (Technische Universität Dortmund):
“Collective Attention on the Web”
(Invited talk for DS 2016)
- Gábor Lugosi (Pompeu Fabra University, Barcelona):
“How to Estimate the Mean of a Random Variable”
(Invited tutorial for ALT 2016)
- John Shawe-Taylor (University College London):
“Margin-Based Structured Output Learning”
(Invited talk for ALT 2016 and DS 2016)

Since 1999, ALT has been awarding the E.M. Gold Award for the most outstanding student contribution. This year, the award was given to Areej Costa for her paper “Exact Learning of Juntas from Membership Queries” co-authored with Nader Bshouty.

ALT 2016 was the 27th meeting in the ALT conference series, established in Japan in 1990. The ALT series is supervised by its Steering Committee: Shai Ben-David (University of Waterloo, Canada), Marcus Hutter (Australian National University, Canberra, Australia), Sanjay Jain (National University of Singapore, Republic of Singapore), Ronald Ortner (Montanuniversität Leoben, Austria), Hans U. Simon (Ruhr-Universität Bochum, Germany), Frank Stephan (National University of Singapore, Republic of Singapore), Csaba Szepesvári (University of Alberta, Edmonton, Canada), Eiji Takimoto (Kyushu University, Fukuoka, Japan), Akihiro Yamamoto (Kyoto University, Japan), and Sandra Zilles (Chair, University of Regina, Canada).

We thank the following people and institutions who contributed to the success of the conference. Most importantly, we would like to thank the authors for contributing and presenting their work at the conference. Without their contribution this conference would not have been possible. We are very grateful to the Fondazione Puglia and to the Consorzio Interuniversitario Nazionale per l'Informatica (National Interuniversity Consortium for Informatics, CINI) for their financial support. We would also like to acknowledge the support of the European Commission through the project MAESTRA — Learning from Massive, Incompletely Annotated, and Structured Data (grant number ICT-2013-612944).

ALT 2016 and DS 2016 were organized by the University of Bari A. Moro. We thank the local arrangements chairs, Annalisa Appice, Corrado Loglisci, Gianvito Pio, Roberto Corizzo, and their team for their efforts in organizing the two conferences.

We are grateful for the collaboration with the conference series Discovery Science. In particular, we would like to thank the general chair of DS 2016 and ALT 2016, Donato Malerba, and the DS 2016 Program Committee chairs, Toon Calders and Michelangelo Ceci.

We are also grateful to EasyChair, the excellent conference management system, which was used for putting together the program for ALT 2016. EasyChair was developed mainly by Andrei Voronkov and is hosted at the University of Manchester. The system is free of charge.

We are grateful to the members of the Program Committee for ALT 2016 and the additional reviewers for their hard work in selecting a good program for ALT 2016. Special thanks go to Frank Stephan from the National University of Singapore for maintaining the ALT website. Last but not the least, we thank Springer for their support in preparing and publishing this volume in the *Lecture Notes in Artificial Intelligence* series.

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