

# Preface

This year's International Conference on Discovery Science, DS 2015, was the 18th event in this series. Like in previous years, the conference was co-located with the International Conference on Algorithmic Learning Theory, ALT 2015, which is already in its 26th year. Started in 2001, ALT/DS is one of the longest-running series of co-located events in computer science. The unique combination of recent advances in the development and analysis of methods for discovering scientific knowledge, coming from machine learning, data mining, and intelligent data analysis, as well as their application in various scientific domains, on the one hand, with the algorithmic advances in machine learning theory, on the other hand, makes every instance of this joint event unique and attractive. This volume contains the papers presented at the 18th International Conference on Discovery Science, while the papers of the 26th International Conference on Algorithmic Learning Theory are published by Springer in a companion volume (LNCS Vol. 9355).

The 18<sup>th</sup> Discovery Science conference received 44 international submissions. Each submission was reviewed by at least two committee members. The committee decided to accept 28 papers, of which 16 are long and 12 are short papers. This results in the 36% acceptance rate for long papers. As is the tradition of the Discovery Science and the Algorithmic Learning Theory conferences, invited talks were shared between the two meetings. This year's DS invited talks were "Turning Prediction Tools into Decision Tools" by Cynthia Rudin from MIT, and "Overcoming Obstacles to the Adoption of Machine Learning by Domain Experts" by Kiri Wagstaff from Jet Propulsion Laboratories, while the ALT invited talks were "Finding Hidden Structure in Data with Tensor Decompositions" by Sham Kakade from Microsoft and the University of Washington, and "Bilinear Prediction Using Low Rank Models" by Inderjit Dhillon from the University of Texas at Austin. Abstracts of all four invited talks are included in these proceedings.

We would like to thank all authors of submitted papers, the Program Committee members, and the additional reviewers for their efforts in evaluating the submitted papers, as well as the invited speakers and tutorial presenters. Support and advice from Randy Goebel, the General Chair of both conferences, were essential every step of the way. We are grateful to Kamalika Chaudhuri, Claudio Gentile, Sandra Zilles, and Csaba Szepesvari for ensuring a smooth coordination with ALT. We are indebted to Jonathan Amyot from the Faculty of Computer Science, Dalhousie University, for putting up and maintaining our website with great competence and efficiency.

We are grateful to the people behind EasyChair for making the system available free of charge. It was an essential tool in the paper submission and evaluation process, as well as in the preparation of the Springer proceedings. We are also grateful to Springer for their continuing support of Discovery Science and for publishing the conference proceedings since its inception.

This year, both conferences were held on October 4-6 in the picturesque setting of Banff, Alberta, and were organized by Sandra Zilles and Csaba Szepesvari. We are very grateful to ISM Canada, an IBM company, to the Alberta Innovates - Technology Futures (AITF), to the Canadian Artificial Intelligence Association (CAIAC), and to the Faculty of Computer Science at Dalhousie University for their sponsorship of both the conferences.

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