

Preface

These are the proceedings of the 15th European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2016), held in Riva del Garda, Italy, during September 19–23, 2016. This event is the premier European Machine Learning and Data Mining conference and builds upon a very successful series of 26 ECML and 19 PKDD conferences, which have been jointly organized for the past 15 years.

The response to our call for paper was very good. We received 353 papers for the main conference track, of which 100 were accepted, yielding an acceptance rate of about 28 %.

Traditionally, ECML PKDD provides an extensive technical program that consists of several focused tracks:

- the conference track, featuring regular conference papers, published in these proceedings;
- the journal track, featuring papers that satisfy the quality criteria of journal papers and at the same time lend themselves to conference talks (these papers are published separately in the journals *Machine Learning* and *Knowledge Discovery and Data Mining*);
- the industrial track, aiming to bring together participants from academia, industry, government, and NGOs (non-governmental organizations) in a venue that highlights practical and real-world studies of machine learning, knowledge discovery, and data mining.
- the demo track, presenting innovative prototype implementations or mature systems that use machine learning techniques and knowledge discovery processes in a real setting;
- the nectar track, offering conference attendees a compact overview of recent scientific advances at the frontier of machine learning and data mining with other disciplines, as published in related conferences and journals.

Moreover, the conference program included 3 discovery challenges, 13 workshops, and 10 tutorial presentations. The discovery challenges were organized by Elio Masciari and Alessandro Moschitti. Fabrizio Costa, Matthijs van Leeuwen, and Albrecht Zimmermann had the responsibility of selecting workshop and tutorial proposals. The PhD Forum, where junior PhD students exchange ideas, experiences, and get advice from senior researchers, was organized by Leman Akoglu and Tijl De Bie.

The program included six plenary keynotes by invited speakers Susan Athey (Stanford Graduate School of Business), Zoubin Ghahramani (University of Cambridge and Alan Turing Institute), Thore Graepel (Google DeepMind and University College London), Ravi Kumar (Google), Rasmus Pagh (IT University of Copenhagen), and Alex “Sandy” Pentland (MIT).

Putting together the program of this conference would have been impossible without the help of a large and supportive team. Our thirty Area Chairs nominated reviewers, moderated the discussion among them to find a consensus over each paper, and made a final accept/reject decision. A total of 315 reviewers (listed in this book) helped to select papers. Two best student papers were selected by Toon Calders and Hendrik Blockeel. The associated awards were sponsored by Springer and the journals *Machine Learning* and *Data Mining and Knowledge Discovery*.

For the fourth time, the conference used a double submission model: next to the regular conference tracks, papers submitted to the Springer journals *Machine Learning (MACH)* and *Data Mining and Knowledge Discovery (DAMI)* were considered for presentation at the conference. These papers were submitted to the ECML PKDD 2016 special issue of the respective journals, and underwent the normal editorial process of these journals. Those papers accepted for one of these journals were assigned a presentation slot at the ECML PKDD 2016 conference. A total of 120 original manuscripts were submitted to the journal track during this year. Some of these papers are still being refereed. Of the fully refereed papers, 8 were accepted in DAMI and 10 in MACH, together with 10 papers from last year's call, which were also scheduled for presentation at this conference.

There were two major innovations at this year's conference. First, we decided to have a full day of plenary presentation on September 21st, while the usual four parallel session tracks were run on September 20th and 22nd. These plenary oral presentations were selected by the Program and Journal Track Co-chairs from the pool of all accepted papers according to criteria such as: (1) novelty and significance of the results and their expected impact; (2) breadth of interest for both machine learners and data miners. It is our belief that this will strengthen the synergy between the ML and the DM sub-communities, allowing papers of general interest for both to be presented to the whole audience.

The second major difference is the adoption of the practices of Reproducible Research (RR). Authors were encouraged to adhere to such practices by making available data and software tools for reproducing the results reported in their papers. In total, 29 papers with accompanying software and/or data are flagged as RR-papers on the conference website <http://ecmlpkdd2016.org/>, which provides links to such additional material (links are also available within the paper bodies in these proceedings).

Part I and Part II of the proceedings of the ECML PKDD 2016 conference contain the full papers of the contributions presented in the scientific track and the abstracts of the scientific plenary talks. Part III of the proceedings of the ECML PKDD 2016 conference contains the full papers of the contributions presented in the industrial track, short papers describing the demonstrations, the nectar papers, and the abstracts of the industrial plenary talks. First of all, we would like to express our gratitude to the general chairs of the conference, Fosca Giannotti and Andrea Passerini, as well as to all members of the Organizing Committee, for managing this event in a very competent and professional way. In particular, we thank the demo, workshop and tutorial, industrial, and nectar track chairs. Special thanks go to the proceedings chairs, Marco Lippi and Stefano Ferilli, for the hard work of putting these proceedings together. We thank the PhD Forum organizers, the Discovery Challenge organizers, and all the people involved in the conference, who worked hard for its success. We would like to

thank Microsoft for allowing us to use their CMT software for conference management. Last but not least, we would like to sincerely thank the authors for submitting their work to the conference and the reviewers and area chairs for their tremendous effort in guaranteeing the quality of the reviewing process, thereby improving the quality of these proceedings.

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