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Preface

We are proud to present the proceedings of the 17th International Symposium on Intelligent Data Analysis (IDA 2018), which was held during October 24–28, 2018, in 's-Hertogenbosch, The Netherlands. The series started in 1995 and was held biannually until 2009. In 2010 the symposium refocused to support papers that go beyond established technology and offer genuinely novel and potentially game-changing ideas in the field of data analysis. The call for papers for this 2018 conference was formulated as follows:

"Complementary to other mainstream conferences in data science, IDA's mission is to promote ideas over performance: A solid motivation can be as convincing as exhaustive empirical evaluation. To this end, IDA creates an open atmosphere that encourages discussion and promotes innovative ideas in data analysis novel and game-changing ideas."

But, clearly, not all novel ideas are good ideas. To ensure the quality of all accepted papers, standard rigorous, single-blind peer evaluation of all papers was performed by the Program Committee (PC) consisting of established researchers in the field who evaluated the papers against the requirements set out in the call for papers. As in previous editions, this process was complemented by the PC advisors, a select set of senior researchers with a multi-year involvement in the IDA conference series. Whenever a PC advisor flagged a paper as both good and presenting an interesting, novel, idea with an informed, thoughtful, positive review, the paper was accepted irrespective of the other reviews.

As in previous installments, this somewhat special focus of IDA has resulted in the submission and acceptance of a number of highly innovative papers that would have had a hard time in the mainstream conferences. In fact, we are pleased and proud to have put together a very strong program. We received 65 paper submissions out of which 29 could be accepted. Every submission was reviewed by at least two PC members, and the majority of submissions had at least three reviews. Each accepted paper was offered a slot for oral presentation and, new this year, also offered a poster at a specially organized poster session to foster deeper discussions than the brief Q&A minutes often offered right after the presentation.

We were honored that the regular program was complemented by three distinguished invited speakers who fulfilled IDA's quest for novel, game-changing ideas:

- Tuuli Toivonen (University of Helsinki) talked about how modern data science and machine learning methods can be used for analyzing and understanding human accessibility and mobility in urban and natural environments.
- Luc de Raedt (KU Leuven) talked about his ERC project to automate data science. More specifically, he discussed how automated data wrangling approaches can be used for pre-processing and how both predictive and descriptive models can in principle be combined to automatically complete spreadsheets and relational databases.

– Johannes Fürnkranz (TU Darmstadt) talked about the need for interpretability biases. Ever since the start of the field, interpretability has been one of the holy grails. Usually this notion is operationalized as simplicity. In this talk, he questioned this assumption, in particular with respect to commonly used rule learning heuristics that aim at learning rules that are as simple as possible.

We also invited all keynote speakers to submit a paper on the topic of their presentation. Professors de Raedt and Fürnkranz decided to take this opportunity. These invited papers appear in a separate Invited Papers section in the beginning of the proceedings. Also, the first selected contribution is a slightly shorter position paper by Leo Lahti about the importance of tools to facilitate open data science.

Finally, the program was completed by the traditional IDA PhD poster session in which PhD students get the opportunity to promote their work.

The conference was held in the former chapel of the Jheronimus Academy of Data Science, and we are grateful for their willingness to host the conference. We wish to express our gratitude to all authors of all submitted papers, for their intellectual contributions; to the PC members and additional reviewers for their efforts in reviewing, discussing, and commenting on all submitted papers; to the program chair advisors for their active involvement; and to the IDA council for their ongoing guidance and support, in particular Elizabeth Bradley, Jaakko Hollmén, and Matthijs van Leeuwen. Also, the program chairs wish to thank the general chair of IDA 2017, David Weston, for his help with practical matters related to preparing the conference proceedings. Finally, we are grateful to our sponsors and supporters: KNIME, which funded the IDA Frontier Prize for the most visionary contribution, as well as The Netherlands Research School for Information and Knowledge Systems (SIKS), the *Artificial Intelligence* journal, and Springer.

August 2018

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