

# Preface

This book contains a selection of the best papers presented at the 28th edition of the annual Benelux Conference on Artificial Intelligence (BNAIC 2016). BNAIC 2016 took place during November 10–11 in Hotel Casa 400 in Amsterdam. The conference was jointly organized by the University of Amsterdam and the Vrije Universiteit Amsterdam, under the auspices of the Benelux Association for Artificial Intelligence (BNVKI) and the Dutch Research School for Information and Knowledge Systems (SIKS).

BNAIC 2016 was the 28th edition of a conference series that started in 1988 under the name “Netherlands Artificial Intelligence Conference.” Originally focusing on Artificial Intelligence research in The Netherlands, the conference later expanded its scope to include research in Belgium (since 1999) and Luxembourg (since 2008). Hence, the objective of BNAIC is to promote and disseminate recent research developments in Artificial Intelligence, particularly within Belgium, Luxembourg, and The Netherlands, although it does not exclude contributions from countries outside the Benelux. Part of the success of the BNAIC series can be attributed to the fact that the conference typically receives a large number of excellent student papers, which reflects the high quality of Artificial Intelligence education in the Benelux.

The BNAIC 2016 program was very exciting and diverse: in addition to the regular research presentations, posters and demonstrations (discussed below), it included several other elements, among which were: (a) keynote presentations by Marc Cavazza (University of Kent), Frank van Harmelen (Vrije Universiteit Amsterdam), Hado van Hasselt (Google DeepMind), and Manuela Veloso (Carnegie Mellon University); (b) a Research Meets Business session; (c) a panel discussion on Social Robots, with contributions by Elly Konijn (Vrije Universiteit Amsterdam), Ben Kröse (University of Amsterdam and Amsterdam University of Applied Sciences), Mark Neerincx (TNO and Delft University of Technology), and Peter Novitzky (University of Twente); (d) a special FACt (FACulty focusing on the FACts of AI) session with presentations by Bart de Boer (Vrije Universiteit Brussels), Catholijn Jonker (Delft University of Technology), and Leon van der Torre (University of Luxembourg); and (e) a special session on open access publishing with contributions by Rinke Hoekstra (Vrije Universiteit), Maarten Frohlich (IOS Press), Bernard Aleva (Elsevier), and Hilde van Wijngaarden (University of Amsterdam and Amsterdam University of Applied Sciences).

In addition, BNAIC 2016 featured three awards. The SNN Best Paper Award was bestowed to Rik van Noord, Florian Kunneman, and Antal van den Bosch for their contribution “Predicting Civil Unrest by Categorizing Dutch Twitter Events,” which is included in this volume. The SKBS Best Demo Award was given to Caitlin Lagrand, Patrick M. de Kok, Sébastien Negrijn, Michiel van der Meer, and Arnoud Visser for their contribution “Autonomous Robot Soccer Matches.” The Best Thesis Abstract

Award was awarded to Hossam Mossalam for his contribution “Multi-Objective Deep Reinforcement Learning with Optimistic Linear Support.”

As in previous years, BNAIC 2016 welcomed four types of contributions, namely, (a) regular papers, (b) compressed contributions, (c) demonstration abstracts, and (d) thesis abstracts. The conference received 93 submissions, consisting of 24 regular papers, 47 compressed contributions, 11 demonstration abstracts, and 11 thesis abstracts. After thorough review by the Program Committee, the conference chairs made the final acceptance decisions. The overall acceptance rate for presentation at the conference was 88% (63% for regular papers, 100% for compressed contributions and demonstration abstracts, and 91% for thesis abstracts). Among these accepted contributions, a small subset of the best papers were selected (after another substantial review and revision phase) for inclusion in this volume. The overall acceptance rate was 28% (33% for regular papers, 9% for demonstration abstracts, and 36% for thesis abstracts; compressed contributions were not considered for this volume, as they describe research that has already been published). This is the first year in which a selection of BNAIC papers is published in the form of a separate Springer book, and our ambition is to continue this initiative in the coming years.

The contributions presented in this volume are grouped by category and by topic. First, eight regular papers are included, of which the first four are all related to natural language processing. The next regular paper presents an agent-based approach to image reconstruction. After that, two regular papers are included that address aspects of game theory, and the last regular paper proposes a solution to the travelling umpire problem based on answer set programming. The regular papers are followed by four student papers, of which the first presents a fuzzy logic approach for anomaly detection in energy consumption data. The next two student papers describe interesting studies regarding the interaction between artificial agents and humans, and the last student paper reports on a learning analytics case study in the context of online secondary education. The last paper included in the book originates from a demonstration abstract and describes an integrated collaborative environment for data processing, exploration and analysis.

To conclude, we want to express our gratitude to everyone who contributed to this book and to BNAIC 2016: in addition to all the invited speakers mentioned above, many thanks to all Organizing and Program Committee members for their hard work in assuring the high quality of the conference and the proceedings. Moreover, we wish to thank all student volunteers, administrative and secretarial assistants, and of course our sponsors. We also gratefully acknowledge help from the BNVKI and from previous BNAIC organizers. And last, but certainly not least, we cordially thank all the authors who submitted their important contributions. Without their efforts, this volume could not have been published.

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