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Preface

This volume contains the proceeding of the 21st International Conference of the Italian Association for Artificial Intelligence, referred to for short as AIxIA. AIxIA is very active in organizing scientific initiatives as well as events for the dissemination of Artificial Intelligence in industry, society, and schools. Among these activities, a scientific international conference has been organized every two years since 1991 and then yearly since 2015. In the last two years, due to the Covid-19 pandemic, the conference was organized in remote mode in Torino and Milano (LNCS 13196 and 12414). Previously, it was organized as a standard conference in Rende (2019: LNCS 11946), Trento (2018: LNCS 11298), Bari (2017: LNCS 10640), Genova (2016: LNCS 10037), Ferrara (2015: LNCS 9336), Torino (2013: LNCS 8249), Palermo (2011, LNCS 6934), Reggio Emilia (2009: LNCS 5883), Roma (2007: LNCS 4733), Milano (2005: LNCS 3673), Pisa (2003: LNCS 2929), Bari (2001: LNCS 2175), Bologna (1999: LNCS 1792), Roma (1997: LNCS 1321), Firenze (1995: LNCS 992), Torino (1993: LNCS 728), Palermo (1991: LNCS 549), and Trento (1989).

The recent positive evolution of the pandemic disease allowed us to take the risk of organizing an attended conference. This seems to have been much appreciated by the community as more than 350 people attended the meeting.

As for the numbers, 54 research papers were submitted to the conference and evaluated by at least three reviewers; moreover, 29 *discussion papers* were submitted and 16 were selected for presentation at the conference. 227 authors were involved, 155 from Italy, 13 from France, 12 from USA, 8 from India, 7 from UK, and 32 from other countries. Among the regular papers, 33 papers were selected for publication in these proceedings.

The conference program included two prestigious keynote speakers, namely: Subbarao Kambhampati (Arizona State University): Symbols as a Lingua Franca for Supporting Human-AI Interaction For Explainable and Advisable AI Systems; Georg Gottlob (University of Oxford): My adventures with Datalog: Walking the thin line between theory and practice (with a paper also included in the proceedings). In addition, it offered three tutorials on hot research topics: Ferdinando Fioretto (Syracuse University): End-to-end constrained optimization learning; Antonio Lieto (University of Turin): Cognitive Design for Artificial Minds; Angelo Oddi, Riccardo Rasconi (CNR-ISTC, Rome), and Marco Baioletti (University of Perugia): Quantum computing and planning.

AIxIA 2022 also covered many aspects of theoretical and applied AI through 17 co-located workshops devoted to specific topics and bringing together the corresponding AI communities. The workshops chairs were Andrea Formisano and Alberto Finzi. Thus, in parallel to the main program, the conference features the following workshops, for a total of 175 accepted regular papers, plus a number of invited talks:

– 6th Workshop on Advances in Argumentation in Artificial Intelligence;
– 11th Workshop on Machine Learning and Data Mining;

- 4th Workshop on Artificial Intelligence and fOrmal VERification, Logic, Automata, and sYnthesis;
- 1st Workshop on Artificial Intelligence for Cultural Heritage;
- 1st Workshop on Artificial Intelligence and Creativity;
- 3rd Italian Workshop on Artificial Intelligence for an Ageing Society;
- R.i.C.e.R.c.A: RCRA Incontri E Confronti;
- 10th Italian Workshop on Planning and Scheduling;
- 9th Italian Workshop on Artificial Intelligence and Robotics;
- 1st Workshop on Artificial Intelligence for Healthcare;
- 6th Workshop on Natural Language for Artificial Intelligence;
- 3rd Workshop on Explainable Artificial Intelligence;
- 1st Workshop on Artificial Intelligence for Human Machine Interaction;
- 1st Workshop on Artificial Intelligence for Public Administration;
- 2nd Italian Workshop on Artificial Intelligence and Applications for Business and Industries;
- 1st Workshop on Bias, Ethical AI, Explainability and the role of Logic and Logic Programming;
- 1st Workshop on Strategies, Prediction, Interaction, and Reasoning in Italy.

Finally, a doctoral consortium with 20 presentations from PhD students was organized on the first day of the conference. The doctoral consortium chairs were Gabriella Cortellessa and Luca Di Gaspero.

The organization benefited from “Platinum” sponsorships from EUSTEMA, Danieli Automation, Generali, Intesa Sanpaolo, and TechEdge, “Gold” sponsorships from OverIT, Previnet, and u-blox, and “Bronze” sponsorships from BeanTech, SMC, and Confindustria Udine. The conference was kindly supported by the Artificial Intelligence Journal, and received the patronage of the European Commission, the Friuli Venezia Giulia Region, and the Municipality of Udine. A special session devoted to industry and AI was organized by Giuseppe Serra and Fabio Mercorio.

Last but not least, we would like to thank the organizing committee, in particular Andrea Brunello and Nicola Saccomanno, who did a huge amount of high-quality work. Moreover, we thank the web master Nicola Gigante, our colleagues and friends Dario Della Monica and Gabriele Puppis, and all the PhD students for their help in the practical management of the conference. Finally, we thank the board of directors of the AIxIA for their constant support, the Rector of the University of Udine for the opportunity to organize the conference in the new building of the scientific library, and the technical staff of University of Udine (in particular, Renato Spoletti, Stefano Bonomi, and Ester Orlandi) for their precious work.

December 2022

Agostino Dovier
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