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AIxIA 2020 – Advances in Artificial Intelligence

XIXth International Conference
of the Italian Association for Artificial Intelligence
Virtual Event, November 25–27, 2020
Revised Selected Papers

Springer

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Preface

The 19th International Conference of the Italian Association for Artificial Intelligence, AIxIA 2020 (reboot), was organized by the Associazione Italiana per l'Intelligenza Artificiale, which is a non-profit scientific society founded in 1998 devoted to the promotion of Artificial Intelligence. The society aims at increasing the public awareness of Artificial Intelligence, encouraging teaching and promoting research in the field.

AIxIA 2020 (reboot) focused on the communities working on the various research areas of the field; it hosted 10 workshops with submission deadlines set for the late summer of 2020. Keynote speakers, open events, and award events completed the conference. AIxIA 2020 (reboot) was held virtually during November 25–27, 2020, "anywhere" in the world, rather than in a single physical place: the event was open to all members of the organizing association and its program was (and still is) accessible on the internet (https://aixia2020.di.unito.it/).

The conference covered broadly the many aspects of theoretical and applied Artificial Intelligence through a series of workshops dedicated to specific topics:

- 9th Italian Workshop on Machine Learning and Data Mining, MLDM.it 2020, organized by Alessio Micheli and Claudio Gallicchio;
- Italian Workshop on Explainable Artificial Intelligence, XAI.it 2020, organized by Daniele Magazzeni, Cataldo Musto, Salvatore Ruggieri, and Giovanni Semeraro;
- Workshop on Evolutionary and Population-based Optimization, WEPO 2020, organized by Andrea De Lorenzo and Luca Manzoni;
- 4th Workshop on Advances In Argumentation In Artificial Intelligence, AI^3 2020, organized by Bettina Fazzinga, Filippo Furfaro, and Francesco Parisi;
- 8th Italian Workshop on Planning and Scheduling, IPS 2020, organized by Riccardo De Benedictis, Enrico Scala, Ivan Serina, Andrea Micheli, and Alessandro Umbrico;
- 7th Italian Workshop on Artificial Intelligence and Robotics, AIRO 2020, organized by Salvatore Anzalone, Luca Buoncompagni, Alberto Castellini, and Alberto Finzi;
- 4th Workshop on Natural Language for Artificial Intelligence, NL4AI 2020, organized by Pierpaolo Basile, Valerio Basile, Elena Cabrio, and Danilo Croce;
- 27th RCRA International Workshop on Experimental Evaluation of Algorithms for Solving Problems with Combinatorial Explosion, RCRA 2020, organized by Marco Maratea and Mauro Vallati;
- Italian Workshop on Artificial Intelligence for an Ageing Society, AIxAS 2020, organized by Filippo Palumbo, Francesa Gasparini, and Francesca Fracasso;
- AIxIA 2020 Discussion Papers, AIxIA 2020 DP, organized by Andrea Orlandini, Matteo Palmonari, and Giuseppe Vizzari.

Apart from MLDM.it 2020, which was based on invitations, overall the workshops received 89 submissions. Each submission was carefully reviewed by at least three

members of the workshop Program Committee. The workshop organizers selected 26 of the best submissions and invited the authors to submit revised and extended versions of their papers, after a second review phase, for inclusion in the post-proceedings volume. The winner of the "Pietro Torasso" award, Popularize Artificial Intelligence (PAI 2020), organized by Matteo Baldoni, Daniela Briola, and Fabio Stella, was also invited to submit an extended version of the paper submitted for the award. In total, 27 papers are included in this post-proceedings.

The conference also included three keynote talks:

- "Responsible Artificial Intelligence", by Carles Sierra, Artificial Intelligence Research Institute (IIIA-CSIC), Spain;
- "No ontology without Ontology: the role of formal ontological analysis in AI (and beyond)", by Nicola Guarino, Consiglio Nazionale delle Ricerche, Trento, Italy;
- "Thinking Fast and Slow in AI", by Francesca Rossi, IBM Research, USA.

The conference hosted three open events:

- "Questioni di Genere in Intelligenza Artificiale", on gender issues in AI, organized by Francesca Alessandra Lisi. The event hosted Sveva Avveduto, emeritus research director at the Consiglio Nazionale delle Ricerche for Research on Population and Social Policies (IRPPS-CNR), and president of "Associazione Donne e Scienza", Giulia Baccarin, entrepreneur, and founder of "MIPU Predictive Hub", Silvana Badaloni, former professor at the Università di Padova, Alessandro Fusacchia, politician and member of the Italian Parliament, Pietro Greco, journalist and writer at "Il Bo Live" from the Università di Padova, Isadora Pei, director of the performing arts collective "AjaRiot", and Francesca Romana Recchia Luciani, a philosopher from the Università degli Studi Bari "Aldo Moro";
- "Insegnamento dell'Intelligenza Artificiale in Italia, dibattito aperto per una didattica di qualità", organized by Matteo Baldoni and Francesco Ricca. The event hosted Giovanni Adorni, president of AICA, Stefano Bistarelli, member of "Commissione didattica GRIN`", Giuseppe De Giacomo, Università La Sapienza, CLAIRE, and the CINI AIIS Lab, Maurizio Gabbrielli, chair of "Consiglio di Studi in Intelligenza Artificiale" from the Università di Bologna, Enrico Nardelli, president of Informatics Europe, and Piero Poccianti, president of AIxIA;
- "Etica dell'Intelligenza Artificiale o Etica Umana? Voce AI ragazzi", organized by Piero Poccianti. The event hosted Emanuela Girardi, founder of "Pop Ai" and AI expert at MiSE, Dino Pedreschi, from the Università di Pisa and member of the GPAI Global Partnership on AI, Anna Pettini, from the Università degli Studi di Firenze, Don Luca Peyron, director of the "Apostolato Digitale di Torino", Piero Poccianti, president of AIxIA, Cristina Pozzi, cofounder and CEO of Impactscool and Young Global Leader of WEF, and Francesca Rossi, the AI ethics global leader at IBM Research. The panel were interviewed by students from ISIS Gobetti-Volta and members of Progetto RApP along with undergraduate students selected by Impactscool.

Finally, the conference hosted the "Marco Cadoli" Ph.D. Thesis Award and the "Leonardo Lesmo" M.Sc. Thesis Award, organized by Stefania Costantini and Viviana Mascardi. The winner of the "Marco Cadoli" Ph.D. Thesis Award, Giuseppe Marra,

and of the "Leonardo Lesmo" M.Sc. Thesis Award, Emanuele Albini, gave a talk at the conference.

We would like to thank all individuals, institutions, and sponsors that supported AIxIA 2020 (reboot), in particular the Artificial Intelligence Journal for the "Funding Opportunities for Promoting AI Research" program, the Università degli Studi di Torino for offering the web conference tool, and the Dipartimento di Informatica of the Università degli Studi di Torino for the website hosting. We thank the authors for submitting high-quality research papers. We are indebted to the workshop program committees members and additional reviewers for spending their valuable time by providing careful reviews and recommendations on the submissions, the workshop organizers, the respective research communities (that were the soul of this conference edition), and all the members of the organizations involved in the conference. Finally, a special thanks to Piero Poccianti, the president of the Associazione Italiana per l'Intelligenza Artificiale.

March 2021

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