

Proceedings of the 38th Italian Conference on Computational Logic (CILC 2023)

Preface

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The Italian Conference on Computational Logic (Convegno Italiano di Logica Computazionale, CILC) is the annual conference organized by the Italian Association for Computational Logic (GULP). Since its first edition, held in Genoa in 1986, it has represented an important occasion for meeting and exchanging ideas and experiences between users, researchers, and developers working in the field of Computational Logic.

Over the years, the annual conference organized by GULP has broadened its horizons from the specific field of Logic Programming to the more general one of Computational Logic, including for instance, declarative programming, constraints programming, and applications in various neighboring sectors, such as Artificial Intelligence and Deductive Databases.

Once again, with this year's conference, the GULP intends to pursue and possibly expand this policy by identifying, with the more general term of Computational Logic, the entire variegated world of research, both basic and applied, which directly or indirectly uses or compare with the ideas and techniques of Computational Logic.

This year edition the conference took place from 21 to 23 June in Sala Florio of Palazzo Florio, an historical building in the center of the town of Udine. It was attended in person by 45 participants.

The conference featured 29 presentations of high-quality papers, 23 of which were original works. Accepted contributions ranged from foundational and theoretical results to applications, experimental experiences, and system descriptions. These contributions focused on various relevant topics broadly related to Computational Logic, including:

- Abductive logic programming
- Analysis, transformation, validation and verification of programs
- Answer set programming
- Applications of computational logic and systems
- Approximate reasoning
- Automated theorem proving
- Computational logic and formal methods in artificial intelligence

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CEUR Workshop Proceedings (CEUR-WS.org)



- Computational logic for concurrency, coordination, mobility, agents and objects
- Data mining and data integration
- Deductive databases
- Extensions and integrations of declarative programming paradigms
- Implementations and benchmarking of computational logic systems
- Inductive logic programming
- Knowledge representation and extraction
- Logic programming, constraint programming and other declarative programming paradigms
- Model-based reasoning
- Model checking
- Multi-agent systems
- Natural language processing
- Non-monotonic reasoning
- Planning and scheduling
- Probabilistic logic programming
- Semantic web
- Temporal logics
- Tools and environments for program development
- Treatment of uncertain or incomplete knowledge

All accepted papers went through a strict evaluation process. Each original contribution was evaluated by at least three anonymous reviewers from the Program Committee to ensure that the quality of papers met the high-quality standards of the conference. Also, each non-original

contribution was reviewed by at three anonymous reviewer to check for coherence with the aims and scope of the conference. Note that, non-original contribution are not included in this volume.

The conference benefited from two invited talks addressing cross fertilization between logic programming and machine learning and between logic programming and optimization. These are two particularly hot research themes with huge impact in AI research and applications. The two invited talks were:

- *Logic-based Learning of interpretable knowledge from raw data* by Alessandra Russo (Imperial College, London, UK), and
- *Logic-Based Benders Decomposition: an opportunity for logic programming applications* by Marco Gavaneli (University of Ferrara, Italy).

The conference was hosted by the University of Udine, which is a publicly funded university located in Friuli, in the north east of Italy. It was born by popular will immediately after the earthquake that struck Friuli in 1976, reflecting the people's motto "Schools and factories first, houses can wait". They wanted to start an active life again, looking to the future. For this reason, a new Computer Science degree course (one of the five in Italy at the time) was proposed from the very beginning of the University. So even though the University is relatively new, it has a long history in Computer Science, and in particular in the logical foundations of computer science and in computational logic. The Italian Conference on Logic Programming (at that time joint with the corresponding Spanish and Portuguese events) was organized by the University of Udine in 1997 and took place in Grado (a lovely island 40 km south of Udine). The International Conference on Logic Programming (ICLP) was also organized in Udine in December 2008. Since then, hundreds of other conferences and workshops have been organised in Friuli. Thanks also to its location close to the border between Italy, Slovenia, and Austria, the University of Udine plays an important role in the *mittel-European* area, promoting many activities not only in research but also in teaching. An example of this is the international master degree in AI and Cybersecurity organized in cooperation with the Alpen-Adria-Universität Klagenfurt. In such a programme, topics of interest for CILC such as automated reasoning, foundations of logic, and constraint programming, are part of the compulsory subjects that are taught to all students.

To conclude, we would like to warmly thank all the people who contributed to CILC 2023, the University of Udine for hosting the event, and the Department of Mathematics Computer Science and Physics which also financially supported the event. One of the invited speakers, Alessandra Russo, was supported by the Interdepartmental Project on AI, as part of the Strategic Plan 2022-2025 of the University of Udine. A special thanks also to beanTech for the precious support. We would like to thank all the authors of the submitted papers, the invited speakers, the members of the Program Committee, and the anonymous reviewers. We are also grateful to the President of GULP Stefania Costantini and to all the members of the GULP Board for their support and their fruitful suggestions. Finally, special thanks go to all who attended the conference for turning CILC 2023 into an occasion for lively discussions on relevant research topics and research challenges.

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