Proceedings of the 39th Italian Conference on Computational Logic (CILC 2024)

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Preface

The Italian Conference on Computational Logic (CILC) is the annual meeting of the Italian Association for Logic Programming (GULP - Gruppo Ricercatori e Utenti Logic Programming https://www.programmazionelogica.it). Since its first edition, held in Genoa in 1986, the conference has been 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 conference organised by GULP has broadened its horizon from the specific field of logic programming to the more general field of computational logic, including, for example, declarative programming, constraint programming, and applications in various neighbouring fields, such as artificial intelligence. The 39th Italian Conference on Computational Logic[1] (CILC 2024) was held in Rome at the National Research Council of Italy on 26-28 June. It was attended by more than 50 participants from universities and research centres all over Italy, as well as from Austria, Canada, Cyprus, Poland, Romania and the United Kingdom. The conference included 34 presentations of invited talks and tutorials, contributed original short or full papers, and papers already published elsewhere. The accepted papers ranged from fundamental and theoretical results to applications, experimental experiences and system descriptions. The presentations covered all aspects of 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 argumentation
- Computational logic and formal methods in artificial intelligence

[1] Conference website: https://cilc2024.github.io/

- 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 underwent a peer review process. Each original paper was evaluated by two or, in most cases, three anonymous reviewers from the Program Committee to ensure that all papers met the high quality standards of the conference. Each non-original paper was also reviewed by the Program Committee to ensure that it was consistent with the aims and scope of the conference. Non-original papers are not included in this volume, but a reference to the original publication can be found at the end of the table of contents of this volume. 30 papers were selected by the Program Committee from 33 submissions. Out of these, 23 papers appear in this volume, 17 as regular papers and 6 as short papers, respectively, while 7 papers were only presented at the conference, having already been published elsewhere. The conference benefited from three invited talks by prominent researchers addressing the cross-fertilisation between logic programming and various hot topics in artificial intelligence, such as neuro-symbolic reasoning, large language models, and computational argumentation. The three invited talks were

- *AI Risk and Reasoning in Neurosymbolic AI* (remote presentation), by Artur d'Avila Garcez (City, University of London, UK)
- *Large Language Models: What They Are, Why They Are Important, and What They Fail At*, by Roberto Navigli (Sapienza University of Rome, Italy)
- *Interactive Explanations for Contestable AI*, by Francesca Toni (Imperial College, London, UK)

The conference program also featured the following invited tutorial on a novel development tool for constructing applications based on Answer Set Programming:

- *ASP Chef: Zero to Hero*, by Mario Alviano (University of Calabria, Italy)

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