Preface

This volume contains the papers accepted for presentation at ICAPS 2023, the Thirty-Third International Conference on Automated Planning and Scheduling, to be held in Prague, Czech Republic, July 8-13, 2023. The annual ICAPS conference series was formed in 2003 through the merger of two pre-existing biennial conferences, the International Conference on Artificial Intelligence Planning and Scheduling (AIPS) and the European Conference on Planning (ECP). ICAPS continues the traditional high standards of AIPS and ECP as an archival forum for new research in the field of automated planning and scheduling.

The 79 papers included in this volume, consisting of 66 long papers and 13 short papers, are those selected for plenary presentation at ICAPS 2023 from a total of 258 submissions. All submissions were reviewed by the International Program Committee, and this set of accepted papers reflects the Program Committee's high reviewing standards. As in previous years, ICAPS 2023 included also papers from three special tracks: Planning and Learning, Industry and Applications, and Robotics. All the special tracks have separate program committees with expertise in the relevant disciplines.

All these papers present the latest advances in the field of automated planning and scheduling, ranging in scope from theoretical analyses of planning and scheduling problems and processes, to new algorithms for planning and scheduling under various constraints and assumptions, to empirical evaluation of planning and scheduling techniques in practical applications. They reflect recent research trends in particular in the subareas of multi-agent path finding, reinforcement and deep learning, explainable planning and scheduling, and new developments in heuristics for planning algorithms. Applications that are considered span diverse areas ranging from more traditional applications (e.g., maintenance scheduling and robotics) to more recent applications (e.g., smart transportation in smart cities).

From this excellent collection of papers, six were selected for special recognition:

- "Landmark Progression in Heuristic Search" by Clemens Büchner, Thomas Keller, Salomé Eriksson, and Malte Helmert was selected for the Best Paper Award.
- "Operator Pruning using Lifted Mutex Groups via Compilation on Lifted Level" by Daniel Fišer was selected for the Best Paper Runner-Up Award.
- "Solving Domain-Independent Dynamic Programming Problems with Anytime Heuristic Search" by Ryo Kuroiwa and Chris Beck was selected for the Best Paper Runner-Up Award.
- "Planning for Temporally Extended Goals in Pure-Past Linear Temporal Logic" by

Luigi Bonassi, Giuseppe De Giacomo, Marco Favorito, Francesco Fuggitti, Alfonso Emilio Gerevini, and Enrico Scala was selected for the Best Student Paper Award.

- "Deadline-Aware Multi-Agent Tour Planning" by Taoan Huang, Vikas Shivashankar, Michael Caldara, Joseph Durham, Jiaoyang Li, Bistra Dilkina, and Sven Koenig was selected for the Best Student Paper Runner-Up Award.

- "Grounding Planning Tasks Using Tree Decompositions and Iterated Solving" by Augusto B. Corrêa, Markus Hecher, Malte Helmert, Davide Mario Longo, Florian Pommerening, and Stefan Woltran was selected for the Best Student Paper Runner-Up Award.

- "Automated Planning to Prioritise Digital Forensics Investigation Cases Containing Indecent Images of Children" by Saad Khan, Simon Parkinson, Monika Roopak, Rachel Armitage, and Andrew Barlow was selected for the Innovative Paper Award.

In addition to the oral presentation of these papers, the technical program of this year's ICAPS conference includes invited talks by three distinguished speakers: Hadas Kress-Gazit (On Synthesis and planning for robot behaviors), Sheila McIlriath ((Formal) Languages Help AI agents Learn, Plan, and Remember), and Serena Villata (Formal and Natural Arguments for Effective Explanations). The technical program also includes Systems Demonstrations and Journal Presentation tracks, following past ICAPS editions.

The ICAPS 2023 Main Conference Program was preceded by two days of satellite events, including 12 workshops, six tutorials, and a doctoral consortium. The workshops this year are Planning and Scheduling for Financial Services (FinPlan); Human-Aware and Explainable Planning (HAXP); Planning and Ontology Workshop (PLATO); Bridging the Gap Between AI Planning and Reinforcement Learning (PRL); Reliable Data-Driven Planning and Scheduling (RDDPS); Hierarchical Planning (HPlan); Scheduling and Planning Applications (SPARK); Planning and Robotics (PlanRob); Integrated Acting, Planning and Execution (IntEx); Plan, Activity and Intent Recognition (PAIR); Heuristics and Search for Domain-Independent Planning (HSDIP); and Knowledge Engineering for Planning and Scheduling (KEPS).

The tutorials offer in-depth perspectives on the following topics: the computational complexity of planning; MDP Modeling and Interaction via RDDL and pyRDDLGym; Recent Advances in Temporal Networks for Planning and Scheduling; Model Acquisition in the Modern Era; Unified Planning: A Python Library Making Planning Technology Accessible; and a special tutorial on the role of Large Language Models in Planning. Following the tradition of ICAPS conferences, a Doctoral Consortium was once again organized, providing Ph.D. students in the field of automated planning and scheduling with the opportunity

to present their current research during the conference and receive early feedback from experts in the field.

We would like to express our sincerest gratitude to all of the members of the Program Committee, who performed admirably in reviewing the submissions. We would like to also thank the Organizing Committee for their efforts, behind the scenes, in organizing the events and activities of this conference. Without their talent and dedication, and without the expertise and hard work of the Program Committee in reviewing the submitted papers, this conference would not have been possible.

Finally, we thank our sponsors: National Science Foundation (NSF), Artificial Intelligence Journal, Filuta AI, Alice Technologies, JPMorgan Chase Bank National Association, David E. Smith, SIFT, RSJ, Sony AI, Google, IBM, EurAI, Jiuzhang Intelligence, and Czech Society for Cybernetics and Informatics.

We hope this volume maintains the tradition of past ICAPS proceedings and becomes a valuable reference for researchers and practitioners in the field of automated planning and scheduling.

Roman Barták and AndreA Orlandini
ICAPS 2023 Conference Chairs

Mauro Vallati, Sven Koenig, and Roni Stern
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