Preface to the Italian Workshop on Planning and Scheduling, RCRA Workshop on Experimental evaluation of algorithms for solving problems with combinatorial explosion, and SPIRIT Workshop on Strategies, Prediction, Interaction, and Reasoning in Italy (IPS-RCRA-SPIRIT 2023)

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This volume contains the papers presented at IPS 2023 (11th Italian Workshop on Planning and Scheduling http://ips2023.unibs.it), RCRA 2023 (30th RCRA workshop on Experimental evaluation of algorithms for solving problems with combinatorial explosion https://rcra2023.wordpress.com) and SPIRIT 2023 (Workshop on Strategies, Prediction, Interaction, and Reasoning in Italy https://vadimmalvone.github.io/spirit2023/) Workshops, held within the XXII Conference of the Italian Association for Artificial Intelligence (AI*IA 2023), November 7-9th, 2023.

The aim of the IPS series of workshops is to bring together researchers interested in different aspects of planning and scheduling, and to introduce new researchers to the community. Although the primary target of this workshop is the Italian community of planning and scheduling, over the past years IPS [1, 2] has attracted an international gathering, fostering contributions and participation from around the world. In particular, this year, 12 papers were accepted for presentation at the workshop, involving different authors from Italy and other International countries. Moreover, we also had an invited talk by Prof. Luciano Serafini and Dr. Leonardo Lamanna on “Planning, Acting, and Learning: Challenges and (some) Results”.

The IPS accepted papers have focused on a variety of topics, such as Hybrid Systems [3, 4], Resilient Planning [5], Temporally Extended Goals [6], Planning Safe Collaborative Behaviors [7], Monte Carlo Tree Search [8], PDDL+ [9], Goal Recognition [10, 11], Timeline-Based Planning [12], Learning to Act [13], Planning as Theorem Proving [14].

The scope of the RCRA workshop is, instead, fostering the cross-fertilisation of ideas stemming from different areas, proposing benchmarks for new challenging problems, comparing models and algorithms from an experimental viewpoint, and, in general, comparing different approaches with respect to efficiency, problem modelling, and ease of development. In particular, this year 9 papers were accepted for presentation at the workshop, involving different authors from Italy and other European countries.

The 2023 edition of RCRA accepted papers considering a wide range of combinatorial problems. In particular, the workshop included works focusing on challenges of automated planning [4, 14]; approaches for Neuro-Symbolic RL [15] and Neuro-Symbolic load monitoring [16]; a comparison of approaches for solving the Traveling Salesperson Problem [17]; learning from perceptions [18], and a range of works in the area of knowledge representation and reasoning, with a focus on LTL synthesis [19], entities similarity [20], many-valued weighted knowledge bases [21] and the characterization of stable models [22].

The scope of the SPIRIT workshop is gathering the scientific communities on artificial intelligence, machine learning, theoretical computer science, multi-agent systems, and microeconomics to promote their integration and contamination. Over the past fifteen years, researchers in artificial intelligence, machine learning, theoretical computer science, multi-agent systems, and microeconomics have joined forces to tackle problems involving incentives and computation. Interestingly, while microeconomics provides computer science with the basic models, computer science raises crucial questions related to computation and learning that suggest the study of new models. The result is a synergic integration of all these fields. Interestingly, the final goal is the provision of rigorous, theoretically-proved methods to deal with multiple strategic players. In the last years, these topics have been central in the Artificial and Machine Learning venues.

The SPIRIT 2023 accepted papers mainly focused on algorithmic game theory, including coalition [23, 24] and opinion formation [25], price of anarchy and stability [26], Bayesian persuasion [27], online learning [28], and on formal methods for multi-agent strategic reasoning, including formal aspects of attack graphs [29], model checking with coalition refinements [30], verification for bayesian mechanisms [31], and modeling of sentiment analysis [32].

As a final remark, the program co-chairs would like to thank all the members of the Program Committees (listed below), as well as the organizers of the AI*IA 2023 Conference.

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