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EDITORIAL

Advances in Multi-agent Systems Research: EUMAS 2021 Extended Selected Papers

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This topical collection consists of extended selected papers from the 18th European Conference on Multi-Agent Systems (EUMAS 2021). The conference was held online, on June 28–29, 2021. EUMAS 2021 followed the tradition of previous editions (Oxford 2003, Barcelona 2004, Brussels 2005, Lisbon 2006, Hammamet 2007, Bath 2008, Agia Napa 2009, Paris 2010, Maastricht 2011, Dublin 2012, Toulouse 2013, Prague 2014, Athens 2015, Valencia 2016, Evry 2017, Bergen 2018, Thessaloniki-virtual 2020) in aiming to provide the prime European forum for presenting and discussing agents research as the annual designated event of the European Association of Multi-Agent Systems (EURAMAS).

After a rigorous peer-review process—involving a program committee containing 50 members—a total of 16 papers were accepted and presented at the conference, covering a wide range of topics in the field of multi-agent systems. Following the conference, for which we had the honor to serve as program co-Chairs (Nimrod Talmon and Ariel Rosenfeld) and EURAMAS liaison officer (Davide Grossi), we invited the authors of 5 of those papers to submit extended versions of their work to this SN CS issue. The authors of all these papers responded positively to our invitation. The significantly extended papers submitted were then carefully reviewed by at least two reviewers each; and after two rounds of review, the 5 papers listed below were selected to be published in this SN CS topical issue. As such, we are confident these papers report on mature research of high technical quality and do, in fact, present substantial recent advances in several sub-areas of research in multi-agent systems.

This topical collection consists of five papers:

1. The first paper, by Alberto Termine, Alessandro Antonucci, Giuseppe Primiero, and Alessandro Facchini, titled *Imprecise Probabilistic Model Checking for Stochastic Multi Agent Systems*, deals with an imprecise variant of probabilistic interpreted systems that allows for the probabilistic modeling of agents where not all the probabilities are known exactly in advance.
2. The second paper, by Dorothea Baumeister and Tobias Alexander Hogrebe, titled *On the Complexity of Predicting Election Outcomes and Estimating Their Robustness*, deals with analyzing the computational complexity of determining winners in elections in which voter preferences are incomplete.
3. The third paper, by Waldy Joe and Hoong Chuin Lau, titled *Coordinating Multi-Party Vehicle Routing with Location Congestion via Iterative Best Response*, deals with a game-theoretic analysis of a routing problem with scheduled pickups and deliveries.
4. The fourth paper, by Priel Levy and Nathan Griffiths, titled *Convention Emergence with Congested Resources*, deals with a framework for modeling norm emergence in congestion games.
5. The fifth paper, by Tomoki Yamauchi, Yuki Miyashita, and Toshiharu Sugawara, titled *Efficient Path and Action Planning Method for Multi-Agent Pickup and Delivery Tasks under Environmental Constraints*, deals with a formulation and a corresponding efficient algorithm for a multiagent pickup and delivery problem.

This article is part of the topical collection "Advances in Multi-Agent Systems Research: EUMAS 2021 Extended Selected Papers" guest edited by Davide Grossi, Ariel Rosenfeld and Nimrod Talmon.

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The editors would like to thank all EUMAS authors who accepted our invitation and submitted extended versions of their papers to this topical collection. In addition, we would like to thank the reviewers for their efforts in providing thorough and punctual reviews of the submitted papers. It is their hard work that allowed us to put together a strong collection of topical papers. We would also like to thank the SN Computer Science Journal for the publication of this topical collection and their support during the process. We are extremely happy to see this collection of extended papers appear and further complement the success of the 2021 edition of EUMAS.

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Declarations

Conflict of Interest The authors declare that they have no conflict of interest.