

Guest Editorial Preface

Special issue on Middle-European Conference on Applied Theoretical Computer Science - MATCOS-22

We are happy to introduce you to a special section on the “mini” conference MATCOS-22 that was held in Koper, Slovenia as part of the multi-conference Information Society on October 13th and 14th 2022. After the 2019 edition that was marked by COVID situation, in 2022 we again got together in person, which made the event much more fruitful. The conference is a result of a long-lasting collaboration between University of Primorska and University of Szeged and also one of the activities in a joint Slovenian-Hungarian research project N2-0171 *Graph theory and combinatorial scientific computing*.

The conference was started by the invited talk “*Interpretability of deep-learned error-correcting codes*” delivered by György Turán from the University of Illinois at Chicago and Research Group on AI, University of Szeged, which was followed by 10 sessions on topics of Machine learning, Algorithm’s complexity, Graph Theory, Optimization, Discrete Optimization, and Parallel computation. For the conference 32 papers were submitted, out of which after the reviewing process the programme committee choose 12 regular papers for presentation. The remaining papers were presented as short contributions.—Authors from 7 countries were participating at the conference.

At the end of conference, the speakers were offered to prepare a full paper to be published as a special section of Informatica. The submitted papers went again through a thorough reviewing process which resulted in six papers that are in front of you. They are addressing three different areas presented at the conference. First, Alain Quilliot (*Surrogate Estimators for Collaborative Decision*), and Hasmik Sahakyan, Gyula Katona, and Levon Aslanyan (*Study on Using Reinforcement Learning for the Monotone Boolean Reconstruction*) touch upon the topic of the machine learning. Next, Andrej Brodnik, Bengt J. Nilsson, and Gordana Vujović (*Online Bin Covering with Exact Parameter Advice*) and Eszter Csókás, and Tamás Vinkó (*A heuristic for influence maximization under deterministic linear threshold model*) are addressing optimisation topics. Finally, Tomaž Dobravec (*Empirical Evaluation of Algorithm Performance: Addressing Execution Time Measurement Challenges*) and Attila Sali and Munqath Alatar (*Approximate Keys and Functional Dependencies in Incomplete Databases with Limited Domains—Algorithmic Perspective*) study the complexity of algorithms.

At last, but not least we want to thank Balázs Dávid, Branko Kavšek, Matjaž Krnc, and Rok Požar for all their contribution as a local organizing committee.

We hope you will enjoy the section on MATCOS-22 and looking forward to see you on MATCOS 2025!

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Guest Editors

Andrej Brodnik

(andrej.brodnik@upr.si), Faculty of Computer and Information Science, University of Ljubljana

Gábor Galambos

(galambos@jgypk.szte.hu), Department of Informatics Applications, Institute of Applied Natural Sciences

Attila Sali

(saliattila@gmail.com), Alfréd Rényi Institute of Mathematics Hungarian Academy of Sciences

