

Preface

This volume contains the papers presented at the 7th international conference on Machines, Computations and Universality (MCU 2015) held during September 9–11, 2015, in Famagusta.

MCU explores computation in the setting of various discrete models (Turing machines, register machines, cellular automata, tile assembly systems, rewriting systems, molecular computing models, neural models...) and analog and hybrid models (BSS machines, infinite time cellular automata, real machines, quantum computing...). There is a particular, but not exclusive, emphasis given to:

- The search for frontiers between decidability and undecidability in the various models
- The search for the simplest universal models
- The computational complexity of predicting the evolution of computations in the various models
- The connection between parallelism and decidability, complexity and universality
- Universality and undecidability in continuous models of computation

Initiated by Maurice Margenstern, the MCU international conference series traces its roots back to the mid-1990s, and has since been concerned with gaining a deeper understanding of computation through the study of models of general purpose computation. Previous MCU conferences took place in Zürich, Switzerland (2013), Orléans, France (2007), Saint-Petersburg, Russia (2004), Chişinău, Moldova (2001), Metz, France (1998), and Paris, France (1995).

There were 23 papers submitted to the 2015 edition of MCU. Each submission was reviewed by four Program Committee members or sub-reviewers. The committee decided to accept ten papers. The program also included four invited talks. Various topics of MCU were overviewed by the invited talks:

- Jetty Klein from Leiden University is an expert on concurrency and Petri nets. In her talk she presented on-going research about generalized traces, i.e., an extension of Mazurkiewicz's trace theory.
- Linqiang Pan from Huazhong University of Science and Technology is working on membrane computing. His speciality is spiking neural P systems. In his talk he explained relationships and differences between spiking neural networks and spiking neural P systems, some classic and recent results.
- Anne Siegel is a senior researcher at CNRS, IRISA, Rennes. She is one of the leading scientists in qualitative dynamical systems in computer science, biology, and discrete mathematics. Her speech was about decidability and undecidability results connected to Rauzy fractals.
- Mike Stannett, from the University of Sheffield, is a leading expert on hypercomputations. He explained that the computational power of a distributed system could depend on the physical environment, i.e., on spacetime geometry in which the computation is performed.

Informal presentations were also made at the conference but they are not mentioned in these proceedings.

MCU 2015 was also an occasion to see the historical city of Famagusta and some of the beautiful surroundings of the city and enjoy the Mediterranean Sea. The city of Famagusta is one of the finest examples of medieval well-preserved architecture in the eastern Mediterranean. The ruins of the ancient city of Salamis are one of the most impressive archaeological sites on the island.

The EasyChair conference system¹ was used to handle submissions, the review process, and LNCS production. As usual, it worked smoothly and perfectly. We definitely recommend it.

MCU 2015 was organized by the Eastern Mediterranean University², Famagusta, North Cyprus. We are very thankful to the Eastern Mediterranean University for making MCU possible and successful. We would like to thank Necdet Osam, Rector of Eastern Mediterranean University, for his energetic support, and Ahmet Sözen, Vice Rector for Academic Affairs of Eastern Mediterranean University, for helping us to resolve organizational problems.

The MCU 2015 organizing team did a great job. As far as the Organizing Committee is concerned, our first very warm thanks go to Rza Bashirov, Chair of MCU 2015 Organizing Committee, who kept track of every stage of event planning for MCU 2015, striving to reach the highest quality in organizational actions. Special thanks go to Mehmet Bozer, who carefully selected prizes for the best paper and best student paper awards as well as gadgets/giveaways for the conference bags. We also thank Hakan Arslan, who on behalf of the web office in Eastern Mediterranean University created the nicest website for MCU 2015. We thank in particular Hasan Arslan, the faculty administrator at the Faculty of Arts and Sciences, who performed his task with great professionalism, helping in the event's accounting and financial management. We thank Selda Adaöz and Gizem Sarca from EMU Press for putting scientific things in an artistic way: We had the most beautiful announcement poster for the conference. Finally, we extend our sincere appreciation to our sponsors:

- Deniz Plaza³ for providing conference bags
- Laboratoire d'Informatique Fondamentale d'Orléans (LIFO)⁴ for partial support in financial aspects

The editors warmly thank the Program Committee, the invited speakers, the authors of the papers, the external reviewers, the speakers of informal presentations, and all the participants for their contribution to the success of the conference.

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Jérôme Durand-Lose
Benedek Nagy

¹ <http://www.easychair.org/>

² <http://www.emu.edu.tr/>

³ <http://www.denizplaza.net/>

⁴ <http://www.univ-orleans.fr/lifo/?lang=en>

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