Preface

Mathematical Aspects of Computer and Information Sciences (MACIS) is a series of biennial conferences focusing on research in mathematical and computational aspects of computing and information science. It is broadly concerned with algorithms, their complexity, and their embedding in larger logical systems. At the algorithmic level there is a rich interplay along the numerical/algebraic/geometrical/topological axes. At the logical level, there are issues of data organization, interpretation, and associated tools. These issues often arise in scientific and engineering computation where we need experiments and case studies to validate or enrich the theory. At the application level, there are significant applications in the areas of mathematical cryptography, machine learning, and data analysis, and the various combinatorial structures and coding theory concepts that are used in a pivotal role in computing and information sciences. MACIS is interested in outstanding and emerging problems in all these areas. Previous MACIS conferences have been held in Beijing (2006, 2011), Paris (2007), Fukuoka (2009), Nanning (2013), and Berlin (2015). MACIS 2017 was held at the University of Applied Sciences Technikum Wien located in the capital of Austria.

We are grateful to the track chairs and the Program Committee for their critical role in putting together a very successful technical program, especially under strict deadlines. We also wish to extend our gratitude to all MACIS 2017 conference participants – all of them contributed to making the conference a success. The conference would not have been possible without the hard work of the local organizer from SBA Research, Bettina Bauer. SBA Research is Austria's leading center dedicated to information security. One of its core research areas focuses on mathematical aspects of information security. We are extremely fortunate to have received the generous support of our sponsors: University of Applied Sciences Technikum Wien, Zuse Institute Berlin (in particular, we are thankful to Winfried Neun for his efforts toward transferring the past MACIS budget to this edition of MACIS), SBA Research, and the Vienna Convention Bureau. Last but not least, we are thankful to the two invited speakers, Bruno Buchberger (RISC, Johannes Kepler University, Austria) and Dongming Wang (Beihang University, China and CNRS, France), for honoring the conference with their participation and stimulating talks.

The volume contains 36 refereed papers (28 regular and 8 short papers) carefully selected out of 67 total submissions (53 regular, 14 short); thus, MACIS 2017 has an overall acceptance rate of 54%. The papers are organized in different categories corresponding to four tracks featured in the MACIS 2017 conference. The topics of the MACIS 2017 tracks cover a wide array of research areas, as follows:

Track 1: Foundation of Algorithms in Mathematics, Engineering and Scientific Computation
Track Chairs: Matthew England, Jonathan Hauenstein, Laura Kovács, Elias Tsigaridas

Track 2: Combinatorics and Codes in Computer Science
Track Chairs: Daniel Augot, Alexander May, Alfred Wasserman
Track 3: Data Modeling and Analysis
Track Chairs: Xiaoyu Chen, Joachim Giesen, Giorgos Kollias
Track 4: Mathematical Aspects of Information Security and Cryptography
Track Chairs: Jan Camenisch, Stefan Dziembowski, Guenael Renault

We wish to thank all the track chairs for their hard work in putting together these tracks. Last but not least, we thank the Springer management and production team for their support.

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