SPECIAL CAI SECTION DEVOTED TO MEMICS '11: PREFACE

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This special section contains revised and extended versions of three selected papers from the 7th International Doctoral Workshop on Mathematical and Engineering Methods in Computer Science – MEMICS '11 organised by the Faculty of Information Technology of Brno University of Technology and the Faculty of Informatics of Masaryk University. MEMICS '11 took place in Lednice, Czech Republic where it was held between October 14 and 16, 2011.

Papers presented in this section were selected at the end of the workshop to receive the Best Paper Award, taking into account their scientific and technical contribution and the quality of presentation. The awards consisted of a diploma for all authors of the selected papers complemented with a financial premium, covered by the sponsoring organisations. Contributions from Red Hat Czech Republic, IBA CZ, and Honeywell Czech Republic are highly appreciated.

The MEMICS workshops are intended to provide an opportunity for Ph. D. students to present and discuss their work in an international community. Their focus on Ph. D. studies instead of a particular narrow scientific area leads to a cross-discipline orientation, providing a pleasant environment for an exchange of ideas among several different fields of computer science and technology.

MEMICS submissions are invited especially in the following (though not exclusive) areas: software and hardware dependability, computer security, computer-aided analysis and verification, testing and diagnostics, simulation, parallel and distributed computing, grid computing, computer networks, modern hardware and its design, non-traditional computing architectures, software engineering, computational intelligence, quantum information processing, computer graphics and multimedia, signal, text, speech, and image processing, and theoretical computer science.

As traditional in the MEMICS workshops, the standard program based on papers by Ph. D. students was complemented by invited lectures given by internationally recognised researchers. MEMICS '11 hosted six invited speakers: Saddek Bensalem from VERIMAG, University Joseph Fourier/CNRS/INPG, Grenoble, France, with the talk "Rigorous Component-Based System Design Using the BIP Framework", Peter Bentley from University College London, United Kingdom, with the talk "Modelling Complex Systems – Lessons from the Life Sciences", Krishnendu Chatterjee from IST Austria, Austria, with the talk "Games and Probabilistic Systems with Mean-payoff, Energy and Parity Objectives", Görschwin Fey from University of Bremen, Germany, with the talk "Assessing System Vulnerability Using Formal Verification Techniques", Renato Renner from ETH Zurich, Switzerland, with the talk "Security in a Quantum World", and Petr Tůma from Charles University in Prague, Czech Republic, with the talk "Computer Memory: Why We Should Care What Is Under The Hood". Thanks go to all these invited lecturers who found time to participate at the workshop and demonstrated how a top quality presentation could look like.

The program of MEMICS '11 contained 25 regular contributions selected out of 38 submissions by authors from 7 countries. Out of the selected publications, 12 works were published in the local proceedings (146 pages, ISBN 978-80-214-4305-1) and – for the first time in the history of MEMICS – 13 in the LNCS proceedings (LNCS 7119, Springer-Verlag). Apart from regular papers, MEMICS traditionally invites Ph. D. students to present also works that have already been peer reviewed and presented at a well established international conference. The programme of MEMICS '11 included 21 presentations chosen out of 25 submissions by authors from 7 countries. All contributions were refereed by at least three reviewers selected by the program committee consisting of 47 members from 14 countries. The hard work of the programme committee as well as of the external reviewers is highly appreciated.

All the contributed papers were presented by Ph. D. students who got the opportunity to speak in front of their peers and to receive immediate feedback from participating senior faculty members, including the invited lecturers. All students were encouraged to actively participate in the discussions, to express their opinions, exchange ideas and compare methods, traditions and approaches of groups and institutions whose representatives were participating at the workshop. All these forms of discussions and social networking created a unique environment intended to foster a further research collaboration among participants and their institutions.

Zdeněk KOTÁSEK is an Associate Professor at the Faculty of Information Technology, Brno University of Technology, Czech Republic. His research interests are in testing of electronic systems and fault tolerant systems design.

Jan BOUDA is an Assistant Professor at Faculty of Informatics, Masaryk University, Czech Republic. He has received the M. Sc. and Ph. D. degrees in computer science from Faculty of Informatics, Masaryk University, in 2001 and 2004, respectively. His research interests include cryptography, information theory, and quantum information processing. He is a co-author of algorithms implemented in the unconditionally secure quantum key distribution network SECOQC.

Ivana ČERNÁ is a Full Professor at Faculty of Informatics, Masaryk University, Czech Republic. She has received the M.Sc. and Ph. D. degrees in computer science from Comenius University, Slovak Republic, in 1986 and 1992, respectively. Her research interests include theory of communicating and parallel systems, formal verification and verification tools, algorithm design and analysis. She is a co-author of algorithms implemented in a parallel and distributed verification tool DiVinE.

Lukáš SEKANINA is a Full Professor at the Faculty of Information Technology, Brno University of Technology, Czech Republic. He has received all his degrees from Brno University of Technology. His research interests include bio-inspired computing and evolvable hardware. He co-authored over 100 papers, mainly on evolvable hardware.

Tomáš VOJNAR is a Full Professor at the Faculty of Information Technology of the Brno University of Technology. His research focuses mainly on automated verification, especially over infinite-state and concurrent systems.