

Annual Doctoral Workshop on Mathematical and Engineering Methods in Computer Science

MEMICS 2009, November 13–15, 2009, Znojmo, Czech Republic

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Preface

The 2009 edition of the International Doctoral Workshop on *Mathematical and Engineering Methods in Computer Science* (MEMICS'09) is the fifth in a row of three-day workshops organized in South Moravia by Faculty of Information Technology of Brno University of Technology and Faculty of Informatics of Masaryk University.

MEMICS'09 was held in Znojmo, Czech Republic, on November 13–15, 2009.

The MEMICS workshops are intended to provide an opportunity for PhD students to present and discuss their work in an international environment. An important feature of MEMICS is its cross-discipline orientation allowing for an exchange of ideas among several different fields of computer science and engineering. The workshop series is run by the two aforementioned schools within the project *Mathematical and Engineering Approaches to Developing Reliable and Secure Concurrent and Distributed Computer Systems*, financially supported by the Czech Science Foundation.

The workshop topics include the following (though not exclusive) areas: software and hardware dependability, computer security, parallel and distributed computing, formal analysis and verification, simulation, testing and diagnostics, GRID computing, computer networks, modern hardware and its design, non-traditional computing architectures, quantum computing, and all related areas of computer science.

While mainly focusing on works primarily authored by PhD students, the MEMICS workshops also include invited lectures given by internationally recognized researchers. In particular, the MEMICS'09 workshop has enjoyed four invited lectures, covering different fields of interest of MEMICS participants and providing both theoretical and more applied results. The invited speakers this year have been Mikolaj Bojanczyk from University of Warsaw in Poland with a talk *Automata for XML*, Rūsiņš Freivalds from University of Latvia in Riga talking about *Randomization and Other Ways to Overcome Determinism in Algorithms*, Peter Habermehl from University Paris 7 in France presenting *Angluin-style Learning of Non-deterministic Finite-state Automata*, and Günther Raidl from Vienna University of Technology in Austria with a talk on *Combining Metaheuristics with Mathematical Programming Techniques for Solving Difficult Network Design Problems*. Thanks go to all these invited lecturers who found time to participate at the workshop and demonstrate how a top quality presentation could look like.

MEMICS workshops invite PhD students to come and present their research results in front of their peers and to receive immediate advice and feedback from participating senior faculty members, including the invited lecturers. Participating students are encouraged to express their opinions, to discuss the presentations, and to exchange ideas, compare methods, traditions, and approaches of groups and institutions whose representatives are participating at the workshop. These discussions and social networking are expected to contribute to the further research collaboration among participants and their institutions. All the time,

various issues of achieving reliability and security of computer systems (with a special, though not exclusive emphasis on concurrent and distributed systems) lie in the foundations, making sure the participants have a common ground on which to build such a collaboration. This focus corresponds tightly to the need to build as reliable and secure computer systems as possible, which is increasingly stressed worldwide.

The cornerstone of any scientific workshop is its programme. This year, the scientific programme has contained 26 contributed papers selected by the Programme Committee from 45 submissions. Each submitted paper was evaluated by at least three reviewers who provided an extensive feedback to the authors. This hard and time consuming task is highly appreciated as without it, MEMICS could never be a successful event. Apart from regular papers, MEMICS also invites PhD students to present work that has already been peer reviewed and presented on some well known international conference. This workshop programme has included 21 presentations chosen out of 27 submissions. The full programme listing can be found on <http://www.memics.cz/2009>. Altogether, the regular papers and presentations have come from authors from 15 different countries (10 for the regular papers).

After another round of evaluation and negotiation with the authors, five best regular papers of MEMICS'09 have been invited to a special issue of the Computing and Informatics journal, and 14 other high quality contributions are presented in this DROPS volume, making it a really strong issue covering diverse parts of computer science from pure theory to practical applications. We thank all of them for their effort put into the preparation of their papers.

Lastly to say, the organization aspects of the workshop have been taken care by the local Organizing Committee which has worked hard to guarantee a smooth realization of MEMICS'09 and has contributed significantly to the success of the workshop. We would like to explicitly thank to the Organizing Committee members and its chair, Jan Staudek, for all their efforts. More than 100 participants have registered for the workshop, with around one fourth from abroad, demonstrating the interest in this event.

The MEMICS'09 workshop was financially supported by the Doctoral Grant 102/09/H042 from the Czech Science Foundation. Our thanks go also to the companies CEPIA Technologies, Y Soft, and Red Hat Czech for providing funds for the *best paper awards* of MEMICS'09, given at the workshop. Together with other direct and indirect support and help from the organizing faculties these contributions are highly appreciated.

Brno, December 2009

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PC chairs of MEMICS'09