

Preface

This volume contains the proceedings of the 9th Doctoral Workshop on Mathematical and Engineering Methods in Computer Science (MEMICS 2014) held in Telč, Czech Republic, during October 17–19, 2014.

The aim of the MEMICS workshop series is to provide an opportunity for PhD students to present and discuss their work in an international environment. The scope of MEMICS is broad and covers many fields of computer science and engineering. In the year 2014, submissions were invited especially in the following (though not exclusive) areas:

- Algorithms, logic, and games,
- High performance computing,
- Computer-aided analysis, verification, and testing,
- Hardware design and diagnostics,
- Computer graphics and image processing, and
- Artificial intelligence and natural language processing.

There were 28 submissions from PhD students from 10 countries. Each submission was thoroughly evaluated by at least four Program Committee members who also provided extensive feedback to the authors. Out of these submissions, nine full papers were selected for publication in these post-proceedings, and additional nine papers were selected for local presentation at the workshop.

The highlights of the MEMICS 2014 program included six keynote lectures delivered by internationally recognized researchers from the aforementioned areas of interest. The speakers were:

- Gianni Antichi from University of Cambridge who gave a talk on “An Open-Source Hardware Approach for High Performance Low-Cost QoS Monitoring of VoIP Traffic,”
- Derek Groen from University College London who gave a talk on “High-Performance Multiscale Computing for Modelling Cerebrovascular Blood-flow and Nanomaterials,”
- Jozef Ivanečký from European Media Laboratory who gave a talk on “Today’s Challenges for Embedded ASR,”
- Daniel Lokshtanov from University of Bergen who gave a talk on “Tree Decompositions and Graph Algorithms,”
- Michael Tautschnig from Queen Mary University of London who gave a talk on “Automating Software Analysis at Large Scale,” and
- Stefan Wörz from University of Heidelberg who gave a talk on “3D Model-Based Segmentation of 3D Biomedical Images.”

The full papers of four of these keynote lectures are also included in the proceedings.

In addition to regular papers, MEMICS workshops traditionally invite PhD students to submit a presentation of their recent research results that have already undergone a

rigorous peer-review process and have been presented at a high quality international conference or published in a recognized journal. A total of 16 presentations out of 22 submissions from 6 countries were included into the MEMICS 2014 program.

The MEMICS tradition of best paper awards continued also in the year 2014. The best contributed papers were selected during the workshop, taking into account their scientific and technical contribution together with the quality of presentation. The 2014 awards went to the following papers:

- “LTL Model Checking of LLVM Bitcode with Symbolic Data” by Petr Bauch, Vojtěch Havel, and Jiří Barnat; presented by Petr Bauch.
- “A New Concept in Advice Complexity of Job Shop Scheduling” by David Wehner; presented by the author.

The two awards consisted of a diploma accompanied by a financial prize of 400 Euro each. The prize money was donated by Red Hat Czech Republic and by Y Soft, two of the MEMICS 2014 Industrial Sponsors.

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