



Editorial

The International Conference on Formal Engineering Methods (ICFEM) is a well-established forum for the presentation of research in all topics related to formal engineering methods, including verification and validation, software engineering, formal specification and modeling, software security and reliability. Contributions that advance the state of the art of applying formal methods in practice are particularly encouraged. The 16th edition of ICFEM took place in Luxembourg in November 2014.

The articles in this issue of Formal Aspects of Computing result from an open call to all researchers in the field, including authors of papers accepted at ICFEM 2014, for submitting articles presenting their results in the domain of formal engineering methods. The objective was to have a competitive process and select the best submissions for publication in the journal. Submissions based on papers previously published at conferences, including ICFEM, were required to contain significant novel content. We received 28 submissions in reply to this call, and the current issue contains the first six articles that successfully underwent our stringent peer reviewing process. These articles address a broad range of aspects of formal engineering methods, including theoretical and practical perspectives on the topic.

Component-wise Incremental LTL Model Checking by Vince Molnár, András Vörös, Dániel Darvas, Tamás Bartha, and István Majzik proposes a new approach to LTL model checking that exploits the saturation algorithm for verifying component-based systems.

Computing Maximal Weak and Other Bisimulations by Alexandre Boulgakov, Thomas Gibson-Robinson, and A. W. Roscoe presents and compares different algorithms for computing maximal bisimulations of generalized labeled transition systems, useful for mitigating the effect of state explosion in explicit model checking algorithms.

Correct-by-Construction Model Driven Engineering Composition Operators by Mounira Kezadri-Hamiaz, Marc Pantel, Xavier Thirioux, and Benoit Combemale addresses formal support for model composition, in particular for the verification of the properties of composition operators using interactive proof assistants.

Model-Driven Synthesis of Formally Precise, Stylized Software Architectures by Hamid Bagheri and Kellin Sullivan introduces a precise approach for supporting architecture style as a separate parameter to model-driven synthesis.

A Language-Independent Proof System for Full Program Equivalence by Stefan Ciobaca, Dorel Lucanu, Vlad Rusu, and Grigore Rosu defines a proof system, parameterized by the operational semantics of programming languages, for showing mutual equivalence of two programs written in possibly different languages.

Ready for Testing: Ensuring Conformance to Industrial Standards through Formal Verification by Sergio Alejandro Feo-Arenis, Bernd Westphal, Daniel Dietsch, Marco Muñoz, Siyar Andisha, and Andreas Podelski reports on a case study where automated formal verification has been used to support subsequent certification, in the context of a small to medium-sized enterprise, of the design of a safety-critical real-time system.

Further articles which were received in response to our call for papers and which, possibly after subsequent revision, were accepted will be published in a later issue of Formal Aspects of Computing.

We are very grateful to Formal Aspects of Computing for making this special issue possible, and in particular to the managing editor John Cooke for his unfailing support during the preparation of this issue. We would like to thank the many authors who responded to our call for papers. The reviewers did a wonderful job in providing timely, in-depth reports, which have contributed significantly to the quality of this issue.

Stephan Merz
Jun Pang
Jin Song Dong

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