DOI 10.1007/s00165-010-0168-x

Formal Aspects of Computing (2011) 23: 1–2

**Formal Aspects of Computing**

# Editorial

This issue contains seven papers which have been selected among those presented at the ABZ 2008 Conference in London, published in preliminary form in the Proceedings (Springer LNCS 5238) and submitted in revised form after the conference and re-reviewed for this special issue of the *Formal Aspects of Computing* Journal. The reader will find here four papers from the B track (edited by Michael Butler and Michael Poppleton), two from the Abstract State Machines (ASM) track (edited by Egon Börger) and one from the Z track (edited by Jonathan Bowen), which roughly represents the proportion with which these three state-based Formal Methods approaches to system design and analysis were represented at the conference. One paper of each track is devoted to questions concerning the enhancement of tools to support the methods; in addition one ASM and one B paper deal with a practical application and two more B papers are on methodological issues concerning Event-B.

The paper *Generating Tests from B Specifications and Dynamic Selection Criteria* by J. Julliand, P.-A. Masson, R. Tissot and P.-C. Bué integrates into the *Leirios Test Generator* for B-models a dynamic selection criterion, in essence sets of operations sequences described in terms of scenarios (also called test purposes). The proposal is validated on an industrial standard smart-card platform for identification, authentication, and electronic signature of documents. The paper *A data-flow approach to test multi-agent ASMs* by A. Cavarra provides a conceptual foundation for the application of data-flow testing techniques to ASM. It is applied to a family of data-flow coverage criteria for a class of ASMs, for which a model checking-based approach is introduced to generate test cases satisfying a given set of coverage criteria from the ASM models automatically. The paper *Z2SAL—a translation-based model checker for Z* by J. Derrick, S. North and A. J. H. Simons proposes building a model checker for Z by translating from Z to the input language for the Symbolic Analysis Laboratory (SAL).

The paper *Using Event-B to Construct Instruction Set Architectures* by S. Wright applies Event-B and the Rodin toolset to define an abstract model, capturing the generic properties of common instruction set architectures, and to incrementally refine this model to various Virtual Machine concretizations by C code (together with its compilation). The paper *Proving Linearizability with Temporal Logic* by S. Bäumler, G. Schellhorn, B. Tofan and W. Reif uses the implementation of temporal logic in the interactive theorem prover KIV to prove a general composition theorem which reduces the proof of an overall system property of interest to sufficient rely-guarantee conditions for single processes of a concurrent system. This generic theorem is then instantiated to prove the linearizability of two classic lock-free implementations: a Treiber-like stack and a slightly improved version of Michael and Scotts queue.

*Correspondence and offprint requests to*: E. Börger, E-mail: boerger@di.unipi.it

The two papers *Retrenchment for Event-B: UseCase-wise Development and Rodin Integration* by R. Banach and *On the purpose of Event-B proof obligations* by S. Hallerstede contribute to methodological questions concerning Event-B. The first one proposes an Event-B formulation, including its integration into the Rodin toolset, of the retrenchement concept, combined with Event-B refinement techniques, to handle UseCase-wise system development. The second one starts from the observation that in Event-B the semantics of a model is provided implicitly by proof obligations and argues, by way of two examples, for using one set of proof obligations to reason about different semantic model interpretations of these proof obligations.

We wish to thank the reviewers for their help with evaluating the revised versions of the papers published here.

Egon Börger
Jonathan P. Bowen
Michael Butler
Michael Poppleton

*Published online 18 November 2010*