
Editorial

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Biographical notes: Kamel Barkaoui is a Full Professor at the Department of Computer Science at the Conservatoire National des Arts et Métiers (CNAM) in Paris. He received his PhD in 1988 and his Habilitation in 1998 from Université Pierre et Marie Curie (Paris VI). His research interests include verification and performance evaluation of concurrent and distributed systems. He received the Outstanding Paper Award of 1995 IEEE International Conference on System Man and Cybernetics. He served on PCs and as a PC Chair for numerous international workshops and conferences. He was a Guest Editor for *Journal of Systems and Software (JSS)*, for *Formal Aspects of Computing Journal (FACJ)* and the General co-Chair for the 18th FM 2012. He is the Steering Committee Chair of the International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS).

Patrice Moreaux is a ‘Professeur Agrégé’ in Mathematics and he received his PhD in Computer Science from the Université Paris Dauphine in 1996. Since 2006, he has been a Full Professor at the University of Savoie, France. His research interests include modelling, verification and performance evaluation of concurrent and distributed systems. He is also interested in software engineering of service-oriented systems and autonomic computing in cloud computing environments. He served on PCs for several international workshops and conferences. He is a member of Steering Committee of the International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS).

This issue entitled ‘Verification, control and performance analysis’ is devoted to extended versions of selected contributions from the technical sessions of the last two editions of International Workshop on Verification and Evaluation of Computer and Communication Systems (VECoS) held in 2011 in Tunis, and 2012 in Paris.

The aim of the VECoS Workshop is to bring together researchers and practitioners, in the areas of verification, control, performance, quality of service, dependability evaluation and assessment, in order to discuss the state-of-the-art and the challenges in modern computer and communication systems in which functional and non-functional properties are strongly interrelated. Thus, the main motivation for VECoS is to encourage

the cross-fertilisation between the various formal verification and evaluation approaches, methods and techniques, and especially those based on the specification formalisms for concurrent, distributed and software/hardware systems. Beyond its technical and scientific goals, another main purpose of VECoS is to promote collaboration between participants in research and education in the area of computer science and engineering.

The programme committees included researchers from 15 countries and more than 40 laboratories. Each of the 52 submitted papers was evaluated by at least three reviewers. Afterwards, reports were returned to the programme committee for discussion and resolution of conflicts. Based on their recommendations, we selected 23 papers. The proceedings including these accepted papers were published by the eWiC series of the British Computer Society. After VECoS 2012, we invited 16 authors to submit extended versions of their papers. After additional refereeing and further revisions, we were able to accept 13 papers for inclusion in this special issue divided in two parts.

This Part 2 comprises the following six papers:

- End-to-end latency and temporal consistency analysis in networked real-time systems
 Michaël Lauer, Frédéric Boniol, Claire Pagetti and Jérôme Ermont present (a formal methodology based on a time Petri net improving the temporal consistency verification of multimedia presentations. In addition the proposed approach makes possible over inconsistencies checking due to output-resource conflicts).
- Size analysis in multiprocessor real-time scheduling
 Annie Choquet-Geniet and Gaëlle Largeteau-Skapin present a model-based methodology to determine the lowest number of processors for a Real-Time application to be feasible, in a multiprocessor context. They also discuss the size of the required simulation for a full temporal validation.
- Controllability for discrete event systems modelled in VeriJ
 Yan Zhang, Béatrice Bérard, Lom Messan Hillah, Fabrice Kordon and Yann Thierry-Mieg present a model transformation approach to allow formal analysis of control problems modelled in VeriJ, a subset of Java. This allows to combine the strengths of formal techniques with a user-friendly input language.
- Transactional Petri nets: a semantic framework for UML2 activities
 Sabine Boufenara, Kamel Barkaoui, Faiza Belala and Hanifa Boucheneb propose a new class of high-level zero-safe nets namely transactional Petri nets (TPN) to overcome the omissions resulting from translating UML2 activity diagrams into Petri nets. The operational semantics of TPNs is described within revised rewriting logic based framework.
- Compositional reactive semantics of system-level designs written in SystemC and formal verification with predicate abstraction
 Nesrine Harrath and Bruno Monsuez propose a method to automatically extract an abstract representation of SystemC components in terms of SystemC-waiting state automata. Using an operational semantics of a subset of SystemC language, they show how one can generate and reduce the set of all possible execution traces of a SystemC program.

- Functional safety of adaptive embedded control systems: new solutions
Atef Gharbi and Mohamed Khalgui propose an agent-oriented architecture for the functional safety of embedded control systems based on the concept of ‘control component’ defined as an event-triggered software unit to implement the system on networked devices. An inter-agents protocol is then defined for coherent coordination between reconfigurable devices of the system.

The seven papers presented in Part 1 are:

- A formal framework to specify and verify real time properties on critical systems (Nouha Abid, Silvano Dal Zilio and Didier Le Botlan)
- LTL translation improvements in Spot 1.0 (Alexandre Duret-Lutz)
- On combining the ready sets with the covering steps methods (Hanifa Boucheneb and Kamel Barkaoui)
- Verifying while loops with invariant relations (Asma Louhichi, Wided Ghardallou, Khaled Bsaies, Lamia Labeled Jilani, Olfa Mraïhi and Ali Mili)
- A RT-Maude-based framework for component installation (Meriem Belguidoum, Faiza Belala and Fateh Latreche)
- Managing energy in a network of reconfigurable optical add/drop multiplexers (Jean-Michel Fourneau, Nora Izri and Dominique Verchère)
- Strong and weak stochastic bounds for multidimensional Markov chains (Hind Castel-Taleb and Nihal Pekergin).

We are grateful to all members of the programme and organising committees and to all referees of this special issue for their hard work. The support and encouragement of the steering committee were invaluable assets. Finally, we would like to thank all the authors of the invited and submitted papers and all the participants of the workshop.