

## Special issue on recent trends in discrete event systems

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This special issue of DEDS on *Recent Trends in Discrete Event Systems* was inspired by the 10th International Workshop on Discrete Event Systems (WODES 2010), which was held on the campus of Technische Universität Berlin from 30 August to 1 September 2010. The Workshop Series on Discrete Event Systems started in 1992. Since then workshops have been held every two years: in Prague (1992), Antibes (1994), Edinburgh (1996), Cagliari (1998), Ghent (2000), Zaragoza (2002), Reims (2004), Ann Arbor (2006), Göteborg (2008) and Berlin (2010). Since its inception, WODES has been one of the most influential series of international meetings devoted to various aspects of discrete event systems.

The WODES 2010 program included three invited lectures by Paulo Tabuada (UCLA), René Boel (Ghent University), and Rajeev Alur (University of Pennsylvania). It also included 50 regular and 22 invited papers selected from a total of 103 submissions. The proceedings of WODES 2010 have been published by IFAC, the International Federation of Automatic Control, and are available online at <http://www.ifac-papersonline.net>.

Following WODES 2010, we were invited by the editorial board of this journal and the WODES steering committee to prepare a special issue of DEDS highlighting

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new trends in discrete event systems. Based on the reviews of the WODES 2010 submissions, the authors of eleven contributions were asked to submit significantly expanded versions of their conference papers for possible inclusion in this special issue. These submissions were carefully reviewed, following the standard editorial process of this journal. Finally, seven papers were selected for this special issue. They span a wide range of topics, including control synthesis, diagnosis and verification problems for probabilistic and deterministic systems, and cover both automaton and Petri net models of discrete event systems.

In the paper by S. Haar, a unifying metric framework for event structures is proposed, providing a general topological description of diagnosability in sequential and nonsequential semantics for Petri nets. The contribution by E. E. Cano, C. A. Rovetto, and J.-M. Colom develops a new algorithm for the efficient computation of minimal siphons in the class of  $S^4PR$  nets. B. Addad, S. Amari, and J.-J. Lesage investigate the representation of networked conflicting timed event graphs in the  $(\max, +)$ -algebra. The paper by S. Ware and R. Malik introduces annotated automata to obtain conflict-preserving abstractions for the compositional verification of nonblocking properties in discrete event systems. The contribution by V. Pantelic and M. Lawford characterises a pseudometric for optimal supervisory control of probabilistic discrete events systems, which is employed to measure the behavioural similarity between systems. The paper by S. T. J. Forschelen, J. M. van de Mortel-Fronczak, R. Su, and J. E. Rooda provides a case study, where Supervisory Control Theory is applied to a theme park vehicle. Finally, the paper by P. Twu, P. Martin, and M. Egerstedt discusses the Graph Process Specification framework as a way to script decentralized control sequences in hybrid networked systems.

We are grateful to the authors for their contributions and timely revisions. We also thank the reviewers for their careful reading and their numerous helpful comments and suggestions. Finally, we thank the Editor-in-Chief of DEDS, Xi-Ren Cao, for inviting us to serve as guest editors for this special issue. It has indeed been a pleasant experience!

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Guest Editors