

## Applications and Theory of Petri Nets and Other Models of Concurrency, 2010

### Preface

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This special issue is dedicated to selected papers from the 31st International Conference on Applications and Theory of Petri Nets and Other Models of Concurrency, which took place in June 2010 in Braga (Portugal). In a careful reviewing process, 16 regular contributions have been accepted among 50 submissions for this conference. Then, after the conference, about one fourth of the papers published in the proceedings was selected with the help of the Program Committee members, and the authors were invited to revise and extend their contributions for this special issue. Next, the extended submissions have been examined in another independent reviewing process to meet the standards of FUNDAMENTA INFORMATICAЕ. Finally, nine contributions of which 2 are tool papers have been accepted for publication. The accepted papers give a good overview of some recent developments in the area of Petri nets and other models of concurrency.

The article "*Separability in persistent Petri nets*" by Eike Best and Philippe Darondeau establishes a strong form of separability, in which every firing sequence of  $k \cdot N$  is simulated by an identical firing sequence of  $k$  parallel instances of  $N$ . The paper "*Learning workflow Petri nets*" by Javier Esparza, Martin Leucker, and Maximilian Schlund presents a new approach to workflow mining, i.e., to the task of automatically producing a workflow model from a set of event logs recording sequences of workflow events; each sequence corresponds to a use case or workflow instance. The first tool paper "*High-level Petri net model checking with ALPiNA*" by Steve Hostettler, Alexis Marechal, Alban Linard, Matteo Risoldi, and Didier Buchs introduces the Algebraic Petri Nets Analyzer (ALPiNA), a symbolic model checker for high-level Petri net. The article "*On three alternative characterizations of combined traces*" by Dai Tri Man Lê shows that a combined trace quotient monoid, a combined dependency graph, and a labelled stratified order structure constitute three equivalent ways to represent combined traces. The second tool paper "*Wendy: a tool to synthesize partners for services*" by Niels Lohmann and Daniela Weinberg introduces Wendy, a Petri net-based tool to synthesize partner services. These partners are valuable artifacts to support the design, validation, verification, and adaptation of services. The paper "*Accelerations for the coverability set of Petri nets with names*" Fernando Rosa-Velardo, María Martos-Salgado, and David de Frutos-Escrig continues investigations of  $v$ -PNs in order to compute the cover that gives a good over approximation of the set of reachable marking. In the paper "*Light region-based techniques for process*

*discovery*" by Marc Solé and Josep Carmona the theory of regions is revisited to devise a novel technique that explores the space of regions by combining the elements of a region basis. The article "*Can stubborn sets be optimal?*" by Antti Valmari and Henri Hansen presents theoretical results and examples that aim at shedding light on the problem of selecting the transitions that are investigated in the current state while generating a reduced state space. This paper received the "*Outstanding Paper*" award at the conference. In the paper "*Causal behavioural profiles - efficient computation, applications, and evaluation*" by Matthias Weidlich, Artem Polyvyanyy, Jan Mendling, and Mathias Weske, the authors propose causal behavioural profiles as the basis for a consistency notion. These profiles capture essential behavioural information, such as order, exclusiveness, and causality between pairs of activities of a process model.

We would like to thank the authors of the papers of this issue for their efforts to extend and revise their contributions. We are also grateful to all the reviewers who have given numerous valuable suggestions to the authors. Finally, we would like to thank Damian Niwiński for giving us the opportunity to publish this issue.

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