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Wil van der Aalst · Eike Best (Eds.)

Application and Theory of Petri Nets and Concurrency

38th International Conference, PETRI NETS 2017
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Proceedings

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Preface

This volume constitutes the proceedings of the 38th International Conference on Application and Theory of Petri Nets and Concurrency (Petri Nets 2017). This series of conferences serves as an annual meeting place to discuss progress in the field of Petri nets and related models of concurrency. These conferences provide a forum for researchers to present and discuss both applications and theoretical developments in this area. Novel tools and substantial enhancements to existing tools can also be presented. This year, the satellite program of the conference comprised five workshops, two Petri net courses, two advanced tutorials, and a model-checking contest.

Petri Nets 2017 was colocated with the Application of Concurrency to System Design Conference (ACSD 2017). Both were organized by the Aragón Institute of Engineering Research of Zaragoza University. The conference took place at the School of Engineering and Architecture of Zaragoza University during June 25–30, 2017. We would like to express our deepest thanks to the Organizing Committee chaired by José Manuel Colom for the time and effort invested in the local organization of this event.

This year, 33 papers were submitted to Petri Nets 2016 by authors from 25 different countries. Each paper was reviewed by three reviewers. The discussion phase and final selection process by the Program Committee (PC) were supported by the EasyChair conference system. The PC selected 16 papers for presentation: nine theory papers, four application papers, and three tool papers. The number of submissions was a bit lower than expected. However, we were pleased that several highly innovative and very strong papers were submitted. After the conference, some of these authors were invited to submit an extended version of their contribution for consideration in a special issue of a journal.

We thank the PC members and other reviewers for their careful and timely evaluation of the submissions and the fruitful constructive discussions that resulted in the final selection of papers. The Springer LNCS team (notably Anna Kramer and Alfred Hofmann) and Uli Schlachter provided excellent and welcome support in the preparation of this volume. We are also grateful to the invited speakers for their contributions:

- Thomas Henzinger, Institute of Science and Technology (IST) Austria, who delivered the Distinguished Carl Adam Petri Lecture
  "Promises and Challenges of Reactive Modeling: A Personal Perspective"
- Josep Carmona, Universitat Politècnica de Catalunya, Barcelona, Spain
  "The Alignment of Formal, Structured and Unstructured Process Descriptions"
- Christos Cassandras, Boston University, USA
  "Complexity Made Simple (at a Small Price)"
- Irina Lomazova, National Research University Higher School of Economics, Moscow, Russia
  "Resource Equivalences in Petri Nets"

Alongside ACSD 2017, the following workshops were colocated: the Workshop on Petri Nets and Software Engineering (PNSE 2017), the Workshop on Modeling and Software Engineering in Business and Industry (MoSEBIn 2017), the Workshop on Algorithms and Theories for the Analysis of Event Data (ATAED 2017), the Workshop on Structure Theory of Petri Nets (STRUCTURE 2017), and the Workshop on Healthcare Management and Patient Safety Through Modelling and Simulation. Other colocated events included: the Model Checking Contest, the Petri Net Course, and an Advanced Tutorial on Process Mining (A Tour In Process Mining: From Practice to Algorithmic Challenges).

We hope you will enjoy reading the contributions in this LNCS volume.

June 2017

Wil van der Aalst
Eike Best

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Distinguished Carl Adam Petri Lecture

Promises and Challenges of Reactive Modeling: A Personal Perspective

Thomas A. Henzinger

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Abstract. Reactive models offer a fundamental paradigm for predicting the behavior of highly concurrent event-based systems, which includes all systems with significant software components. While much historical emphasis has been put on the analysis and comparison of different models for concurrency, several additional capabilities of reactive models have come into focus more recently: the heterogeneous combination of computational and analytical models, of worst-case and best-effort techniques; interface languages for the decomposition of a system into multiple viewpoints, in addition to temporal, spatial, and hierarchical structuring mechanisms; reasoning about strategic choice, in addition to non-deterministic and probabilistic choice; computing quantitative fitness measures vis-à-vis boolean requirements, in addition to measures of time and resource consumption; design for robustness properties, in addition to correctness and performance properties; theories of approximation in addition to theories of abstraction; methods for system synthesis in addition to model analysis. We review some results and outline some challenges on these topics.

This research is supported in part by the Austrian Science Fund (FWF) under grants S11402-N23 (RiSE/SHiNE) and Z211-N23 (Wittgenstein Award).

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