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Susanna Donatelli · Stefan Haar (Eds.)

Application and Theory of Petri Nets and Concurrency

40th International Conference, PETRI NETS 2019
Aachen, Germany, June 23–28, 2019
Proceedings

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Foreword

Welcome to the proceedings of the 40th International Conference on Application and Theory of Petri Nets and Concurrency. We were very proud to be able to host the 40th instance of the conference in the beautiful city of Aachen. The conference took place in the Tivoli football stadium close to the city center of Aachen. This beautiful venue provided a unique atmosphere with great views and excellent conference facilities. In the same week, the First International Conference on Process Mining (ICPM 2019) and the 19th International Conference on Application of Concurrency to System Design (ACSD 2019) as well as several workshops and tutorials took place at the same location.

I would like to thank the members of the Process and Data Science (PADS) group at RWTH Aachen University for helping to organize this event. Thanks to all authors, presenters, reviewers, Program Committee members, and participants. Special thanks go to the program chairs of Petri Nets 2019: Susanna Donatelli and Stefan Haar. The three conferences were supported by Celonis, Deloitte, ProcessGold, SAP, myInvenio, Fluxicon, AcceleraLabs, Minit, PuzzleData, PAFnow, Software AG, StereoLOGIC, BrightCape, Logpickr, Mehrwerk, QPR, KPMG, LanaLabs, Wintec, RWTH, Fraunhofer FIT, Gartner, the Alexander von Humboldt Foundation, the Deutsche Forschungsgemeinschaft, FernUniversität Hagen, and Springer.

A special feature of this year's conference was the special Friday afternoon session "Retrospective and Perspective of Petri Net Research" celebrating 40 years of Petri Net conferences organized by Jörg Desel. This was a wonderful opportunity to reflect on the history of our field and to celebrate the great scientific achievements of our community.

June 2019

Wil van der Aalst

Preface

This volume constitutes the proceedings of the 40th International Conference on Application and Theory of Petri Nets and Concurrency (Petri Nets 2019). 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.

Petri Nets 2019 was colocated with the 19th Application of Concurrency to System Design Conference (ACSD 2019). Both were organized by the Process and Data Science (PADS) group at RWTH Aachen University, Aachen, Germany. The conferences were co-organized with the First International Conference on Process Mining (ICPM 2019). The conference took place in the Tivoli business and event area in Aachen, during June 23–28, 2019.

This year, 41 papers were submitted to Petri Nets 2019 by authors from 19 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. From 33 regular papers and eight tool papers, the PC selected 23 papers for presentation: 20 regular papers and three tool papers. 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, Ingrid Haas and Alfred Hofmann) provided excellent and welcome support in the preparation of this volume.

We are also grateful to the invited speakers for their contributions:

- Luca Cardelli, University of Oxford, who delivered the Distinguished Carl Adam Petri Lecture (CAP) on “Programmable Molecular Networks”
- Dirk Fahland, Eindhoven University of Technology, on “Describing, Discovering, and Understanding Multi-Dimensional Processes”; and
- Philippas Tsigas, Chalmers University of Technology, on “Lock-Free Data Sharing in Concurrent Software Systems”

Alongside *ACSD 2019*, the following workshops were also colocated with the conference:

- Workshop on Petri Nets and Software Engineering (PNSE 2019)
- Workshop on Algorithms and Theories for the Analysis of Event Data (ATAED 2019)

Other colocated events included the Petri Net Course and the tutorials on Model Checking for Petri Nets - from Algorithms to Technology (Karsten Wolf) and on Model-Based Software Engineering for/with Petri Nets (Ekkart Kindler).

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

June 2019

Susanna Donatelli
Stefan Haar

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