

Alessandro Abate · Gilles Geeraerts (Eds.)

Formal Modeling and Analysis of Timed Systems

15th International Conference, FORMATS 2017
Berlin, Germany, September 5–7, 2017
Proceedings

Contents

Invited Talk

- Euler's Method Applied to the Control of Switched Systems 3
Laurent Fribourg

Timed Models

- On the Determinization of Timed Systems 25
Patricia Bouyer, Samy Jaziri, and Nicolas Markey
- On Global Scheduling Independency in Networks of Timed Automata 42
Sergio Feo-Arenis, Milan Vujinović, and Bernd Westphal
- Optimal Reachability in Cost Time Petri Nets. 58
Hanifa Boucheneb, Didier Lime, Baptiste Parquier, Olivier H. Roux, and Charlotte Seidner

Hybrid Systems

- Optimal Control for Multi-mode Systems with Discrete Costs. 77
Mahmoud A.A. Mousa, Sven Schewe, and Dominik Wojtczak
- Augmented Complex Zonotopes for Computing Invariants of Affine Hybrid Systems 97
Arvind Adimoolam and Thao Dang
- Conic Abstractions for Hybrid Systems 116
Sergiy Bogomolov, Mirco Giacobbe, Thomas A. Henzinger, and Hui Kong
- Time-Triggered Conversion of Guards for Reachability Analysis of Hybrid Automata 133
Stanley Bak, Sergiy Bogomolov, and Matthias Althoff

Probabilistic Models

- Symbolic Dependency Graphs for PCTL $_{\leq}$ Model-Checking 153
Anders Mariegaard and Kim Guldstrand Larsen
- Distribution-Based Bisimulation for Labelled Markov Processes 170
Pengfei Yang, David N. Jansen, and Lijun Zhang

Quantitative Logics and Monitoring

On the Quantitative Semantics of Regular Expressions
over Real-Valued Signals 189
Alexey Bakhirkin, Thomas Ferrère, Oded Maler, and Dogan Ulus

Combining the Temporal and Epistemic Dimensions for MTL Monitoring . . . 207
Eugene Asarin, Oded Maler, Dejan Nickovic, and Dogan Ulus

Efficient Online Timed Pattern Matching by Automata-Based Skipping 224
Masaki Waga, Ichiro Hasuo, and Kohei Suenaga

Reachability Analysis

Let’s Be Lazy, We Have Time: Or, Lazy Reachability Analysis
for Timed Automata 247
Loïc Jezequel and Didier Lime

Lazy Reachability Checking for Timed Automata Using Interpolants 264
Tamás Tóth and István Majzik

Safe Over- and Under-Approximation of Reachable Sets for Delay
Differential Equations 281
*Bai Xue, Peter Nazier Mosaad, Martin Fränzle, Mingshuai Chen,
Yangjia Li, and Naijun Zhan*

Testing and Simulation

Simulation Based Computation of Certificates for Safety
of Dynamical Systems 303
Stefan Ratschan

A Symbolic Operational Semantics for TESL: With an Application
to Heterogeneous System Testing 318
*Hai Nguyen Van, Thibaut Balabonski, Frédéric Boulanger,
Chantal Keller, Benoît Valiron, and Burkhart Wolff*

Semi-formal Cycle-Accurate Temporal Execution Traces Reconstruction 335
Rehab Massoud, Jannis Stoppe, Daniel Große, and Rolf Drechsler

Author Index 353