## Contents

### Invited Talks

Formal Methods for Robotics: RoboChart, RoboSim, and More .......................... 3  
   Ana Cavalcanti

Recent Successes with a Meta-Logical Approach to Universal Logical Reasoning (Extended Abstract) ................................. 7  
   Christoph Benzmüller

### Formal Methods Integration and Experience Reports

Abstract State Machines and System Theoretic Process Analysis for Safety-Critical Systems .................................................. 15  
   Farah Al-Shareefi, Alexei Lisitsa, and Clare Dixon

From Scenarios to Timed Automata .............................................................. 33  
   Neda Saeedloei and Feliks Kluźniak

Graph Grammar Extraction from Source Code ............................................. 52  
   Lucio Mauro Duarte and Leila Ribeiro

Applying a Formal Method in Industry: A 25-Year Trajectory ......................... 70  
   Thierry Lecomte, David Deharbe, Etienne Prun, and Erwan Mottin

### Model Checking

Encoding Floating-Point Numbers Using the SMT Theory in ESBMC: 
   An Empirical Evaluation over the SV-COMP Benchmarks .............................. 91  
   Mikhail Y.R. Gadelha, Lucas C. Cordeiro, and Denis A. Nicole

Local Analysis of Determinism for CSP ..................................................... 107  
   Rodrigo Otoni, Ana Cavalcanti, and Augusto Sampaio

OptCE: A Counterexample-Guided Inductive Optimization Solver ......................... 125  
   Higo F. Albuquerque, Rodrigo F. Araújo, Iury V. Bessa, Lucas C. Cordeiro, and Eddie B. de Lima Filho

Formal Analysis of the Information Leakage of the DC-Nets and Crowds Anonymity Protocols ................................................................. 142  
   Arthur Américo, Artur Vaz, Mário S. Alvim, Sérgio V.A. Campos, and Annabelle McIver
Refinement and Verification

A Refinement Relation for Families of Timed Automata ...................................... 161
Guillermina Cledou, Jóse Proença, and Luis S. Barbosa

Rapidly Adjustable Non-intrusive Online Monitoring for Multi-core Systems ..................................................... 179
Normann Decker, Philip Gottschling, Christian Hochberger, Martin Leucker, Torben Scheffel, Malte Schmitz, and Alexander Weiss

Sound Transpilation from Binary to Machine-Independent Code ............................ 197
Roberto Metere, Andreas Lindner, and Roberto Guanciale

Using Linear Logic to Verify Requirement Scenarios in Composite Web Service .................. 215
Kênia Santos de Oliveira and Stéphane Julia

Checking Static Properties Using Conservative SAT Approximations for Reachability ........................................ 233
Pedro Antonino, Thomas Gibson-Robinson, and A.W. Roscoe

Semantics and Languages

UTCP: Compositional Semantics for Shared-Variable Concurrency ............................ 253
Andrew Butterfield

On Kleene Algebras for Weighted Computation ........................................................ 271
Leandro Gomes, Alexandre Madeira, and Luis S. Barbosa

Capturing Stochastic and Real-Time Behavior in Reo Connectors ............................. 287
Yi Li, Xiyue Zhang, Yuanyi Ji, and Meng Sun

Author Index .................................................................................................................. 305
Formal Methods: Foundations and Applications
20th Brazilian Symposium, SBMF 2017, Recife, Brazil,
November 29 — December 1, 2017, Proceedings
Cavalheiro, S.; Fiadeiro, J. (Eds.)
2017, X, 305 p. 101 illus., Softcover
ISBN: 978-3-319-70847-8