

Table of Contents

Lecture Notes

Verification of Embedded Real-time Systems	1
<i>P. Herber, S. Glesner</i>	
MARTE/CCSL for Modeling Cyber-Physical Systems	26
<i>F. Mallet</i>	
An Introduction to Hybrid Automata, Numerical Simulation and Reachability Analysis	50
<i>G. Frehse</i>	
Model Checking and Model-Based Testing in the Railway Domain.....	82
<i>A.E. Haxthausen, J. Peleska</i>	
Modeling Unknown Values in Test and Verification	122
<i>B. Becker, M. Sauer, C. Scholl, R. Wimmer</i>	
Specification of Parametric Monitors – Quantified Event Automata versus Rule Systems	151
<i>K. Havelund, G. Reger</i>	
Advances in Design Automation Techniques for Digital-Microfluidic Biochips	190
<i>M. Ibrahim, Z. Li, K. Chakrabarty</i>	
Intuitive Interaction with Robots – Technical Approaches and Challenges	224
<i>E.A. Kirchner, J. de Gea Fernandez, P. Kampmann, M. Schröder, J.H. Metzger, F. Kirchner</i>	
Physical Safety in Robotics.....	249
<i>S. Haddadin</i>	

Student Short Articles

In-circuit Error Detection with Software-based Error Correction – An Alternative to TMR	272
<i>G. Aydos</i>	
Behavior Driven Development for Tests and Verification	275
<i>M. Diepenbeck</i>	
Semantic Object Recognition Based on Qualitative Probabilistic Spatial Relations.....	278
<i>M. Goldhoorn</i>	

Constraint-based Handling of Component Networks	281
<i>M. Goldhoorn</i>	
Model-Based Testing Against Complex SysML Models	284
<i>C. Hilken</i>	
Integrated Model-based Testing and Model Checking with the Benefits of Equivalence Partition Testing	287
<i>F. Hübner</i>	
An SMT-based Approach to analyze Non-Linear Relations of Parameters for Hybrid Systems	290
<i>X. Li</i>	
Analyzing and Simulating Time Descriptions from UML/MARTE CCSL .	293
<i>J. Peters</i>	
Design and Synthesis of Reversible Circuits using Hardware Description Languages	296
<i>E. Schönborn</i>	
Dynamic Rebound Control and Human Robot Interaction of a Ball Playing Robot	299
<i>D. Schütte</i>	
Development of Consistent Formal Models	302
<i>J. Seiter</i>	
Formal Verification of Robustness	305
<i>N. Thole</i>	
Pose and Posture Estimation using Inertial Sensor Data	308
<i>F. Wenk</i>	
Reconfigurable Hardware-Based Acceleration for Machine Learning and Signal Processing	311
<i>H. Woehrle</i>	
Author Index	315



<http://www.springer.com/978-3-658-09993-0>

Formal Modeling and Verification of Cyber-Physical
Systems

1st International Summer School on Methods and Tools
for the Design of Digital Systems, Bremen, Germany,
September 2015

Drechsler, R.; Kühne, U. (Eds.)

2015, X, 313 p. 106 illus., 5 illus. in color., Softcover

ISBN: 978-3-658-09993-0