# Table of Contents

Automated Real Proving in PVS via MetiTarski ........................................... 194
  William Denman and César Muñoz

Quiescent Consistency: Defining and Verifying Relaxed Linearizability ...................... 200
  John Derrick, Brijesh Dongol, Gerhard Schellhorn, Bogdan Tofan, Oleg Travkin, and Heike Wehrheim

Temporal Precedence Checking for Switched Models and Its Application to a Parallel Landing Protocol ......................................................... 215
  Parasara Sridhar Duggirala, Le Wang, Sayan Mitra, Mahesh Viswanathan, and César Muñoz

Contracts in Practice ....................................................................................... 230
  H.-Christian Estler, Carlo A. Furia, Martin Nordio, Marco Piccioni, and Bertrand Meyer

When Equivalence and Bisimulation Join Forces in Probabilistic Automata ......................... 247
  Yuan Feng and Lijun Zhang

Precise Predictive Analysis for Discovering Communication Deadlocks in MPI Programs ...................... 263
  Vojtěch Forejt, Daniel Kroening, Ganesh Narayanaswamy, and Subodh Sharma

Proof Patterns for Formal Methods ......................................................................... 279
  Leo Freitas and Iain Whiteside

Efficient Runtime Monitoring with Metric Temporal Logic: A Case Study in the Android Operating System ................................................................. 296
  Hendra Gunadi and Alwen Tiu

ISCASMc: A Web-Based Probabilistic Model Checker ................................................. 312
  Ernst Moritz Hahn, Yi Li, Sven Schewe, Andrea Turrini, and Lijun Zhang

Invariants, Well-Founded Statements and Real-Time Program Algebra ....................... 318
  Ian J. Hayes and Larissa Meinicke

Checking Liveness Properties of Presburger Counter Systems Using Reachability Analysis .............................................................................................................. 335
  K. Vasanta Lakshmi, Arvind Acharya, and Raghavan Komondoor

A Symbolic Algorithm for the Analysis of Robust Timed Automata ........................... 351
  Piotr Kordy, Rom Langerak, Sjouke Mauw, and Jan Willem Polderman
Efficient Self-composition for Weakest Precondition Calculi
Christoph Scheben and Peter H. Schmitt

Towards a Formal Analysis of Information Leakage for Signature
Attacks in Preferential Elections
Roland Wen, Annabelle McIver, and Carroll Morgan

Analyzing Clinical Practice Guidelines Using a Decidable Metric
Interval-Based Temporal Logic
Morteza Yousef Sanati, Wendy MacCaull, and
Thomas S.E. Maibaum

A Modular Theory of Object Orientation in Higher-Order UTP
Frank Zeyda, Thiago Santos, Ana Cavalcanti, and Augusto Sampaio

Formalizing and Verifying a Modern Build Language
Maria Christakis, K. Rustan M. Leino, and Wolfram Schulte

The Wireless Fire Alarm System: Ensuring Conformance to Industrial
Standards through Formal Verification
Sergio Feo-Arenis, Bernd Westphal, Daniel Dietsch,
Marco Muñiz, and Ahmad Siyar Andisha

Formally Verifying Graphics FPU: An Intel® Experience
Aarti Gupta, V. Achutha Kirankumar M., and Rajnish Ghughal

MDP-Based Reliability Analysis of an Ambient Assisted
Living System
Yan Liu, Lin Gui, and Yang Liu

Diagnosing Industrial Business Processes: Early Experiences
Suman Roy, A.S.M. Sajeev, and Srinivasa Sripathy

Formal Verification of Lunar Rover Control Software Using UPPAAL
Lijun Shan, Yuying Wang, Ning Fu, Xingshe Zhou, Lei Zhao,
Lijing Wan, Lei Qiao, and Jianxin Chen

Formal Verification of a Descent Guidance Control Program of a Lunar
Lander
Hengjun Zhao, Mengfei Yang, Naijun Zhan, Bin Gu,
Liang Zou, and Yao Chen

Author Index

579
595
611
627
643
658
673
688
703
718
733
749