Table of Contents

Keynote Talks

Program Verification Through Computer Algebra .......................... 1
  Chaochen Zhou

JML’s Rich, Inherited Specifications for Behavioral Subtypes ............ 2
  Gary T. Leavens

Three Perspectives in Formal Engineering ................................. 35
  John McDermid, Andy Galloway

Specification and Verification

A Method for Formalizing, Analyzing, and Verifying Secure User Interfaces ................................................................. 55
  Bernhard Beckert, Gerd Beuster

Applying Timed Interval Calculus to Simulink Diagrams .................. 74
  Chunqing Chen, Jin Song Dong

Reducing Model Checking of the Few to the One ........................ 94
  E. Allen Emerson, Richard J. Trefler, Thomas Wahl

Induction-Guided Falsification .............................................. 114
  Kazuhiro Ogata, Masahiro Nakano, Weiqiang Kong,
  Kokichi Futatsugi

Verifying $\chi$ Models of Industrial Systems with SPIN .................. 132
  Nikola Trčka

Stateful Dynamic Partial-Order Reduction ................................ 149
  Xiaodong Yi, Ji Wang, Xuejun Yang

Internetware and Web-Based Systems

User-Defined Atomicity Constraint: A More Flexible Transaction Model for Reliable Service Composition .............................. 168
  Xiaoning Ding, Jun Wei, Tao Huang
Environment Ontology-Based Capability Specification for Web Service Discovery .......................................................... 185
   Puwei Wang, Zhi Jin, Lin Liu

Scenario-Based Component Behavior Derivation ................................. 206
   Yan Zhang, Jun Hu, Xiaofeng Yu, Tian Zhang,
   Xuandong Li, Guoliang Zheng

Verification of Computation Orchestration Via Timed Automata .................. 226
   Jin Song Dong, Yang Liu, Jun Sun, Xian Zhang

Towards the Semantics for Web Service Choreography Description Language ........ 246
   Jing Li, Jifeng He, Geguang Pu, Huibiao Zhu

Type Checking Choreography Description Language .......................... 264
   Hongli Yang, Xiangpeng Zhao, Zongyan Qiu, Chao Cai,
   Geguang Pu

Concurrent, Communicating, Timing and Probabilistic Systems

Formalising Progress Properties of Non-blocking Programs .................. 284
   Brijesh Dongol

Towards a Fully Generic Theory of Data ......................................... 304
   Douglas A. Creager, Andrew C. Simpson

Verifying Statemate Statecharts Using CSP and FDR ............................ 324
   A.W. Roscoe, Z. Wu

A Reasoning Method for Timed CSP Based on Constraint Solving ................ 342
   Jin Song Dong, Ping Hao, Jun Sun, Xian Zhang

Mapping RT-LOTOS Specifications into Time Petri Nets ..................... 360
   Tarek Sadani, Marc Boyer, Pierre de Saqui-Sannes,
   Jean-Pierre Courtiat

Reasoning Algebraically About Probabilistic Loops ............................ 380
   Larissa Meinicke, Ian J. Hayes
Object and Component Orientation

Formal Verification of the Heap Manager of an Operating System
Using Separation Logic ................................. 400
Nicolas Marti, Reynald Affeldt, Akinori Yonezawa

A Statically Verifiable Programming Model for Concurrent
Object-Oriented Programs .................................. 420
Bart Jacobs, Jan Smans, Frank Piessens,
Wolfram Schulte

Model Checking Dynamic UML Consistency .................. 440
Xiangpeng Zhao, Quan Long, Zongyan Qiu

Testing and Model Checking

Conditions for Avoiding Controllability Problems in Distributed
Testing ...................................................... 460
Jessica Chen, Lihua Duan

Generating Test Cases for Constraint Automata by Genetic
Symbiosis Algorithm ........................................ 478
Samira Tasharofi, Sepand Ansari, Marjan Sirjani

Checking the Conformance of Java Classes Against Algebraic
Specifications ................................................ 494
Isabel Nunes, Antónia Lopes, Vasco Vasconcelos, João Abreu,
Luís S. Reis

Incremental Slicing ........................................ 514
Heike Wehrheim

Assume-Guarantee Software Verification Based on Game
Semantics ..................................................... 529
Aleksandar Dimovski, Ranko Lazić

Optimized Execution of Deterministic Blocks in Java PathFinder .......... 549
Marcelo d’Amorim, Ahmed Sobeih, Darko Marinov

Tools

A Tool for a Formal Pattern Modeling Language .................. 568
Soon-Kyeong Kim, David Carrington
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Open Extensible Tool Environment for Event-B</td>
<td>588</td>
</tr>
<tr>
<td>Jean-Raymond Abrial, Michael Butler, Stefan Hallerstede, Laurent Voisin</td>
<td></td>
</tr>
<tr>
<td>Tool for Translating Simulink Models into Input Language of a Model Checker</td>
<td>606</td>
</tr>
<tr>
<td>Meenakshi B., Abhishek Bhatnagar, Sudeepa Roy</td>
<td></td>
</tr>
<tr>
<td><strong>Fault-Tolerance and Security</strong></td>
<td></td>
</tr>
<tr>
<td>Verifying Abstract Information Flow Properties in Fault Tolerant Security Devices</td>
<td>621</td>
</tr>
<tr>
<td>Tim McComb, Luke Wildman</td>
<td></td>
</tr>
<tr>
<td>A Language for Modeling Network Availability</td>
<td>639</td>
</tr>
<tr>
<td>Luigia Petre, Kaisa Sere, Marina Waldén</td>
<td></td>
</tr>
<tr>
<td>Multi-process Systems Analysis Using Event B: Application to Group Communication Systems</td>
<td>660</td>
</tr>
<tr>
<td>J. Christian Attiogbé</td>
<td></td>
</tr>
<tr>
<td><strong>Specification and Refinement</strong></td>
<td></td>
</tr>
<tr>
<td>Issues in Implementing a Model Checker for Z</td>
<td>678</td>
</tr>
<tr>
<td>John Derrick, Siobhán North, Tony Simons</td>
<td></td>
</tr>
<tr>
<td>Taking Our Own Medicine: Applying the Refinement Calculus to State-Rich Refinement Model Checking</td>
<td>697</td>
</tr>
<tr>
<td>Leo Freitas, Ana Cavalcanti, Jim Woodcock</td>
<td></td>
</tr>
<tr>
<td>Discovering Likely Method Specifications</td>
<td>717</td>
</tr>
<tr>
<td>Nikolai Tillmann, Feng Chen, Wolfram Schulte</td>
<td></td>
</tr>
<tr>
<td>Time Aware Modelling and Analysis of Multiclocked VLSI Systems</td>
<td>737</td>
</tr>
<tr>
<td>Tomi Westerlund, Juha Plosila</td>
<td></td>
</tr>
<tr>
<td>SALT—Structured Assertion Language for Temporal Logic</td>
<td>757</td>
</tr>
<tr>
<td>Andreas Bauer, Martin Leucker, Jonathan Streit</td>
<td></td>
</tr>
<tr>
<td><strong>Author Index</strong></td>
<td>777</td>
</tr>
</tbody>
</table>