2011 Fifth International Conference on Theoretical Aspects of Software Engineering

(TASE 2011)

Xi’an, China
29-31 August 2011
2011 Fifth IEEE International Conference on Theoretical Aspects of Software Engineering

TASE 2011

Table of Contents

Foreword......................................................................................................................................................ix
Programme Committee...............................................................................................................................x
Reviewers....................................................................................................................................................xi

Invited Papers
Making Program Logics Intelligible ...........................................................................................................3
  John C. Reynolds
Automatic Specification-Based Testing: Challenges and Possibilities .......................................................5
  Shaoying Liu

Testing and Specification (Regular Papers)
A Tagging Protocol for Asynchronous Testing ........................................................................................11
  Puneet Bhateja
Inheritance and Modularity in Specification and Verification of OO Programs ........................................19
  Liu Yijing, Hong Ali, and Qiu Zongyan
Formalizing Application Programming Interfaces of the OSEK/VDX Operating System Specification .......27
  Longfei Zhu, Min Zhang, Yanhong Huang, Jianqi Shi, and Huibiao Zhu
Refactoring Object-Oriented Specifications with Inheritance-Based Polymorphism ................................35
  Graeme Smith and Steffen Helke
Algorithms (Regular Papers)

Focus Game for Projection Temporal Logic .................................................................45
  Cong Tian and Zhenhua Duan
An Automatic Reasoning Mechanism for NFR Goal Models .....................................52
  Bo Wei, Zhi Jin, and Didar Zowghi
An Efficient Resolution Based Algorithm for SAT ......................................................60
  Min Zhou, Fei He, and Ming Gu
A Symbolic Algorithm for Shortest EG Witness Generation .....................................68
  Yang Zhao, Xiaoqing Jin, and Gianfranco Ciardo
A Generative Approach to Searching Algorithmic Programs Development ....................76
  Haihe Shi and Jinyun Xue

Modeling and Verification (Regular Papers)

A Categorical Modeling Approach of Aspect-Oriented Systems ..................................85
  Arsène Sabas, Subash Shankar, Virginie Wiels, and Michel Boyer
Model Checking Multirate Hybrid Systems with Restricted Convex Polyhedron ............93
  Haibin Zhang
Behaviour Recognition Using Chronicles ..................................................................100
  Patrice Carle, Christine Choppy, and Romain Kervarc
Approximate Bisimulation for Metric Doubly Labeled Transition System .....................108
  Haiyu Pan, Min Zhang, Yixiang Chen, and Hengyang Wu

Program Verification (Regular Papers)

Java Goes TLA+ ........................................................................................................117
  Hannes Lau and Uwe Nestmann
A Simple Model for Certifying Assembly Programs with First-Class Function
Pointers ......................................................................................................................125
  Wei Wang, Zhong Shao, Xinyu Jiang, and Yu Guo
Towards an Axiomatic Verification System for JavaScript ........................................133
  Shengchao Qin, Aziem Chawdhary, Wei Xiong, Malcolm Munro, Zongyan Qiu,
  and Huibiao Zhu
Modeling and Verifying the Code-Level OSEK/VDX Operating System
with CSP ..................................................................................................................142
  Yanhong Huang, Yongxin Zhao, Longfei Zhu, Qin Li, Huibiao Zhu, and Jianqi Shi
# Web Services (Regular Papers)

An Approach to Handling Failure Recovery in Service Composition and Its Analysis ................................. 153  
*Guisheng Fan, Huiqun Yu, Liqiong Chen, and Chunhua Gu*

Research on Web Service Composition Using Probabilistic Abstraction Refinement ......................................... 161  
*Honghao Gao, Huaikou Miao, and Hongwei Zeng*

Modeling and Prototyping Business Processes in AutoPA ................................................................. 169  
*Ling Yin, Jing Liu, and Zuohua Ding*

Modeling and Verifying for Frameset-Based Web Applications .......................................................... 177  
*Shengbo Chen and Huaikou Miao*

# Web Services (Short Papers)

A Stochastic-Petri-Net-Based Model for Ontology-Based Service Compositions ........................................... 187  
*Yunni Xia, Gang Dai, Fangfang Tang, and Qingsheng Zhu*

Program Slicing Stored XSS Bugs in Web Application .................................................................................. 191  
*Yi Wang, Zhoujun Li, and Tao Guo*

Towards a Probabilistic Calculus for Mobile Ad Hoc Networks .............................................................. 195  
*Si Liu, Yongxin Zhao, Huibiao Zhu, and Qin Li*

Analysis of WS-BPEL Processes in PRISM .................................................................................................. 199  
*Chen Deng, Hongli Yang, Husheng Liao, Meng Sun, and Zongyan Qiu*

# Testing and Specification (Short Papers)

Generating Probabilistic Temporal Logic Formulas from Probabilistic Scenario-Based Specifications ................. 205  
*Wenrui Li, Pengcheng Zhang, Zhijian Wang, and Zhongxue Yang*

Formal Specification of Domain-Specific ECA Policy Models ...................................................................... 209  
*Raphael Romeikat and Bernhard Bauer*

Formal Specification for Real Time Cyber Physical Systems Using Aspect-Oriented Approach ......................... 213  
*Lichen Zhang*

An Approach to Regression Test Selection of Adaptive EFSTM Tests ......................................................... 217  
*Bo Guo, Mahadevan Subramaniam, and Hai-Feng Guo*

Test Case Generation Using PDA ................................................................................................................. 221  
*Puneet Bhateja*

Undesirable Aspect Interactions: A Prevention Policy .................................................................................. 225  
*Arsène Sabas, Subash Shankar, Virginie Wiels, and Michel Boyer*
## Modeling and Verification (Short Papers)

<table>
<thead>
<tr>
<th>Paper Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Checking for Protocols Using Verds</td>
<td>231</td>
</tr>
<tr>
<td>Ming Ma</td>
<td></td>
</tr>
<tr>
<td>Model Checking: A Coalgebraic Approach</td>
<td>235</td>
</tr>
<tr>
<td>Jianhua Gao and Ying Jiang</td>
<td></td>
</tr>
<tr>
<td>A Method to Generate Verification Condition Generator</td>
<td>239</td>
</tr>
<tr>
<td>Zhaopeng Li, Yang Zhang, and Yiyun Chen</td>
<td></td>
</tr>
<tr>
<td>A Game Theoretic Model and Tree Analysis Method for Fair Exchange Protocols</td>
<td>243</td>
</tr>
<tr>
<td>Guoqiang Li, Yonggen Gu, Xiuting Tao, and Jie Tao</td>
<td></td>
</tr>
<tr>
<td>Modeling and Analyzing the (mu)TESLA Protocol Using CSP</td>
<td>247</td>
</tr>
<tr>
<td>Mengying Wang, Huibiao Zhu, Yongxin Zhao, and Si Liu</td>
<td></td>
</tr>
<tr>
<td>Proving Computational Geometry Algorithms in TLA+2</td>
<td>251</td>
</tr>
<tr>
<td>Hui Kong, Hehua Zhang, Xiaoyu Song, Ming Gu, and Jiaguang Sun</td>
<td></td>
</tr>
</tbody>
</table>

## Author Index

<table>
<thead>
<tr>
<th>Author Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author Index</td>
<td>255</td>
</tr>
</tbody>
</table>