

2009 IEEE/ACM International Conference on Automated Software Engineering

(ASE 2009)

**Auckland, New Zealand
16-20 November 2009**



**IEEE Catalog Number: CFP09075-PRT
ISBN: 978-1-4244-5259-0**

2009 IEEE/ACM International Conference on Automated Software Engineering

ASE 2009

Table of Contents

Foreword	xi
ASE 2009 Organization	xii
Program Committee	xiii
Additional Reviewers	xvi
Sponsors	xvii

Keynote Speakers

A Petri Net Based Debugging Environment for QVT Relations	3
<i>Manuel Wimmer, Gerti Kappel, Johannes Schoenboeck, Angelika Kusel, Werner Retschitzegger, and Wieland Schwinger</i>	
Validating Automotive Control Software Using Instrumentation-Based Verification	15
<i>Arnab Ray, Iris Morschhaeuser, Chris Ackermann, Rance Cleaveland, Charles Shelton, and Chris Martin</i>	

Requirements

Semi-automated Test Planning for e-ID Systems by Using Requirements Clustering	29
<i>Baris Güldali, Holger Funke, Michael Jahnich, Stefan Sauer, and Gregor Engels</i>	
A Quantum Algorithm for Software Engineering Search	40
<i>Robert J. Hall</i>	
Understanding the Value of Software Engineering Technologies	52
<i>Phillip Green II, Tim Menzies, Steven Williams, and Oussama El-Rawas</i>	

Defect Detection- 1

Type Inference for Soft-Error Fault-Tolerance Prediction	65
<i>Gustav Munkby and Sibylle Schupp</i>	
Evaluating the Accuracy of Fault Localization Techniques	76
<i>Shaimaa Ali, James H. Andrews, Tamilselvi Dhandapani, and Wantao Wang</i>	
Spectrum-Based Multiple Fault Localization	88
<i>Rui Abreu, Peter Zoeteweij, and Arjan J.C. van Gemund</i>	

Maintenance and Evolution- 1

Towards a Comprehensive Test Suite for Detectors of Design Patterns	103
<i>Patrycja Wegrzynowicz and Krzysztof Stencel</i>	
Improving API Usage through Automatic Detection of Redundant Code	111
<i>David Kawrykow and Martin P. Robillard</i>	
Clone-Aware Configuration Management	123
<i>Tung Thanh Nguyen, Hoan Anh Nguyen, Nam H. Pham, Jafar M. Al-Kofahi, and Tien N. Nguyen</i>	

Verification- 1

SMT-Based Bounded Model Checking for Embedded ANSI-C Software	137
<i>Lucas Cordeiro, Bernd Fischer, and Joao Marques-Silva</i>	
Static Validation of C Preprocessor Macros	149
<i>Andreas Saebjoernsen, Lingxiao Jiang, Daniel Quinlan, and Zhendong Su</i>	
Looper: Lightweight Detection of Infinite Loops at Runtime	161
<i>Jacob Burnim, Nicholas Jalbert, Christos Stergiou, and Koushik Sen</i>	

Software Architecture and Design

Improving the Efficiency of Dependency Analysis in Logical Decision Models	173
<i>Sunny Wong and Yuanfang Cai</i>	
Explicit Concern-Driven Development with ArchEvol	185
<i>Eugen C. Nistor and André van der Hoek</i>	
Design Rule Hierarchies and Parallelism in Software Development Tasks	197
<i>Sunny Wong, Yuanfang Cai, Giuseppe Valetto, Georgi Simeonov, and Kanwarpreet Sethi</i>	

Testing

Automated Test Order Generation for Software Component Integration Testing	211
<i>Rattikorn Hewett and Phongphun Kijsanayothin</i>	
A Divergence-Oriented Approach to Adaptive Random Testing of Java Programs	221
<i>Yu Lin, Xucheng Tang, Yuting Chen, and Jianjun Zhao</i>	
Adaptive Random Test Case Prioritization	233
<i>Bo Jiang, Zhenyu Zhang, W. K. Chan, and T. H. Tse</i>	

Variability

Model-Based Customization and Deployment of Eclipse-Based Tools: Industrial Experiences	247
<i>Paul Grünbacher, Rick Rabiser, Deepak Dhungana, and Martin Lehofer</i>	
Self-Repair through Reconfiguration: A Requirements Engineering Approach	257
<i>Yiqiao Wang and John Mylopoulos</i>	
Model Checking of Domain Artifacts in Product Line Engineering	269
<i>Kim Lauenroth, Klaus Pohl, and Simon Toehning</i>	

Defect Detection- 2

Alattin: Mining Alternative Patterns for Detecting Neglected Conditions	283
<i>Suresh Thummalapenta and Tao Xie</i>	
Mining Temporal Specifications from Object Usage	295
<i>Andrzej Wasylkowski and Andreas Zeller</i>	
Inferring Resource Specifications from Natural Language API Documentation	307
<i>Hao Zhong, Lu Zhang, Tao Xie, and Hong Mei</i>	

Human Computer Interaction and Computer Supported Cooperative Work

Specification and Control of Interface Responses to User Input in Rich Internet Applications	321
<i>Matthias Book, Tobias Brückmann, Volker Gruhn, and Malte Hülder</i>	
Code Completion from Abbreviated Input	332
<i>Sangmok Han, David R. Wallace, and Robert C. Miller</i>	
Task-First or Context-First? Tool Integration Revisited	344
<i>Walid Maalej</i>	

Traceability and Monitoring

Mining Hierarchical Scenario-Based Specifications	359
<i>David Lo and Shahar Maoz</i>	
Automatic Generation of Object Usage Specifications from Large Method Traces	371
<i>Michael Pradel and Thomas R. Gross</i>	
Efficient Formalism-Independent Monitoring of Parametric Properties	383
<i>Feng Chen, Patrick O'Neil Meredith, Dongyun Jin, and Grigore Rosu</i>	

Maintenance and Evolution- 2

Automatically Recommending Triage Decisions for Pragmatic Reuse Tasks	397
<i>Reid Holmes, Tristan Ratchford, Martin P. Robillard, and Robert J. Walker</i>	
Mining Health Models for Performance Monitoring of Services	409
<i>Mithun Acharya and Vamshidhar Kommineni</i>	
Inferring Method Effect Summaries for Nested Heap Regions	421
<i>Mohsen Vakilian, Danny Dig, Robert Bocchino, Jeffrey Overbey, Vikram Adve, and Ralph Johnson</i>	
ReAssert: Suggesting Repairs for Broken Unit Tests	433
<i>Brett Daniel, Vilas Jagannath, Danny Dig, and Darko Marinov</i>	

Verification- 2

Cache-Based Model Checking of Networked Applications: From Linear to Branching Time	447
<i>Cyrille Artho, Watcharin Leungwattanakit, Masami Hagiya, Yoshinori Tanabe, and Mitsuharu Yamamoto</i>	
State-Space Coverage Estimation	459
<i>Ali Taleghani and Joanne M. Atlee</i>	

A Framework for State-Space Exploration of Java-Based Actor Programs	468
<i>Steven Lauterburg, Mirco Dotta, Darko Marinov, and Gul Agha</i>	
Symbolic Deadlock Analysis in Concurrent Libraries and Their Clients	480
<i>Jyotirmoy Deshmukh, E. Allen Emerson, and Sriram Sankaranarayanan</i>	

Short Papers

Precise Data Race Detection in a Relaxed Memory Model Using Heuristic-Based Model Checking	495
<i>KyungHee Kim, Tuba Yavuz-Kahveci, and Beverly A. Sanders</i>	
A Formal Syntax for Probabilistic Timed Property Sequence Charts	500
<i>Pengcheng Zhang, Lars Grunske, Antony Tang, and Bixin Li</i>	
Let the Ants Deploy Your Software - An ACO Based Deployment Optimisation Strategy	505
<i>Aldeida Aleti, Lars Grunske, Indika Meedeniya, and Irene Moser</i>	
Using String Distances for Test Case Prioritisation	510
<i>Yves Ledru, Alexandre Petrenko, and Sergiy Boroday</i>	
Reggae: Automated Test Generation for Programs Using Complex Regular Expressions	515
<i>Nuo Li, Tao Xie, Nikolai Tillmann, Jonathan de Halleux, and Wolfram Schulte</i>	
A Methodology and Framework to Simplify Usability Analysis of Mobile Applications	520
<i>Florence Balagtas-Fernandez and Heinrich Hussmann</i>	
An Open Source-Based Approach to Software Development Infrastructures	525
<i>Yuhoon Ki and Meongchul Song</i>	
EA-Analyzer: Automating Conflict Detection in Aspect-Oriented Requirements	530
<i>Alberto Sardinha, Ruzanna Chitchyan, Nathan Weston, Phil Greenwood, and Awais Rashid</i>	
An Automated Passive Testing Approach for the IMS PoC Service	535
<i>Felipe Lalanne, Stephane Maag, Edgardo Montes de Oca, Ana Cavalli, Wissam Mallouli, and Arnaud Gonguet</i>	
Adding Examples into Java Documents	540
<i>Jinhan Kim, Sanghoon Lee, Seung-won Hwang, and Sunghun Kim</i>	
Enhanced Automation for Managing Model and Metamodel Inconsistency	545
<i>Louis M. Rose, Dimitrios S. Kolovos, Richard F. Paige, and Fiona A.C. Polack</i>	
Generating Fixes from Object Behavior Anomalies	550
<i>Valentin Dallmeier, Andreas Zeller, and Bertrand Meyer</i>	
Service Substitution Revisited	555
<i>Dionysis Athanasopoulos, Apostolos Zarras, and Valerie Issarny</i>	
A Verification-Driven Approach to Traceability and Documentation for Auto-Generated Mathematical Software	560
<i>Ewen Denney and Bernd Fischer</i>	
Towards Augmenting Requirements Models with Preferences	565
<i>Sotirios Liaskos, Sheila A. McIlraith, and John Mylopoulos</i>	

Automated Comprehension Tasks in Software Exploration	570
<i>Sandro Boccuzzo and Harald C. Gall</i>	
Pointcut Rejuvenation: Recovering Pointcut Expressions in Evolving Aspect-Oriented Software	575
<i>Raffi Khatchadourian, Phil Greenwood, Awais Rashid, and Guoqing Xu</i>	
Applications of Simulation and AI Search: Assessing the Relative Merits of Agile vs Traditional Software Development	580
<i>Bryan Lemon, Aaron Riesbeck, Tim Menzies, Justin Price, Joseph D'Alessandro, Rikard Carlsson, Tomi Prifiti, Fayola Peters, Huihua Lu, and Dan Port</i>	
Automating the Implementation of Analysis Concerns in Workflow Applications	585
<i>Oscar González, Rubby Casallas, and Dirk Deridder</i>	
Static Typing for Ruby on Rails	590
<i>Jong-hoon An, Avik Chaudhuri, and Jeffrey S. Foster</i>	
Towards Automating Class-Splitting Using Betweenness Clustering	595
<i>Keith Cassell, Peter Andrae, Lindsay Groves, and James Noble</i>	
Reducing Features to Improve Bug Prediction	600
<i>Shivkumar Shivaji, E. James Whitehead Jr., Ram Akella, and Sunghun Kim</i>	
Generating Vulnerability Signatures for String Manipulating Programs Using Automata-Based Forward and Backward Symbolic Analyses	605
<i>Fang Yu, Muath Alkhalaf, and Tefvik Bultan</i>	
Weaving Context Sensitivity into Test Suite Construction	610
<i>Huai Wang and W.K. Chan</i>	
Optimizing a Structural Constraint Solver for Efficient Software Checking	615
<i>Junaid Haroon Siddiqui, Darko Marinov, and Sarfraz Khurshid</i>	
A Case for Automated Debugging Using Data Structure Repair	620
<i>Muhammad Zubair Malik, Khalid Ghori, Bassem Elkarablieh, and Sarfraz Khurshid</i>	
Generation of Simulation Views for Domain Specific Modeling Languages Based on the Eclipse Modeling Framework	625
<i>Enrico Biermann, Karsten Ehrig, Claudia Ermel, and Jonas Hurrelmann</i>	
Using Spectrum-Based Fault Localization for Test Case Grouping	630
<i>Martin Weiglhofer, Gordon Fraser, and Franz Wotawa</i>	
Cluster-Based I/O-Efficient LTL Model Checking.....	635
<i>Jiri Barnat, Lubos Brim, and Pavel Simecek</i>	
A Linear Programming Approach for Automated Localization of Multiple Faults	640
<i>Brian C. Dean, William B. Pressly, Brian A. Malloy, and Adam A. Whitley</i>	
Lost in Translation: Forgetful Semantic Anchoring	645
<i>Daniel Balasubramanian and Ethan K. Jackson</i>	
An IDE-based, Integrated Solution to Schema Evolution of Object-Oriented Software	650
<i>Marco Piccioni, Manuel Orioly, Bertrand Meyer, and Teseo Schneider</i>	

Tool Demonstration Papers

KaitoroBase: Visual Exploration of Software Architecture Documents	657
<i>Moon Ting Su, Christian Hirsch, and John Hosking</i>	
phpModeler - A Web Model Extractor	660
<i>Josip Maras, Maja Štula, and Ivica Crnković</i>	
Zoltar: A Toolset for Automatic Fault Localization	662
<i>Tom Janssen, Rui Abreu, and Arjan J.C. van Gemund</i>	
Supporting Requirements Validation: The EuRailCheck Tool	665
<i>Roberto Cavada, Alessandro Cimatti, Alessandro Mariotti, Cristian Mattarei, Andrea Micheli, Sergio Mover, Marco Pensallorto, Marco Roveri, Angelo Susi, and Stefano Tonetta</i>	
Loopfrog: A Static Analyzer for ANSI-C Programs	668
<i>Daniel Kroening, Natasha Sharygina, Stefano Tonetta, Aliaksei Tsitovich, and Christoph M. Wintersteiger</i>	
A Tool Suite for the Generation and Validation of Configurations for Software Availability	671
<i>Abdelouahed Gherbi, Ali Kanso, Ferhat Khendek, Abdelwahab Hamou-Lhadj, and Maria Toeroe</i>	
A Tool for Attributed Goal-Oriented Requirements Analysis	674
<i>Motoshi Saeki, Shinpei Hayashi, and Haruhiko Kaiya</i>	
Jtop: Managing JUnit Test Cases in Absence of Coverage Information	677
<i>Lingming Zhang, Ji Zhou, Dan Hao, Lu Zhang, and Hong Mei</i>	
An Automated Tool for Generating UML Models from Natural Language Requirements	680
<i>Deva Kumar Deeptimahanti and Muhammad Ali Babar</i>	
AOWP: Web-Specific AOP Framework for PHP	683
<i>Keiji Hokamura, Ryoto Naruse, Masaru Shiozuka, Naoyasu Ubayashi, Shin Nakajima, and Akihito Iwai</i>	

Doctoral Symposium Papers

A Modelling Language for Interactive Web Applications	689
<i>Jevon M. Wright</i>	
Automated Software Tool Support for Checking the Inconsistency of Requirements	693
<i>Massila Kamalrudin</i>	
A Holistic Approach to Mobile Service Provisioning	698
<i>Andrew John Dennis Meads</i>	
Secure and Usable Requirements Engineering	703
<i>Jose Romero-Mariona</i>	
Goal-Based Testing of Semantic Web Services	707
<i>Muhammad Shaban Jokhio</i>	
Migration from Procedural Programming to Aspect Oriented Paradigm	712
<i>Dipankar Majumdar</i>	

Improving Component Dependency Resolution with Soft Constraints, Validation and Verification	716
<i>Graham D. Jenson</i>	

Author Index