

Proceedings

18th IEEE International Symposium on Software Reliability Engineering

ISSRE 2007

Trollhättan, Sweden

5–9 November 2007

Sponsored by
IEEE Computer Society
IEEE Computer Society Technical Council on Software Engineering (TCSE)
IEEE Reliability Society

With support from
Cisco Systems, Inc.
Town of Trollhättan
University West
Google
Saab AB



Los Alamitos, California
Washington • **Tokyo**



Table of Contents

The 18th IEEE International Symposium on Software Reliability

Greetings from the General and Program Chairs	viii
Organizing Committee	ix
Program Committee	xi
Reviewers	xii
Secondary Reviewers	xiv

Session 1: Reliability of Software Systems

Sensitivity of Website Reliability to Usage Profile Changes	3
<i>Kim Weyns and Martin Höst</i>	
Measuring Software Reliability in Practice: An Industry Case Study	9
<i>Saida Benlarbi and David Stortz</i>	
Software Reliability Modeling with Test Coverage: Experimentation and Measurement with a Fault-Tolerant Software Project.....	17
<i>Xia Cai and Michael R. Lyu</i>	

Session 2: Dependable Software Systems

Coordinated Atomic Actions for Dependable Distributed Systems: The Current State in Concepts, Semantics and Verification Means	29
<i>Barbara Gallina, Nicolas Guelfi, and Alexander Romanovsky</i>	
Towards Self-Protecting Enterprise Applications	39
<i>Davide Lorenzoli, Leonardo Mariani and, Mauro Pezzè</i>	
Reliability Modeling of a 1-Out-of-2 System: Research with Diverse Off-the-Shelf SQL Database Servers.....	49
<i>Peter Bishop, Ilir Gashi, Bev Littlewood, and David Wright</i>	

Session 3: Verification & Validation

Corroborating User Assessments of Software Behavior to Facilitate Operational Testing	61
<i>Vinay Augustine and Andy Podgurski</i>	
Requirement Error Abstraction and Classification: A Control Group Replicated Study.....	71
<i>Gursimran S. Walia, Jeffrey C. Carver, and Thomas Philip</i>	
Prioritization of Regression Tests Using Singular Value Decomposition with Empirical Change Records	81
<i>Mark Sherriff, Mike Lake, and Laurie Williams</i>	

Session 4: Security Testing and Analysis

Testing Security Policies: Going Beyond Functional Testing	93
<i>Yves Le Traon, Tejeddine Mouelhi, and Benoit Baudry</i>	
Integrated Software Vulnerability and Security Functionality Assessment.....	103
<i>Xiangrong Wang, Hang Shi, Tze-Yau William Huang, and Frank C. Lin</i>	
A Comparison between Internal and External Malicious Traffic	109
<i>Michel Cukier and Susmit Panjwani</i>	

Session 5: Test Automation

Automated Oracle Comparators for Testing Web Applications	117
<i>Sara Sprenkle, Lori Pollock, Holly Esquivel, Barbara Hazelwood, and Stacey Ecott</i>	
On the Impact of Injection Triggers for OS Robustness Evaluation	127
<i>Andréas Johansson, Neeraj Suri, and Brendan Murphy</i>	
Using Machine Learning to Support Debugging with Tarantula.....	137
<i>Lionel C. Briand, Yvan Labiche, and Xuetao Liu</i>	

Session 6: Software Security

Statistical Inference of Computer Virus Propagation Using Non-Homogeneous Poisson Processes	149
<i>Hiroyuki Okamura, Kazuya Tateishi, and Tadashi Dohi</i>	
Applying Software Reliability Models on Security Incidents	159
<i>Edward Condon, Michel Cukier, and Tao He</i>	

Session 7: Testing Techniques

Generating Trace-Sets for Model-Based Testing	171
<i>Birgitta Lindström, Paul Pettersson, and Jeff A. Offutt</i>	
Improving Constraint-Based Testing with Dynamic Linear Relaxations-MISSING	181
<i>Tristan Denmat, Arnaud Gotlieb and Mireille Ducasse</i>	
Intra-Class Testing of Abstract Class Features.....	191
<i>Peter J. Clarke, Djuradj Babich, Tariq M. King, and James F. Power</i>	

Session 8: Metrics and Measurements

Correlations between Internal Software Metrics and Software Dependability in a Large Population of Small C/C++ Programs	203
<i>Meine J.P. van der Meulen and Miguel A. Revilla</i>	
Using In-Process Testing Metrics to Estimate Post-Release Field Quality	209
<i>Nachiappan Nagappan, Laurie Williams, Mladen Vouk, and Jason Osborne</i>	
Data Mining Techniques for Building Fault-proneness Models in Telecom Java Software	215
<i>Erik Arisholm, Lionel C. Briand, and Magnus Fuglerud</i>	

Session 9: Software Quality Prediction

Predicting Subsystem Defects Using Dependency Graph Complexities	227
<i>Thomas Zimmermann and Nachiappan Nagappan</i>	
Fault Prediction Using Early Lifecycle Data	237
<i>Yue Jiang, Bojan Cukic, and Tim Menzies</i>	
Non-parametric Predictive Inference of Preventive Rejuvenation Schedule in Operational Software Systems	247
<i>Koichiro Rinsaka and Tadashi Dohi</i>	
Author Index.....	257