

VOLUME 23 ■ NUMBER 2

MARCH 1998

SOFTWARE ENGINEERING NOTES



An Informal Newsletter Published by the Association for Computing Machinery
SPECIAL INTEREST GROUP ON SOFTWARE ENGINEERING

ISSTA 98

Proceedings of the

ACM SIGSOFT

International Symposium on Software Testing and Analysis

Clearwater Beach, Florida, USA

March 2-5, 1998



Edited by
Michal Young

1998 International Symposium on Software Testing and Analysis

March 2–4, 1998
Clearwater Beach, Florida

Committee Members	iii
Message from the Program Chair	iv
Table of Contents	v

Keynote address: Why I No Longer Believe in the Tooth Fairy

Michael P. DeWalt, National Resource Specialist—Aircraft Software, Federal Aviation Administration

Session 1: Static Analysis

Constructing Compact Models of Concurrent Java Programs <i>James C. Corbett, University of Hawaii</i>	1
Computation of Interprocedural Control Dependencies <i>Mary Jean Harrold, Gregg Rothermel, Saurabh Sinha, Ohio State University and Oregon State University</i>	11
Comparing Flow and Context Sensitivity on the Modification-side-effects Problem <i>Philip A. Stocks, Barbara G. Ryder, William A. Landi, and Sean Zhang, Rutgers University</i>	21

Session 2: Evaluation of Testing

An Experiment in Estimating Reliability Growth Under Both Representative and Directed Testing <i>Brian Mitchell and Steven J. Zeil, Old Dominion University</i>	32
On Random and Partition Testing <i>Simeon Ntafos, University of Texas at Dallas</i>	42

Panel: Most Influential Papers from the ISSTA Research Community

Chair: Debra Richardson, U. California, Irvine

Panelists:

Richard Hamlet, Portland State University

Richard Kemmerer, University of California at Santa Barbara

Edward F. Miller, Software Research, Inc.

Invited presentation: Shipping the Right Software at the Right Time

Roger Sherman, Former Director of Testing for Product Development, Microsoft Corporation

Session 3: Test Data Generation

Automatic Test Data Generation Using Constraint Solving Techniques <i>Arnaud Gotlieb, Bernard Botella, and Michel Rueher, Dassault Electronique</i>	53
An Applicable Test Data Generation Algorithm for Domain Errors <i>Istvan Forgacs and Akos Hajnal, Hungarian Academy of Sciences</i>	63
Automated Program Flaw Finding Using Simulated Annealing <i>Nigel J. Tracey, John Clark, and Keith Mander, University of York</i>	73

Session 4: Test Automation

A Visual Test Development Environment for GUI Systems <i>Thomas Ostrand, Aaron Anodide, Herbert Foster, and Tarak Goradia, Siemens Corporate Research</i>	82
Automatic Generation of Tests for Source-to-Source Translators <i>Mark Molloy, Kristy Andrews, James Herren, David Cutler, and Paul Del Vigna, Tandem Computers</i>	93

Session 5: Model Checking

Improving Efficiency of Symbolic Model Checking for State-Based System Requirements <i>William Chan, Richard J. Anderson, Paul Beame, and David Notkin, University of Washington</i>	102
Verifying Systems With Integer Constraints and Boolean Predicates: A Composite Approach <i>Tevfik Bultan, Richard Gerber, and Christopher League, University of Maryland</i>	113
Model Checking Without a Model: An Analysis of the Heart-Beat Monitor of a Telephone Switch Using VeriSoft <i>Patrice Godefroid, Robert S. Hanmer, and Lalita Jategaonkar Jagadeesan, Lucent Technologies</i>	124

Session 6: Structural Testing

On the Limit of Control Flow Analysis for Regression Test Selection <i>Thomas Ball, Bell Laboratories</i>	134
Automated Regression Test Generation <i>Bogdan Korel and Ali M. Al-Yami, Illinois Institute of Technology</i>	143
All-du-path Coverage for Parallel Programs <i>Cheer-Sun Yang, Amie Souter, and Lori Pollock, University of Delaware</i>	153

Joint ISSTA/FMSP Panel Discussion

If you could spend \$1,000,000 extra this year on improving software quality, how would you allocate it?

Author Index	163
--------------------	-----