

2013 35th International Conference on Software Engineering

(ICSE 2013)

**San Francisco, California, USA
18-26 May 2013**

Pages 1-791



**IEEE Catalog Number: CFP13018-POD
ISBN: 978-1-4673-3075-6**

Contents

Preface

| | |
|-----------------------------------|------|
| Message from the Chairs | v |
| Committees | xii |
| Sponsors | xvii |

Technical Research

Composition

| | |
|--|----|
| Automatic Synthesis of Modular Connectors via Composition of Protocol Mediation Patterns Paola Inverardi and Massimo Tivoli — <i>University of L'Aquila, Italy</i> | 3 |
| Robust Reconfigurations of Component Assemblies Fabienne Boyer, Olivier Gruber, and Damien Pous — <i>Université Joseph Fourier, France; CNRS, France</i> | 13 |
| Drag-and-Drop Refactoring: Intuitive and Efficient Program Transformation Yun Young Lee, Nicholas Chen, and Ralph E. Johnson — <i>University of Illinois at Urbana-Champaign, USA</i> | 23 |

Adaptation

| | |
|--|----|
| Managing Non-functional Uncertainty via Model-Driven Adaptivity Carlo Ghezzi, Leandro Sales Pinto, Paola Spoletini, and Giordano Tamburrelli — <i>Politecnico di Milano, Italy; Università dell'Insubria, Italy</i> | 33 |
| GuideArch: Guiding the Exploration of Architectural Solution Space under Uncertainty Naeem Esfahani, Sam Malek, and Kaveh Razavi — <i>George Mason University, USA</i> | 43 |
| Coupling Software Architecture and Human Architecture for Collaboration-Aware System Adaptation Christoph Dorn and Richard N. Taylor — <i>TU Vienna, Austria; UC Irvine, USA</i> | 53 |
| Learning Revised Models for Planning in Adaptive Systems Daniel Sykes, Domenico Corapi, Jeff Magee, Jeff Kramer, Alessandra Russo, and Katsumi Inoue — <i>Imperial College London, UK; National Institute of Informatics, Japan</i> | 63 |

Apps

| | |
|---|----|
| RERAN: Timing- and Touch-Sensitive Record and Replay for Android Lorenzo Gomez, Iulian Neamtiu, Tanzirul Azim, and Todd Millstein — <i>UC Los Angeles, USA; UC Riverside, USA</i> | 72 |
| Inferring Likely Mappings between APIs Amruta Gokhale, Vinod Ganapathy, and Yogesh Padmanaban — <i>Rutgers University, USA</i> | 82 |
| Estimating Mobile Application Energy Consumption using Program Analysis Shuai Hao, Ding Li, William G. J. Halfond, and Ramesh Govindan — <i>University of Southern California, USA</i> | 92 |

Testing

| | |
|---|-----|
| Observable Modified Condition/Decision Coverage Michael Whalen, Gregory Gay, Dongjiang You, Mats P. E. Heimdahl, and Matt Staats — <i>University of Minnesota, USA; KAIST, South Korea</i> | 102 |
|---|-----|

| | |
|--|-----|
| Creating a Shared Understanding of Testing Culture on a Social Coding Site Raphael Pham, Leif Singer, Olga Liskin, Fernando Figueira Filho, and Kurt Schneider — <i>Leibniz Universität Hannover, Germany; UFRN, Brazil</i> | 112 |
| Billions and Billions of Constraints: Whitebox Fuzz Testing in Production Ella Bounimova, Patrice Godefroid, and David Molnar — <i>Microsoft Research, USA</i> | 122 |
| Test-Case Generation | |
| Feedback-Directed Unit Test Generation for C/C++ using Concolic Execution Pranav Garg, Franjo Ivancic, Gogul Balakrishnan, Naoto Maeda, and Aarti Gupta — <i>University of Illinois at Urbana-Champaign, USA; NEC Labs, USA; NEC, Japan</i> | 132 |
| A Learning-Based Method for Combining Testing Techniques Domenico Cotroneo, Roberto Pietrantuono, and Stefano Russo — <i>Università di Napoli Federico II, Italy; Lab CINI-ITEM Carlo Savy, Italy</i> | 142 |
| Human Performance Regression Testing Amanda Swearngin, Myra B. Cohen, Bonnie E. John, and Rachel K. E. Bellamy — <i>University of Nebraska-Lincoln, USA; IBM Research, USA</i> | 152 |
| Guided Test Generation for Web Applications Suresh Thummalapenta, K. Vasanta Lakshmi, Saurabh Sinha, Nishant Sinha, and Satish Chandra — <i>IBM Research, India; Indian Institute of Science, India; IBM Research, USA</i> | 162 |
| Test-Case Selection | |
| Comparing Multi-point Stride Coverage and Dataflow Coverage Mohammad Mahdi Hassan and James H. Andrews — <i>University of Western Ontario, Canada</i> | 172 |
| Interaction-Based Test-Suite Minimization Dale Blue, Itai Segall, Rachel Tzoref-Brill, and Aviad Zlotnick — <i>IBM, USA; IBM Research, Israel</i> | 182 |
| Bridging the Gap between the Total and Additional Test-Case Prioritization Strategies Lingming Zhang, Dan Hao, Lu Zhang, Gregg Rothermel, and Hong Mei — <i>Peking University, China; University of Texas at Austin, USA; University of Nebraska-Lincoln, USA</i> | 192 |
| Formal Analysis | |
| Detecting Spurious Counterexamples Efficiently in Abstract Model Checking Cong Tian and Zhenhua Duan — <i>Xidian University, China</i> | 202 |
| Segmented Symbolic Analysis Wei Le — <i>Rochester Institute of Technology, USA</i> | 212 |
| Explicating Symbolic Execution (xSymExe): An Evidence-Based Verification Framework John Hatcliff, Robby, Patrice Chalin, and Jason Belt — <i>Kansas State University, USA</i> | 222 |
| Formal Specification | |
| Aluminum: Principled Scenario Exploration through Minimality Tim Nelson, Salman Saghaifi, Daniel J. Dougherty, Kathi Fisler, and Shriram Krishnamurthi — <i>Worcester Polytechnic Institute, USA; Brown University, USA</i> | 232 |
| Counter Play-Out: Executing Unrealizable Scenario-Based Specifications Shahar Maoz and Yaniv Sa'ar — <i>Tel Aviv University, Israel; Weizmann Institute of Science, Israel</i> | 242 |
| Unifying FSM-Inference Algorithms through Declarative Specification Ivan Beschastnikh, Yuriy Brun, Jenny Abrahamson, Michael D. Ernst, and Arvind Krishnamurthy — <i>University of Washington, USA; University of Massachusetts, USA</i> | 252 |
| What Good Are Strong Specifications? Nadia Polikarpova, Carlo A. Furia, Yu Pei, Yi Wei, and Bertrand Meyer — <i>ETH Zurich, Switzerland; ITMO National Research University, Russia</i> | 262 |
| Analysis | |
| Comparative Causality: Explaining the Differences between Executions William N. Sumner and Xiangyu Zhang — <i>Purdue University, USA</i> | 272 |

| | |
|---|-----|
| Automatic Testing of Sequential and Concurrent Substitutability Michael Pradel and Thomas R. Gross — <i>ETH Zurich, Switzerland</i> | 282 |
| Data Clone Detection and Visualization in Spreadsheets Feliene Hermans, Ben Sedee, Martin Pinzger, and Arie van Deursen — <i>TU Delft, Netherlands</i> | 292 |
| Code Analysis | |
| Partition-Based Regression Verification Marcel Böhme, Bruno C. d. S. Oliveira, and Abhik Roychoudhury — <i>National University of Singapore, Singapore</i> | 302 |
| Automated Diagnosis of Software Configuration Errors Sai Zhang and Michael D. Ernst — <i>University of Washington, USA</i> | 312 |
| Detecting Deadlock in Programs with Data-Centric Synchronization Daniel Marino, Christian Hammer, Julian Dolby, Mandana Vaziri, Frank Tip, and Jan Vitek — <i>Symantec Research Labs, USA; Saarland University, Germany; IBM Research, USA; University of Waterloo, Canada; Purdue University, USA</i> | 322 |
| Debugging | |
| The Design of Bug Fixes Emerson Murphy-Hill, Thomas Zimmermann, Christian Bird, and Nachiappan Nagappan — <i>North Carolina State University, USA; Microsoft Research, USA</i> | 332 |
| PorchLight: A Tag-Based Approach to Bug Triaging Gerald Bortis and André van der Hoek — <i>UC Irvine, USA</i> | 342 |
| Expositor: Scriptable Time-Travel Debugging with First-Class Traces Yit Phang Khoo, Jeffrey S. Foster, and Michael Hicks — <i>University of Maryland, USA</i> | 352 |
| Chronicler: Lightweight Recording to Reproduce Field Failures Jonathan Bell, Nikhil Sarda, and Gail Kaiser — <i>Columbia University, USA</i> | 362 |
| Bug Prediction | |
| Does Bug Prediction Support Human Developers? Findings from a Google Case Study Chris Lewis, Zhongpeng Lin, Caitlin Sadowski, Xiaoyan Zhu, Rong Ou, and E. James Whitehead Jr. — <i>UC Santa Cruz, USA; Google, USA; Xi'an Jiaotong University, China</i> | 372 |
| Transfer Defect Learning Jaechang Nam, Sinno Jialin Pan, and Sunghun Kim — <i>Hong Kong University of Science and Technology, China; Institute for Infocomm Research, Singapore</i> | 382 |
| It's Not a Bug, It's a Feature: How Misclassification Impacts Bug Prediction Kim Herzig, Sascha Just, and Andreas Zeller — <i>Saarland University, Germany</i> | 392 |
| Big Data | |
| Assisting Developers of Big Data Analytics Applications When Deploying on Hadoop Clouds Weiyi Shang, Zhen Ming Jiang, Hadi Hemmati, Bram Adams, Ahmed E. Hassan, and Patrick Martin — <i>Queen's University, Canada; Polytechnique Montréal, Canada</i> | 402 |
| Broken Sets in Software Repository Evolution Jérôme Vouillon and Roberto Di Cosmo — <i>University of Paris Diderot, France; CNRS, France; INRIA, France</i> | 412 |
| Boa: A Language and Infrastructure for Analyzing Ultra-Large-Scale Software Repositories Robert Dyer, Hoan Anh Nguyen, Hriday Rajan, and Tien N. Nguyen — <i>Iowa State University, USA</i> | 422 |
| Process | |
| How, and Why, Process Metrics Are Better Foyzur Rahman and Premkumar Devanbu — <i>UC Davis, USA</i> | 432 |
| The Role of Domain Knowledge and Cross-Functional Communication in Socio-Technical Coordination Daniela Damian, Remko Helms, Irwin Kwan, Sabrina Marczak, and Benjamin Koelewijn — <i>University of Victoria, Canada; Utrecht University, Netherlands; Oregon State University, USA; PUCRS, Brazil</i> | 442 |
| Dual Ecological Measures of Focus in Software Development Daryl Posnett, Raissa D'Souza, Premkumar Devanbu, and Vladimir Filkov — <i>UC Davis, USA</i> | 452 |

| | |
|--|-----|
| Not Going to Take This Anymore: Multi-objective Overtime Planning for Software Engineering Projects Filomena Ferrucci, Mark Harman, Jian Ren, and Federica Sarro — <i>University of Salerno, Italy; University College London, UK</i> | 462 |
|--|-----|

Product Lines

| | |
|--|-----|
| Beyond Boolean Product-Line Model Checking: Dealing with Feature Attributes and Multi-features Maxime Cordy, Pierre-Yves Schobbens, Patrick Heymans, and Axel Legay — <i>University of Namur, Belgium; IRISA, France; INRIA, France; University of Liège, Belgium</i> | 472 |
| Strategies for Product-Line Verification: Case Studies and Experiments Sven Apel, Alexander von Rhein, Philipp Wendler, Armin Größlinger, and Dirk Beyer — <i>University of Passau, Germany</i> | 482 |
| On the Value of User Preferences in Search-Based Software Engineering: A Case Study in Software Product Lines Abdel Salam Sayyad, Tim Menzies, and Hany Ammar — <i>West Virginia University, USA</i> | 492 |

Search-Based SE

| | |
|---|-----|
| LASE: Locating and Applying Systematic Edits by Learning from Examples Na Meng, Miryung Kim, and Kathryn S. McKinley — <i>University of Texas at Austin, USA; Microsoft Research, USA</i> | 502 |
| Search-Based Genetic Optimization for Deployment and Reconfiguration of Software in the Cloud Sören Frey, Florian Fittkau, and Wilhelm Hasselbring — <i>Kiel University, Germany</i> | 512 |
| How to Effectively Use Topic Models for Software Engineering Tasks? An Approach Based on Genetic Algorithms Annibale Panichella, Bogdan Dit, Rocco Oliveto, Massimiliano Di Penta, Denys Poshyvanyk, and Andrea De Lucia — <i>University of Salerno, Italy; College of William and Mary, USA; University of Molise, Italy; University of Sannio, Italy</i> | 522 |

Performance

| | |
|---|-----|
| Green Streams for Data-Intensive Software Thomas W. Bartenstein and Yu David Liu — <i>SUNY Binghamton, USA</i> | 532 |
| Dynamic Synthesis of Local Time Requirement for Service Composition Tian Huat Tan, Étienne André, Jun Sun, Yang Liu, Jin Song Dong, and Manman Chen — <i>National University of Singapore, Singapore; Université Paris 13, France; CNRS, France; Singapore University of Technology and Design, Singapore; Nanyang Technological University, Singapore</i> | 542 |
| Supporting Swift Reaction: Automatically Uncovering Performance Problems by Systematic Experiments Alexander Wert, Jens Happe, and Lucia Happe — <i>KIT, Germany; SAP Research, Germany</i> | 552 |
| Toddler: Detecting Performance Problems via Similar Memory-Access Patterns Adrian Nistor, Linhai Song, Darko Marinov, and Shan Lu — <i>University of Illinois at Urbana-Champaign, USA; University of Wisconsin-Madison, USA</i> | 562 |

Requirements Engineering

| | |
|--|-----|
| Departures from Optimality: Understanding Human Analyst's Information Foraging in Assisted Requirements Tracing Nan Niu, Anas Mahmoud, Zhangji Chen, and Gary Bradshaw — <i>Mississippi State University, USA</i> | 572 |
| Analysis of User Comments: An Approach for Software Requirements Evolution Laura V. Galvis Carreño and Kristina Winbladh — <i>University of Delaware, USA</i> | 582 |
| Requirements Modelling by Synthesis of Deontic Input-Output Automata Emmanuel Letier and William Heaven — <i>University College London, UK</i> | 592 |

Reliability

| | |
|--|-----|
| Automated Reliability Estimation over Partial Systematic Explorations Esteban Pavese, Víctor Braberman, and Sebastian Uchitel — <i>Universidad de Buenos Aires, Argentina; Imperial College London, UK</i> | 602 |
| Safe Software Updates via Multi-version Execution Petr Hosek and Cristian Cadar — <i>Imperial College London, UK</i> | 612 |
| Reliability Analysis in Symbolic Pathfinder Antonio Filieri, Corina S. Păsăreanu, and Willem Visser — <i>University of Stuttgart, Germany; Carnegie Mellon Silicon Valley, USA; NASA Ames Research Center, USA; Stellenbosch University, South Africa</i> | 622 |

Security and Privacy

| | |
|---|-----|
| Engineering Adaptive Privacy: On the Role of Privacy Awareness Requirements Inah Omoronyia, Luca Cavallaro, Mazeiar Salehie, Liliana Pasquale, and Bashar Nuseibeh — <i>University of Glasgow, UK; Lero, Ireland; University of Limerick, Ireland; Open University, UK</i> | 632 |
| Mining SQL Injection and Cross Site Scripting Vulnerabilities using Hybrid Program Analysis Lwin Khin Shar, Hee Beng Kuan Tan, and Lionel C. Briand — <i>Nanyang Technological University, Singapore; University of Luxembourg, Luxembourg</i> | 642 |
| Path Sensitive Static Analysis of Web Applications for Remote Code Execution Vulnerability Detection Yunhui Zheng and Xiangyu Zhang — <i>Purdue University, USA</i> | 652 |
| Automated Software Architecture Security Risk Analysis using Formalized Signatures Mohamed Almorsy, John Grundy, and Amani S. Ibrahim — <i>Swinburne University of Technology, Australia</i> | 662 |

Analysis Studies

| | |
|---|-----|
| Why Don't Software Developers Use Static Analysis Tools to Find Bugs? Brittany Johnson, Yoonki Song, Emerson Murphy-Hill, and Robert Bowdidge — <i>North Carolina State University, USA; Google, USA</i> | 672 |
| Exploring the Impact of Inter-smell Relations on Software Maintainability: An Empirical Study Aiko Yamashita and Leon Moonen — <i>Simula Research Laboratory, Norway</i> | 682 |
| An Empirical Study on the Developers' Perception of Software Coupling Gabriele Bavota, Bogdan Dit, Rocco Oliveto, Massimiliano Di Penta, Denys Poshyvanyk, and Andrea De Lucia — <i>University of Salerno, Italy; College of William and Mary, USA; University of Molise, Italy; University of Sannio, Italy</i> | 692 |

Empirical Studies

| | |
|--|-----|
| X-PERT: Accurate Identification of Cross-Browser Issues in Web Applications Shauvik Roy Choudhary, Mukul R. Prasad, and Alessandro Orso — <i>Georgia Tech, USA; Fujitsu Labs, USA</i> | 702 |
| Expectations, Outcomes, and Challenges of Modern Code Review Alberto Bacchelli and Christian Bird — <i>University of Lugano, Switzerland; Microsoft Research, USA</i> | 712 |
| UML in Practice Marian Petre — <i>Open University, UK</i> | 722 |
| Cassandra: Proactive Conflict Minimization through Optimized Task Scheduling Bakhtiar Khan Kasi and Anita Sarma — <i>University of Nebraska-Lincoln, USA</i> | 732 |

Programming Support

| | |
|--|-----|
| Are Your Incoming Aliases Really Necessary? Counting the Cost of Object Ownership Alex Potanin, Monique Damitio, and James Noble — <i>Victoria University of Wellington, New Zealand</i> | 742 |
| Efficient Construction of Approximate Call Graphs for JavaScript IDE Services Asger Feldthaus, Max Schäfer, Manu Sridharan, Julian Dolby, and Frank Tip — <i>Aarhus University, Denmark; Nanyang Technological University, Singapore; IBM Research, USA; University of Waterloo, Canada</i> | 752 |
| Improving Feature Location Practice with Multi-faceted Interactive Exploration Jinshui Wang, Xin Peng, Zhenchang Xing, and Wenyun Zhao — <i>Fudan University, China; Nanyang Technological University, Singapore</i> | 762 |

Program Repair

| | |
|---|-----|
| SemFix: Program Repair via Semantic Analysis Hoang Duong Thien Nguyen, Dawei Qi, Abhik Roychoudhury, and Satish Chandra — <i>National University of Singapore, Singapore; IBM Research, USA</i> | 772 |
| Automatic Recovery from Runtime Failures Antonio Carzaniga, Alessandra Gorla, Andrea Mattavelli, Nicolò Perino, and Mauro Pezzè — <i>University of Lugano, Switzerland; Saarland University, Germany</i> | 782 |
| Program Transformations to Fix C Integers Zack Coker and Munawar Hafiz — <i>Auburn University, USA</i> | 792 |
| Automatic Patch Generation Learned from Human-Written Patches Dongsun Kim, Jaechang Nam, Jaewoo Song, and Sunghun Kim — <i>Hong Kong University of Science and Technology, China</i> | 802 |

Tools

| | |
|---|-----|
| Reverb: Recommending Code-Related Web Pages Nicholas Sawadsky, Gail C. Murphy, and Rahul Jiresal — <i>University of British Columbia, Canada</i> | 812 |
| Dynamic Injection of Sketching Features into GEF Based Diagram Editors Andreas Scharf and Till Amma — <i>University of Kassel, Germany</i> | 822 |
| Discovering Essential Code Elements in Informal Documentation Peter C. Rigby and Martin P. Robillard — <i>Concordia University, Canada; McGill University, Canada</i> | 832 |
| Automatic Query Reformulations for Text Retrieval in Software Engineering Sonia Haiduc, Gabriele Bavota, Andrian Marcus, Rocco Oliveto, Andrea De Lucia, and Tim Menzies — <i>Wayne State University, USA; University of Salerno, Italy; University of Molise, Italy; University of West Virginia, USA</i> | 842 |

Keynotes

| | |
|---|-----|
| Are Software Patents Bad? (Keynote) Pamela Samuelson — <i>UC Berkeley, USA</i> | 855 |
| The Connection between Movie Making and Software Development (Keynote) Tony DeRose — <i>Pixar Research Group, USA</i> | 856 |
| Does Scale Really Matter? Ultra-Large-Scale Systems Seven Years after the Study (Keynote) Linda Northrop — <i>SEI, USA</i> | 857 |

Software Engineering in Practice

Technical Debt: Past, Present, and Future

| | |
|---|-----|
| Technical Debt: Past, Present, and Future (Panel) Steven Fraser, Judith Bishop, Barry Boehm, Pradeep Kathail, Philippe Kruchten, Ipek Ozkaya, and Alexandra Szynkarski — <i>Cisco Systems, USA; Microsoft Research, USA; University of Southern California, USA; University of British Columbia, Canada; SEI, USA; CAST, USA</i> | 861 |
|---|-----|

Agile and Distributed Practices

| | |
|---|-----|
| Scaling Agile Methods to Regulated Environments: An Industry Case Study Brian Fitzgerald, Klaas-Jan Stol, Ryan O’Sullivan, and Donal O’Brien — <i>Lero, Ireland; University of Limerick, Ireland; QUMAS, Ireland</i> | 863 |
| Agility at Scale: Economic Governance, Measured Improvement, and Disciplined Delivery Alan W. Brown, Scott Ambler, and Walker Royce — <i>University of Surrey, UK; Ambler and Associates, Canada; IBM, USA</i> | 873 |
| Distributed Development Considered Harmful? Ekrem Kocaguneli, Thomas Zimmermann, Christian Bird, Nachiappan Nagappan, and Tim Menzies — <i>West Virginia University, USA; Microsoft Research, USA</i> | 882 |

Software Architecture

| | |
|--|-----|
| Measuring Architecture Quality by Structure Plus History Analysis Robert Schwanke, Lu Xiao, and Yuanfang Cai — <i>Siemens, USA; Drexel University, USA</i> | 891 |
| Obtaining Ground-Truth Software Architectures Joshua Garcia, Ivo Krka, Chris Mattmann, and Nenad Medvidovic — <i>University of Southern California, USA; Jet Propulsion Laboratory, USA</i> | 901 |
| MIDAS: A Design Quality Assessment Method for Industrial Software Ganesh Samarthyam, Girish Suryanarayana, Tushar Sharma, and Shrinath Gupta — <i>Siemens, India</i> | 911 |

Metrics and Evaluation

| | |
|--|-----|
| Evaluating Usefulness of Software Metrics: An Industrial Experience Report Eric Bouwers, Arie van Deursen, and Joost Visser — <i>Software Improvement Group, Netherlands; TU Delft, Netherlands; Radboud University Nijmegen, Netherlands</i> | 921 |
|--|-----|

| | |
|---|-----|
| Reducing Human Effort and Improving Quality in Peer Code Reviews using Automatic Static Analysis and Reviewer Recommendation Vipin Balachandran — <i>VMware, India</i> | 931 |
| Estimating Software-Intensive Projects in the Absence of Historical Data Aldo Dagnino — <i>ABB Research, USA</i> | 941 |

Mini-Tutorial

| | |
|---|-----|
| Pathways to Technology Transfer and Adoption: Achievements and Challenges (Mini-Tutorial) Dongmei Zhang and Tao Xie — <i>Microsoft Research, China; North Carolina State University, USA</i> | 951 |
|---|-----|

Case Studies

| | |
|--|-----|
| User Involvement in Software Evolution Practice: A Case Study Dennis Pagano and Bernd Brügge — <i>TU Munich, Germany</i> | 953 |
| A Characteristic Study on Failures of Production Distributed Data-Parallel Programs Sihan Li, Hucheng Zhou, Haoxiang Lin, Tian Xiao, Haibo Lin, Wei Lin, and Tao Xie — <i>North Carolina State University, USA; Microsoft Research, China; Tsinghua University, China; Microsoft Bing, China; Microsoft Bing, USA</i> | 963 |
| Is Time-Zone Proximity an Advantage for Software Development? The Case of the Brazilian IT Industry Rafael Prikladnicki and Erran Carmel — <i>PUCRS, Brazil; American University, USA</i> | 973 |
| A Study of Enabling Factors for Rapid Fielding: Combined Practices to Balance Speed and Stability Stephany Bellomo, Robert L. Nord, and Ipek Ozkaya — <i>SEI, USA</i> | 982 |

Testing

| | |
|---|------|
| JST: An Automatic Test Generation Tool for Industrial Java Applications with Strings Indradeep Ghosh, Nastaran Shafiei, Guodong Li, and Wei-Fan Chiang — <i>Fujitsu Labs, USA; York University, Canada; University of Utah, USA</i> | 992 |
| Efficient and Change-Resilient Test Automation: An Industrial Case Study Suresh Thummalapenta, Pranavadatta Devaki, Saurabh Sinha, Satish Chandra, Sivagami Gnanasundaram, Deepa D. Nagaraj, and Sampathkumar Sathishkumar — <i>IBM Research, India; IBM Research, USA; IBM, India</i> | 1002 |
| Automatic Detection of Performance Deviations in the Load Testing of Large Scale Systems Haroon Malik, Hadi Hemmati, and Ahmed E. Hassan — <i>Queen's University, Canada; University of Waterloo, Canada</i> | 1012 |

Bug Detection

| | |
|--|------|
| Detecting Inconsistencies in Wrappers: A Case Study Henning Femmer, Dharmalingam Ganesan, Mikael Lindvall, and David McComas — <i>TU Munich, Germany; Fraunhofer CESE, USA; NASA Goddard Space Flight Center, USA</i> | 1022 |
| Categorizing Bugs with Social Networks: A Case Study on Four Open Source Software Communities Marcelo Serrano Zanetti, Ingo Scholtes, Claudio Juan Tessone, and Frank Schweitzer — <i>ETH Zurich, Switzerland</i> | 1032 |
| Predicting Bug-Fixing Time: An Empirical Study of Commercial Software Projects Hongyu Zhang, Liang Gong, and Steve Versteeg — <i>Tsinghua University, China; CA Technologies, Australia</i> | 1042 |

Software Engineering in Education

Problem-Based and Studio Learning

| | |
|---|------|
| Authentic Assessment in Software Engineering Education Based on PBL Principles: A Case Study in the Telecom Market Simone C. dos Santos and Felipe S. F. Soares — <i>UFPE, Brazil; Recife Center of Advanced Studies and Systems, Brazil</i> | 1055 |
| Studios in Software Engineering Education: Towards an Evaluable Model Christopher N. Bull, Jon Whittle, and Leon Cruickshank — <i>Lancaster University, UK</i> | 1063 |
| Enabling a Classroom Design Studio with a Collaborative Sketch Design Tool Dastyani Loksa, Nicolas Mangano, Thomas D. LaToza, and André van der Hoek — <i>UC Irvine, USA</i> | 1073 |

| | |
|--|------|
| A Framework to Evaluate Software Engineering Student Contests: Evaluation and Integration with Academic Programs Amir Zeid — <i>American University of Kuwait, Kuwait</i> | 1083 |
|--|------|

Teaching Introductory Software Engineering

| | |
|--|------|
| An Evaluation of Interactive Test-Driven Labs with WebIDE in CS0 David S. Janzen, John Clements, and Michael Hilton — <i>Cal Poly, USA</i> | 1090 |
| POPT: A Problem-Oriented Programming and Testing Approach for Novice Students Vicente Lustosa Neto, Roberta Coelho, Larissa Leite, Dalton S. Guerrero, and Andrea P. Mendonça — <i>UFRN, Brazil; UFCG, Brazil; IFAM, Brazil</i> | 1099 |
| Teaching Developer Skills in the First Software Engineering Course Václav Rajlich — <i>Wayne State University, USA</i> | 1109 |
| Teaching and Learning Programming and Software Engineering via Interactive Gaming Nikolai Tillmann, Jonathan de Halleux, Tao Xie, Sumit Gulwani, and Judith Bishop — <i>Microsoft Research, USA; North Carolina State University, USA</i> | 1117 |

Panel: Town Hall Discussion of SE 2004 Revisions

| | |
|---|------|
| Town Hall Discussion of SE 2004 Revisions (Panel) Mark Ardis, David Budgen, Gregory W. Hislop, Jeff Offutt, Mark Sebern, and Willem Visser — <i>Stevens Institute of Technology, USA; Durham University, UK; Drexel University, USA; George Mason University, USA; Milwaukee School of Engineering, USA; Stellenbosch University, South Africa</i> | 1127 |
|---|------|

Advanced Software Engineering Education

| | |
|---|------|
| Teaching Students Global Software Engineering Skills using Distributed Scrum Maria Paasivaara, Casper Lassenius, Daniela Damian, Petteri Rätty, and Adrian Schröter — <i>Aalto University, Finland; University of Victoria, Canada</i> | 1128 |
| Teaching Software Process Modeling Marco Kuhrmann, Daniel Méndez Fernández, and Jürgen Münch — <i>TU Munich, Germany; University of Helsinki, Finland</i> | 1138 |
| Industry Involvement in ICT Curriculum: A Comparative Survey Chris J. Pilgrim — <i>Swinburne University of Technology, Australia</i> | 1148 |
| Vulnerability of the Day: Concrete Demonstrations for Software Engineering Undergraduates Andrew Meneely and Samuel Lucidi — <i>Rochester Institute of Technology, USA</i> | 1154 |

New Ideas and Emerging Results

Dependability Perspectives

| | |
|--|------|
| Eliminative Induction: A Basis for Arguing System Confidence John B. Goodenough, Charles B. Weinstock, and Ari Z. Klein — <i>SEI, USA</i> | 1161 |
| Exploring the Internal State of User Interfaces by Combining Computer Vision Techniques with Grammatical Inference Paul Givens, Aleksandar Chakaroy, Sriram Sankaranarayanan, and Tom Yeh — <i>University of Colorado at Boulder, USA</i> | 1165 |
| Semantic Smells and Errors in Access Control Models: A Case Study in PHP François Gauthier and Ettore Merlo — <i>Polytechnique Montréal, Canada</i> | 1169 |
| Practical Semantic Test Simplification Sai Zhang — <i>University of Washington, USA</i> | 1173 |
| Understanding Regression Failures through Test-Passing and Test-Failing Code Changes Roykronk Sukkerd, Ivan Beschastnikh, Jochen Wuttke, Sai Zhang, and Yuriy Brun — <i>University of Washington, USA; University of Massachusetts, USA</i> | 1177 |

Supporting Tomorrow's Developer

| | |
|--|------|
| Temporal Code Completion and Navigation | |
| Yun Young Lee, Sam Harwell, Sarfraz Khurshid, and Darko Marinov — <i>University of Illinois at Urbana-Champaign, USA; University of Texas at Austin, USA</i> | 1181 |
| Situational Awareness: Personalizing Issue Tracking Systems | |
| Olga Baysal, Reid Holmes, and Michael W. Godfrey — <i>University of Waterloo, Canada</i> | 1185 |
| GROPG: A Graphical On-Phone Debugger | |
| Tuan Anh Nguyen, Christoph Csallner, and Nikolai Tillmann — <i>University of Texas at Arlington, USA; Microsoft Research, USA</i> | 1189 |
| Why Did This Code Change? | |
| Sarah Rastkar and Gail C. Murphy — <i>University of British Columbia, Canada</i> | 1193 |
| Deciphering the Story of Software Development through Frequent Pattern Mining | |
| Nicolas Bettenburg and Andrew Begel — <i>Queen's University, Canada; Microsoft Research, USA</i> | 1197 |

Collaborative Development

| | |
|--|------|
| Liberating Pair Programming Research from the Oppressive Driver/Observer Regime | |
| Stephan Salinger, Franz Zieris, and Lutz Prechelt — <i>Freie Universität Berlin, Germany</i> | 1201 |
| Pricing Crowdsourcing-Based Software Development Tasks | |
| Ke Mao, Ye Yang, Mingshu Li, and Mark Harman — <i>ISCAS, China; UCAS, Cina; University College London, UK</i> | 1205 |
| Building Test Suites in Social Coding Sites by Leveraging Drive-By Commits | |
| Raphael Pham, Leif Singer, and Kurt Schneider — <i>Leibniz Universität Hannover, Germany</i> | 1209 |
| Supporting Application Development with Structured Queries in the Cloud | |
| Michael Smit, Bradley Simmons, Mark Shtern, and Marin Litoiu — <i>York University, Canada</i> | 1213 |
| Hunting for Smells in Natural Language Tests | |
| Benedikt Hauptmann, Maximilian Junker, Sebastian Eder, Lars Heinemann, Rudolf Vaas, and Peter Braun — <i>TU Munich, Germany; CQSE, Germany; Munich Re, Germany; Validas, Germany</i> | 1217 |

Alternative Modeling

| | |
|---|------|
| Bottom-Up Model-Driven Development | |
| Hamid Bagheri and Kevin Sullivan — <i>University of Virginia, USA</i> | 1221 |
| An Approach for Restructuring Text Content | |
| Lerina Aversano, Gerardo Canfora, Giuseppe De Ruvo, and Maria Tortorella — <i>University of Sannio, Italy</i> | 1225 |
| A Case for Human-Driven Software Development | |
| Emilie Balland, Charles Consel, Bernard N'Kaoua, and H el ene Sauz eon — <i>University of Bordeaux, France; INRIA, France</i> | 1229 |
| A Framework for Managing Cloned Product Variants | |
| Julia Rubin and Marsha Chechik — <i>IBM Research, Israel; University of Toronto, Canada</i> | 1233 |
| Sketching Software in the Wild | |
| David Socha and Josh Tenenber g — <i>University of Washington, USA</i> | 1237 |

Posters

| | |
|---|------|
| On Extracting Unit Tests from Interactive Live Programming Sessions | |
| Adrian Kuhn — <i>University of British Columbia, Canada</i> | 1241 |
| Towards Automated Testing and Fixing of Re-engineered Feature Models | |
| Christopher Henard, Mike Papadakis, Gilles Perrouin, Jacques Klein, and Yves Le Traon — <i>University of Luxembourg, Luxembourg; University of Namur, Belgium</i> | 1245 |
| Computational Alignment of Goals and Scenarios for Complex Systems | |
| Dalal Alrajeh, Alessandra Russo, James Lockerbie, Neil Maiden, Alistair Mavin, and Mark Novak — <i>Imperial College London, UK; City University London, UK; Rolls Royce, UK; Aero Engine Controls, UK</i> | 1249 |
| Service Networks for Development Communities | |
| Damian A. Tamburri, Patricia Lago, and Hans van Vliet — <i>VU University Amsterdam, Netherlands</i> | 1253 |

| | |
|--|------|
| Formal Specifications Better Than Function Points for Code Sizing Mark Staples, Rafal Kolanski, Gerwin Klein, Corey Lewis, June Andronick, Toby Murray, Ross Jeffery, and Len Bass — <i>NICTA, Australia</i> | 1257 |
| Using Mutation Analysis for a Model-Clone Detector Comparison Framework Matthew Stephan, Manar H. Alalfi, Andrew Stevenson, and James R. Cordy — <i>Queen's University, Canada</i> | 1261 |
| On the Relationships between Domain-Based Coupling and Code Clones: An Exploratory Study Md Saidur Rahman, Amir Aryani, Chanchal K. Roy, and Fabrizio Perin — <i>University of Saskatchewan, Canada; Australian National University, Australia; University of Bern, Switzerland</i> | 1265 |
| Quantitative Program Slicing: Separating Statements by Relevance Raul Santelices, Yiji Zhang, Siyuan Jiang, Haipeng Cai, and Ying-Jie Zhang — <i>University of Notre Dame, USA; Tsinghua University, China</i> | 1269 |
| Example-Driven Modeling: Model = Abstractions + Examples Kacper Bąk, Dina Zayan, Krzysztof Czarnecki, Michał Antkiewicz, Zinovy Diskin, Andrzej Wąsowski, and Derek Rayside — <i>University of Waterloo, Canada; IT University of Copenhagen, Denmark</i> | 1273 |
| Towards Recognizing and Rewarding Efficient Developer Work Patterns Will Snipes, Vinay Augustine, Anil R. Nair, and Emerson Murphy-Hill — <i>ABB Research, USA; ABB Research, India; North Carolina State University, USA</i> | 1277 |
| Selecting Checkpoints along the Time Line: A Novel Temporal Checkpoint Selection Strategy for Monitoring a Batch of Parallel Business Processes Xiao Liu, Yun Yang, Dahai Cao, and Dong Yuan — <i>East China Normal University, China; Swinburne University of Technology, Australia</i> | 1281 |

Formal Demonstrations

Formal Demonstrations 1

| | |
|---|------|
| LAMBDAFICATOR: From Imperative to Functional Programming through Automated Refactoring Lyle Franklin, Alex Gyori, Jan Lahoda, and Danny Dig — <i>Ball State University, USA; Politehnica University of Timisoara, Romania; Oracle, Czech Republic; University of Illinois at Urbana-Champaign, USA</i> | 1287 |
| JITTAC: A Just-in-Time Tool for Architectural Consistency Jim Buckley, Sean Mooney, Jacek Rosik, and Nour Ali — <i>University of Limerick, Ireland; Lero, Ireland; University of Brighton, UK</i> | 1291 |
| Seahawk: Stack Overflow in the IDE Luca Ponzanelli, Alberto Bacchelli, and Michele Lanza — <i>University of Lugano, Switzerland</i> | 1295 |
| DRC: A Detection Tool for Dangling References in PHP-Based Web Applications Hung Viet Nguyen, Hoan Anh Nguyen, Tung Thanh Nguyen, and Tien N. Nguyen — <i>Iowa State University, USA</i> | 1299 |
| TestEvol: A Tool for Analyzing Test-Suite Evolution Leandro Sales Pinto, Saurabh Sinha, and Alessandro Orso — <i>Politecnico di Milano, Italy; IBM Research, India; Georgia Tech, USA</i> | 1303 |
| Query Quality Prediction and Reformulation for Source Code Search: The Refoqus Tool Sonia Haiduc, Giuseppe De Rosa, Gabriele Bavota, Rocco Oliveto, Andrea De Lucia, and Andrian Marcus — <i>Wayne State University, USA; University of Salerno, Italy; University of Molise, Italy</i> | 1307 |
| A Large Scale Linux-Kernel Based Benchmark for Feature Location Research Zhenchang Xing, Yinxing Xue, and Stan Jarzabek — <i>Nanyang Technological University, Singapore; National University of Singapore, Singapore</i> | 1311 |
| NavClus: A Graphical Recommender for Assisting Code Exploration Seonah Lee, Sungwon Kang, and Matt Staats — <i>KAIST, South Korea</i> | 1315 |

Formal Demonstrations 2

| | |
|--|------|
| LASE: An Example-Based Program Transformation Tool for Locating and Applying Systematic Edits John Jacobellis, Na Meng, and Miryung Kim — <i>University of Texas at Austin, USA</i> | 1319 |
| CEL: Modeling Everywhere Remo Lemma, Michele Lanza, and Fernando Olivero — <i>University of Lugano, Switzerland</i> | 1323 |

| | |
|--|------|
| V:ISSUE:LIZER: Exploring Requirements Clarification in Online Communication over Time Eric Knauss and Daniela Damian — <i>University of Victoria, Canada</i> | 1327 |
| YODA: Young and newcOmer Developer Assistant Gerardo Canfora, Massimiliano Di Penta, Stefano Giannantonio, Rocco Oliveto, and Sebastiano Panichella — <i>University of Sannio, Italy; University of Molise, Italy; University of Salerno, Italy</i> | 1331 |
| RADAR: A Tool for Debugging Regression Problems in C/C++ Software Fabrizio Pastore, Leonardo Mariani, and Alberto Goffi — <i>University of Milano-Bicocca, Italy; University of Lugano, Switzerland</i> | 1335 |
| MCT: A Tool for Commenting Programs by Multimedia Comments Yiyang Hao, Ge Li, Lili Mou, Lu Zhang, and Zhi Jin — <i>Peking University, China; Chinese Academy of Sciences-AMSS, China</i> | 1339 |
| Memoise: A Tool for Memoized Symbolic Execution Guowei Yang, Sarfraz Khurshid, and Corina S. Păsăreanu — <i>University of Texas at Austin, USA; Carnegie Mellon Silicon Valley, USA; NASA Ames Research Center, USA</i> | 1343 |
| Controller Synthesis: From Modelling to Enactment Victor Braberman, Nicolas D’Ippolito, Nir Piterman, Daniel Sykes, and Sebastian Uchitel — <i>Universidad de Buenos Aires, Argentina; Imperial College London, UK; University of Leicester, UK</i> | 1347 |

Doctoral Symposium

Short Papers

| | |
|--|------|
| A Study of Variability Spaces in Open Source Software Sarah Nadi — <i>University of Waterloo, Canada</i> | 1353 |
| Implementing Database Access Control Policy from Unconstrained Natural Language Text John Slankas — <i>North Carolina State University, USA</i> | 1357 |
| Increasing Anomaly Handling Efficiency in Large Organizations using Applied Machine Learning Leif Jonsson — <i>Ericsson, Sweden; Linköping University, Sweden</i> | 1361 |
| Analyzing the Change-Proneness of Service-Oriented Systems from an Industrial Perspective Daniele Romano — <i>TU Delft, Netherlands</i> | 1365 |
| Supporting Maintenance Tasks on Transformational Code Generation Environments Victor Guana — <i>University of Alberta, Canada</i> | 1369 |
| An Approach to Documenting and Evolving Architectural Design Decisions Meiru Che — <i>University of Texas at Austin, USA</i> | 1373 |
| An Observable and Controllable Testing Framework for Modern Systems Tingting Yu — <i>University of Nebraska-Lincoln, USA</i> | 1377 |
| Toward a Software Product Line for Affective-Driven Self-Adaptive Systems Javier Gonzalez-Sanchez — <i>Arizona State University, USA</i> | 1381 |
| Normalizing Source Code Vocabulary to Support Program Comprehension and Software Quality Latifa Guerrouj — <i>Polytechnique Montréal, Canada</i> | 1385 |
| Integrating Systematic Exploration, Analysis, and Maintenance in Software Development Kıvanç Muşlu — <i>University of Washington, USA</i> | 1389 |

Posters

| | |
|---|------|
| Fostering Software Quality Assessment Martin Brandtner — <i>University of Zurich, Switzerland</i> | 1393 |
| A Framework for Self-Healing Software Systems Nicolò Perino — <i>University of Lugano, Switzerland</i> | 1397 |
| Building High Assurance Secure Applications using Security Patterns for Capability-Based Platforms Paul Rimba — <i>NICTA, Australia; UNSW, Australia</i> | 1401 |
| Systematically Selecting a Software Module during Opportunistic Reuse Naveen Kulkarni — <i>IIIT Hyderabad, India</i> | 1405 |

| | |
|--|------|
| Informing Development Decisions: From Data to Information | |
| Olga Baysal — <i>University of Waterloo, Canada</i> | 1407 |
| Understanding and Simulating Software Evolution | |
| Zhongpeng Lin — <i>UC Santa Cruz, USA</i> | 1411 |
| An Ontology Toolkit for Problem Domain Concept Location in Program Comprehension | |
| Nuno Ramos Carvalho — <i>University of Minho, Portugal</i> | 1415 |
| Measuring the Forensic-Ability of Audit Logs for Nonrepudiation | |
| Jason King — <i>North Carolina State University, USA</i> | 1419 |
| SNIPR: Complementing Code Search with Code Retargeting Capabilities | |
| Huascar Sanchez — <i>UC Santa Cruz, USA</i> | 1423 |

ACM Student Research Competition - Posters

Program Analysis

| | |
|--|------|
| Supporting Incremental Programming with Ghosts | |
| Oscar Callaú — <i>University of Chile, Chile</i> | 1429 |
| Novice Understanding of Program Analysis Tool Notifications | |
| Brittany Johnson — <i>North Carolina State University, USA</i> | 1432 |
| Energy Aware Self-Adaptation in Mobile Systems | |
| Luca Ardito — <i>Politecnico di Torino, Italy</i> | 1435 |

Debugging

| | |
|--|------|
| ConfDiagnoser: An Automated Configuration Error Diagnosis Tool for Java Software | |
| Sai Zhang — <i>University of Washington, USA</i> | 1438 |
| Reproducing and Debugging Field Failures in House | |
| Wei Jin — <i>Georgia Tech, USA</i> | 1441 |
| Fault Comprehension for Concurrent Programs | |
| Sangmin Park — <i>Georgia Tech, USA</i> | 1444 |

Process and Maintenance

| | |
|---|------|
| A Proposal for the Improvement of Project's Cost Predictability using EVM and Historical Data of Cost | |
| Adler Diniz de Souza — <i>UF RJ, Brazil</i> | 1447 |
| Studying the Effect of Co-change Dispersion on Software Quality | |
| Ehsan Kourosfar — <i>George Mason University, USA</i> | 1450 |
| A Roadmap for Software Maintainability Measurement | |
| Juliana Saraiva — <i>UFPE, Brazil</i> | 1453 |

Models and Requirements

| | |
|---|------|
| Reasoning with Qualitative Preferences to Develop Optimal Component-Based Systems | |
| Zachary J. Oster — <i>Iowa State University, USA</i> | 1456 |
| From Models to Code and Back: Correct-by-Construction Code from UML and ALF | |
| Federico Ciccozzi — <i>Mälardalen University, Sweden</i> | 1459 |
| Mitigating the Obsolescence of Specification Models of Service-Based Systems | |
| Romina Torres — <i>Federico Santa María Technical University, Chile</i> | 1462 |
| Decision Theoretic Requirements Prioritization: A Two-Step Approach for Sliding towards Value Realization | |
| Nupul Kukreja — <i>University of Southern California, USA</i> | 1465 |

Developers and Users

| | |
|---|------|
| Changeset Based Developer Communication to Detect Software Failures | |
| Braden Simpson — <i>University of Victoria, Canada</i> | 1468 |

| | |
|--|------|
| Identifying Failure Inducing Developer Pairs within Developer Networks Jordan Ell — <i>University of Victoria, Canada</i> | 1471 |
| On Identifying User Complaints of iOS Apps Hammad Khalid — <i>Queen's University, Canada</i> | 1474 |

Tutorial Summaries

| | |
|---|------|
| Automated Testing of GUI Applications: Models, Tools, and Controlling Flakiness Atif M. Memon and Myra B. Cohen — <i>University of Maryland, USA; University of Nebraska-Lincoln, USA</i> | 1479 |
| Build Your Own Model Checker in One Month Jin Song Dong, Jun Sun, and Yang Liu — <i>National University of Singapore, Singapore; Singapore University of Technology and Design, Singapore; Nanyang Technological University, Singapore</i> | 1481 |
| Data Science for Software Engineering Tim Menzies, Ekrem Kocaguneli, Fayola Peters, Burak Turhan, and Leandro L. Minku — <i>West Virginia University, USA; University of Oulu, Finland; University of Birmingham, UK</i> | 1484 |
| Software Analytics: Achievements and Challenges Dongmei Zhang and Tao Xie — <i>Microsoft Research, China; North Carolina State University, USA</i> | 1487 |
| Developing Verified Programs with Dafny K. Rustan M. Leino — <i>Microsoft Research, USA</i> | 1488 |
| Software Metrics: Pitfalls and Best Practices Eric Bouwers, Arie van Deursen, and Joost Visser — <i>Software Improvement Group, Netherlands; TU Delft, Netherlands; Radboud University Nijmegen, Netherlands</i> | 1491 |
| A Hands-On Java PathFinder Tutorial Peter Mehrlitz, Neha Rungta, and Willem Visser — <i>NASA Ames Research Center, USA; Stellenbosch University, South Africa</i> | 1493 |
| Efficient Quality Assurance of Variability-Intensive Systems Patrick Heymans, Axel Legay, and Maxime Cordy — <i>University of Namur, Belgium; IRISA, France; INRIA, France</i> | 1496 |
| Software Requirement Patterns Xavier Franch — <i>Universitat Politècnica de Catalunya, Spain</i> | 1499 |

Workshop Summaries

| | |
|---|------|
| 1st International Workshop on Assurance Cases for Software-Intensive Systems (ASSURE 2013) Ewen Denney, Ganesh Pai, Ibrahim Habli, Tim Kelly, and John Knight — <i>SGT, USA; NASA Ames Research Center, USA; University of York, UK; University of Virginia, USA</i> | 1505 |
| 8th International Workshop on Automation of Software Test (AST 2013) Hong Zhu, Henry Muccini, and Zhenyu Chen — <i>Oxford Brookes University, UK; University of L'Aquila, Italy; Nanjing University, China</i> | 1507 |
| 1st International Workshop on Conducting Empirical Studies in Industry (CESI 2013) Xavier Franch, Nazim H. Madhavji, Bill Curtis, and Larry Votta — <i>Universitat Politècnica de Catalunya, Spain; University of Western Ontario, Canada; CAST, USA; Brincos, USA</i> | 1509 |
| 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE 2013) Rafael Prikladnicki, Rashina Hoda, Marcelo Cataldo, Helen Sharp, Yvonne Dittrich, and Cleidson R. B. de Souza — <i>PUCRS, Brazil; University of Auckland, New Zealand; Bosch Research, USA; Open University, UK; IT University of Copenhagen, Denmark; Vale Institute of Technology, Brazil</i> | 1511 |
| 1st International Workshop on Combining Modelling and Search-Based Software Engineering (CMSBSE 2013) Mark Harman, Richard F. Paige, and James Williams — <i>University College London, UK; University of York, UK</i> | 1513 |
| 3rd International Workshop on Collaborative Teaching of Globally Distributed Software Development (CTGDSD 2013) Stuart Faulk, Michal Young, Rafael Prikladnicki, David M. Weiss, and Lian Yu — <i>University of Oregon, USA; PUCRS, Brazil; Iowa State University, USA; Peking University, China</i> | 1515 |

| | |
|--|------|
| 1st International Workshop on Data Analysis Patterns in Software Engineering (DAPSE 2013) | |
| Christian Bird, Tim Menzies, and Thomas Zimmermann — <i>Microsoft Research, USA; West Virginia University, USA</i> | 1517 |
| 1st FME Workshop on Formal Methods in Software Engineering (FormaliSE 2013) | |
| Stefania Gnesi and Nico Plat — <i>ISTI-CNR, Italy; West Consulting BV, Netherlands</i> | 1519 |
| 3rd International Workshop on Games and Software Engineering: Engineering Computer Games to Enable Positive, Progressive Change (GAS 2013) | |
| Kendra M. L. Cooper, Walt Scacchi, and Alf Inge Wang — <i>University of Texas at Dallas, USA; UC Irvine, USA; NTNU, Norway</i> | 1521 |
| 2nd International Workshop on Green and Sustainable Software (GREENS 2013) | |
| Patricia Lago, Niklaus Meyer, Maurizio Morisio, Hausi A. Müller, and Giuseppe Scanniello — <i>VU University Amsterdam, Netherlands; Swiss Informatics Society, Switzerland; Politecnico di Torino, Italy; University of Victoria, Canada; University of Basilicata, Italy</i> | 1523 |
| 2nd SEMAT Workshop on a General Theory of Software Engineering (GTSE 2013) | |
| Pontus Johnson, Ivar Jacobson, Michael Goedicke, and Mira Kajko-Mattsson — <i>KTH, Sweden; Ivar Jacobson Int., Switzerland; University of Duisburg-Essen, Germany</i> | 1525 |
| 7th International Workshop on Software Clones (IWSC 2013) | |
| Rainer Koschke, Elmar Juergens, and Juergen Rilling — <i>University of Bremen, Germany; CQSE, Germany; Concordia University, Canada</i> | 1527 |
| 1st International Workshop on Live Programming (LIVE 2013) | |
| Brian Burg, Adrian Kuhn, and Chris Parnin — <i>University of Washington, USA; University of British Columbia, Canada; Georgia Tech, USA</i> | 1529 |
| 5th International Workshop on Modeling in Software Engineering (MiSE 2013) | |
| Joanne M. Atlee, Robert Baillargeon, Marsha Chechik, Robert B. France, Jeff Gray, Richard F. Paige, and Bernhard Rumpe — <i>University of Waterloo, Canada; Sodus, USA; University of Toronto, Canada; Colorado State University, USA; University of Alabama, USA; University of York, UK; RWTH Aachen University, Germany</i> | 1531 |
| 1st International Workshop on the Engineering of Mobile-Enabled Systems (MOBS 2013) | |
| Grace A. Lewis, Jeff Gray, Henry Muccini, Nachiappan Nagappan, David Rosenblum, and Emad Shihab — <i>SEI, USA; University of Alabama, USA; University of L'Aquila, Italy; Microsoft Research, USA; National University of Singapore, Singapore; Rochester Institute of Technology, USA</i> | 1533 |
| 4th International Workshop on Managing Technical Debt (MTD 2013) | |
| Philippe Kruchten, Robert L. Nord, and Ipek Ozkaya — <i>University of British Columbia, Canada; SEI, USA</i> | 1535 |
| 1st International Workshop on Natural Language Analysis in Software Engineering (NaturaLiSE 2013) | |
| Lori Pollock, David Binkley, Dawn Lawrie, Emily Hill, Rocco Oliveto, Gabriele Bavota, and Alberto Bacchelli — <i>University of Delaware, USA; Loyola University Maryland, USA; Montclair State University, USA; University of Molise, Italy; University of Salerno, Italy; University of Lugano, Switzerland</i> | 1537 |
| 5th International Workshop on Principles of Engineering Service-Oriented Systems (PESOS 2013) | |
| Domenico Bianculli, Patricia Lago, Grace A. Lewis, and Hye-Young Paik — <i>University of Luxembourg, Luxembourg; VU University Amsterdam, Netherlands; SEI, USA; UNSW, Australia</i> | 1539 |
| 4th International Workshop on Product LinE Approaches in Software Engineering (PLEASE 2013) | |
| Julia Rubin, Goetz Botterweck, Andreas Pleuss, and David M. Weiss — <i>IBM Research, Israel; Lero, Ireland; University of Limerick, Ireland; Iowa State University, USA</i> | 1541 |
| 2nd International Workshop on Realizing Artificial Intelligence Synergies in Software Engineering (RAISE 2013) | |
| Rachel Harrison, Sol Greenspan, Tim Menzies, Marjan Mernik, Pedro Henriques, Daniela da Cruz, and Daniel Rodriguez — <i>Oxford Brookes University, UK; NSF, USA; West Virginia University, USA; University of Maribor, Slovenia; University of Minho, Portugal; University of Alcalá, Spain</i> | 1543 |
| 1st International Workshop on Release Engineering (RELENG 2013) | |
| Bram Adams, Christian Bird, Foutse Khomh, and Kim Moir — <i>Polytechnique Montréal, Canada; Microsoft Research, USA; Mozilla, Canada</i> | 1545 |
| 5th International Workshop on Software Engineering for Computational Science and Engineering (SE-CSE 2013) | |
| Jeffrey C. Carver, Tom Epperly, Lorin Hochstein, Valerie Maxville, Dietmar Pfahl, and Jonathan Sillito — <i>University of Alabama, USA; Lawrence Livermore National Laboratory, USA; Nimbis Services, USA; iVEC, Australia; University of Tartu, Estonia; University of Calgary, Canada</i> | 1547 |
| 5th International Workshop on Software Engineering in Health Care (SEHC 2013) | |
| Craig E. Kuziemsky and John Knight — <i>University of Ottawa, Canada; University of Virginia, USA</i> | 1549 |

| | |
|---|------|
| 4th International Workshop on Software Engineering for Sensor Network Applications (SESENA 2013) | |
| Christine Julien and Klaus Wehrle — <i>University of Texas at Austin, USA; RWTH Aachen University, Germany</i> | 1551 |
| 2nd International Workshop on Software Engineering Challenges for the Smart Grid (SE4SG 2013) | |
| Ian Gorton, Yan Liu, Heiko Koziolk, Anne Koziolk, and Mazeiar Salehie — <i>Pacific Northwest National Lab, USA; Concordia University, Canada; ABB Research, Germany; KIT, Germany; Lero, Ireland</i> | 1553 |
| 3rd International Workshop on Developing Tools as Plug-Ins (TOPI 2013) | |
| Michael Barnett, Martin Nordio, Judith Bishop, Karin K. Breitman, and Diego Garbervetsky — <i>Microsoft Research, USA; ETH Zurich, Switzerland; PUC-Rio, Brazil; Universidad de Buenos Aires, Argentina</i> | 1555 |
| 2nd International Workshop on the Twin Peaks of Requirements and Architecture (TwinPeaks 2013) | |
| Paris Avgeriou, Janet E. Burge, Jane Cleland-Huang, Xavier Franch, Matthias Galster, Mehdi Mirakhorli, and Roshanak Roshandel — <i>University of Groningen, Netherlands; Miami University, USA; DePaul University, USA; Universitat Politècnica de Catalunya, Spain; University of Canterbury, New Zealand; Seattle University, USA</i> | 1556 |
| 2nd International Workshop on User Evaluations for Software Engineering Researchers (USER 2013) | |
| Andrew Begel and Caitlin Sadowski — <i>Microsoft Research, USA; Google, USA</i> | 1558 |
| 4th International Workshop on Emerging Trends in Software Metrics (WETSoM 2013) | |
| Steve Counsell, Michele L. Marchesi, Ewan Tempero, and Aaron Visaggio — <i>Brunel University, UK; University of Cagliari, Italy; University of Auckland, New Zealand; University of Sannio, Italy</i> | 1560 |

Author Index