



25th IEEE International Conference on

Software Maintenance



ICSM 2009

<http://icsm2009.cs.ualberta.ca/>

Edmonton, Alberta, Canada

September 20–26, 2009

Conference Program

ICSM 2009



IEEE



IEEE
computer society



Technical Council on Software Engineering

INFORMATICS



CORE

CIRCLE OF RESEARCH EXCELLENCE



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ICSM 2009 at a glance

All events serve breakfast at 8:00am. Registration begins at 8:00am.

SUNDAY, September 20, 2009	
9:00 am - 10:30 am	SCAM 2009
11:00 am - 12:00 pm	SCAM 2009
1:30 pm - 2:45 pm	SCAM 2009
3:15 pm - 4:30 pm	SCAM 2009

MONDAY, September 21, 2009			
9:15 am - 10:30 am	SCAM 2009	9:15 am - 10:30 am	MESOA 2009
11:00 am - 12:00 pm	SCAM 2009	11:00 am - 12:30 pm	MESOA 2009
1:30 pm - 2:45 pm	SCAM 2009	2:00 pm - 3:30 pm	MESOA 2009
3:15 pm - 5:30 pm	SCAM 2009	4:00 pm - 5:30 pm	MESOA 2009

TUESDAY, September 22, 2009			
9:00 am - 10:30 am	Keynote: Mary Jean Harrold		
11:00 am - 12:30 pm	Research: Software Testing	Research: Evolution Studies	Research: Software Design
2:00 pm - 3:30 pm	Doctoral Symposium	Short Papers 1	Short Papers 2
4:00 pm - 5:30 pm	Doctoral Symposium	Industry: Maintenance Processes	
6:00 pm - 9:00 pm	ICSM Reception (Wedgwood Room, Hotel Macdonald)		

WEDNESDAY, September 23, 2009			
9:00 am - 10:30 am	Keynote: David M. Weiss		
11:00 am - 12:30 pm	Research: Verification	Research: Practice Studies	Research: Change Analysis
12:30 pm - 2:00 pm	Lunch	Tool Demos	
2:00 pm - 3:30 pm	SOAT 2009	Short Papers 3	Short Papers 4
4:00 pm - 5:30 pm	SOAT 2009	Short Papers 5	Industry: Reverse Engineering
5:30 pm - 6:30 pm	ICSM 2010 Announcement and Open Steering Committee Meeting		

THURSDAY, September 24, 2009			
9:00 am - 10:30 am	Panel: 25 years of ICSM		
11:00 am - 12:30 pm	Research: Dynamic Analysis	Research: Metrics	Research: Defect Analysis
2:00 pm - 3:30 pm	Research: Static Analysis	Research: Process Management	Research: Traceability Recovery
4:00 pm - 5:30 pm	Industry: Software Testing		
6:00 pm - 10:00 pm	ICSM Banquet (Edmonton Queen Riverboat)		

FRIDAY, September 25, 2009			
8:45 am - 10:30 am	WSE 2009	9:15 am - 10:30 am	VISSOFT 2009
11:00 am - 12:30 pm	WSE 2009	11:00 am - 12:30 pm	VISSOFT 2009
2:00 pm - 3:30 pm	VISSOFT/WSE Keynote	2:00 pm - 3:30 pm	VISSOFT/WSE Keynote
3:45 pm - 6:00 pm	WSE 2009	4:00 pm - 6:00 pm	VISSOFT 2009

SATURDAY, September 26, 2009	
9:00 am - 10:30 am	WSE 2009
10:45 am - 12:30 pm	WSE 2009

ICSM Program Details

Monday, September 22, 2009	
8:00 am - 9:00 am	Light Breakfast
9:00 am - 10:30 am	3rd International Workshop on a Research Agenda for Maintenance and Evolution of Service-Oriented Systems (MESOA): Introduction MESOA Organizers: Grace Lewis, Dennis Smith, Kostas Kontogiannis, Ned Chapin
10:30 am - 11:00 am	Morning Coffee Break
11:00 am - 12:00 pm	MESOA Session 1: Tools for Migration to SOA Environments MESOA Session 2: Case Studies in Systems Migration to SOA Environments
12:00 pm - 1:30 pm	Lunch
1:30 pm - 3:30 pm	MESOA Session 2: Case Studies in Systems Migration to SOA Environments (continued ...) MESOA Session 3: SOA Governance and Service-Oriented Systems Evolution MESOA Session 4: Longer-Term Research Topics in Maintenance and Evolution of Service-Oriented Systems
3:30 pm - 4:00 pm	Afternoon Coffee Break
4:00 pm - 5:30 pm	MESOA Session 5: Panel- Challenges for Maintenance and Evolution of Deployed Service-Oriented Systems MESOA Workshop Review and Next Steps

Edmonton Room

Tuesday, September 23, 2009			
8:00 am - 9:00 am	Breakfast		
9:00 am - 10:30 am	Keynote - Mary Jean Harrold: Reduce, Reuse, Recycle, Recover: Techniques for Improved Regression Testing (Empire Ballroom)		
10:30 am - 11:00 am	Morning Coffee Break		
11:00 am - 12:30 pm	Research Session 1: Software Testing (Empire Ballroom) Session Chair: Serge Demeyer Experimental Assessment of Manual Versus Tool-Based Maintenance of GUI-Directed Test Scripts Mark Grechanik, Qing Xie, Chen Fu Prioritizing JUnit Test Cases in Absence of Coverage Information Lingming Zhang, Ji Zhou, Dan Hao, Lu Zhang, Hong Mei Prioritizing Component Compatibility Tests via User Preferences Il-Chul Yoon, Alan Sussman, Atif Memon, Adam Porter	Research Session 2: Evolution Studies (Wedgwood Room) Session Chair: Scott Tilley Linux Kernel as Complex Networks: A Novel Method to Study Evolution Lei Wang, Zheng Wang, Chen Yang, Li Zhang, Qiang Ye Towards a Better Understanding of Software Evolution: An Empirical Study on Open Source Software Guowu Xie, Jianbo Chen, Iulian Neamtii A Survey-based Study of the Mapping of System Properties to ISO/IEC 9126 Maintainability Characteristics Jose Pedro Correia, Yiannis Kanellopoulos, Joost Visser	Research Session 3: Software Design (Drawing Room) Session Chair: Yuanfang Cai Criteria for the Evaluation of Implemented Architectures Eric Bouwers, Joost Visser, Arie van Deursen Playing Roles in Design Patterns: An Empirical Descriptive and Analytic Study Foutse Khomh, Yann-Gaël Guéhéneuc, Giuliano Antoniol Decomposing Object-oriented Class Modules Using an Agglomerative Clustering Technique Marios Fokaefs, Jorg Sander, Nikolaos Tsantalis, Alexander Chatzigeorgiou

12:30 pm - 2:00 pm	Lunch		
2:00 pm - 3:30 pm	<p>Doctoral Symposium 1 (Drawing Room) Session Chair: Ahmed E. Hassan</p> <p>A statistical examination of the evolution and properties of libre software Israel Herraiz</p> <p>Changes and Bugs - Mining and Predicting Development Activities Thomas Zimmermann</p> <p>Detection and Analysis of Near-Miss Software Clones Chanchal Kumar Roy</p>	<p>Short Papers 1 (Empire Ballroom) Session Chair: Jonathan Sillito</p> <p>Maintenance and agile development: challenges, opportunities and future directions Geir K. Hanssen, Aiko Fallas Yamashita, Reidar Conradi, Leon Moonen</p> <p>Software Change Classification using Hunk Metrics Javed Ferzund, Syed Nadeem Ahsan, Franz Wotawa</p> <p>Evolution Analysis with Animated and 3D-Visualizations Sven Wenzel, Jens Koch, Udo Kelter, Andreas Kolb</p> <p>Analyzing the Evolution of User-Visible Features: A Case Study with Eclipse Daqing Hou, Yuejiao Wang</p> <p>Using Method Stereotype Distribution as a Signature Descriptor for Software Systems Natalia Dragan, Michael Collard, Jonathan Maletic</p> <p>Predicting Change Impact from Logical Models Sunny Wong, Yuanfang Cai</p>	<p>Short Papers 2 (Wedgwood Room) Session Chair: Zheng Li</p> <p>Maintenance, or the 3rd Dimension of eXtreme Model-Driven Design Bernhard Steffen, Tiziana Margaria, Christian Wagner, Sven Jörges</p> <p>Scalable and Incremental Clone Detection for Evolving Software Tung Nguyen, Hoan Nguyen, Jafar Al-Kofahi, Nam Pham, Tien Nguyen</p> <p>Balancing Value and Modifiability when Planning for the Next Release Anas Jadallah, Matthias Galster, Mahmoud Moussavi, Guenther Ruhe</p> <p>Software Maintenance in Complying with IT Governance: A Report from the Field Ned Chapin</p> <p>Experimenting a Reverse Engineering Technique for Modelling the Behaviour of Rich Internet Applications Domenico Amalfitano, Anna Rita Fasolino, Porfirio Tramontana</p> <p>Understanding Source Package Organization Using the Hybrid Model Xinyi Dong, Michael Godfrey</p>
3:30 pm - 4:00 pm	Afternoon Coffee Break		
4:00 pm - 5:30 pm	<p>Doctoral Symposium 2 (Drawing Room) Session Chair: Arie van Deursen</p> <p>Using Information Retrieval to Support Software Maintenance Tasks Denys Poshyvanyk</p> <p>Identifying High-Level Dependence Structures Using Slice-Based Dependence Analysis Zheng Li</p> <p>Co-evolution of Source Code and the Build System - Impact on the Introduction of AOSD in Legacy Systems Bram Adams</p>	<p>Industry Session 1: Maintenance Processes (Empire Ballroom) Session Chair: Hausi A. Müller</p> <p>Business Process Recovery for System Maintenance – An Empirical Approach Zhengong Cai, Xiaohu Yang, Xinyu Wang</p> <p>Preprocessing the Noise in Legacy User-permission Assignment Data for Role Mining—An Industrial Practice Chao Huang, Jianling Sun, Xinyu Wang, Yuanjie Si, Di Wu</p>	
6:00 pm - 9:00 pm	ICSM Reception (Wedgwood Room)		

WEDNESDAY, September 23, 2009

8:00 am - 9:00 am	Breakfast		
9:00 am - 10:30 am	Keynote - David M. Weiss: Architecture of Product Lines (Empire Ballroom)		
10:30 am - 11:00 am	Morning Coffee Break		
11:00 am - 12:30 pm	<p>Research Session 4: Verification and Validation (Drawing Room) Session Chair: Ira Baxter</p> <p>Detecting Virus Mutations Via Dynamic Matching Min Feng, Rajiv Gupta</p> <p>Regression Model Checking Guowei Yang, Matthew Dwyer, Gregg Rothermel</p> <p>Automatic Performance Analysis of Load Tests Zhen Ming Jiang, Ahmed E. Hassan, Gilbert Hamann, Parminder Flora</p>	<p>Research Session 5: Practice Studies (Wedgwood Room) Session Chair: Denys Poshyvanyk</p> <p>Inquiring the Usage of Aspect-Oriented Programming: an Empirical Study Freddy Munoz, Benoit Baudry, Romain Delamare, Yves Le Traon</p> <p>Studying the Use of Developer IRC Meetings in Open Source Projects Emad Shihab, Zhen Ming Jiang, Ahmed E. Hassan</p> <p>Searching and Skimming: An Exploratory Study Jamie Starke, Chris Luce, Jonathan Sillito</p>	<p>Research Session 6: Change Analysis (Empire Ballroom) Session Chair: Miryung Kim</p> <p>Managing Code Clones Using Dynamic Change Tracking and Resolution Michiel de Wit, Andy Zaidman, Arie van Deursen</p> <p>Comparative Analysis of Evolving Software Systems Using the Gini Coefficient Rajesh Vasa, Markus Lumpe, Philip Branch, Oscar Nierstrasz</p> <p>Assessing the Impact of Framework Changes Using Component Ranking Reishi Yokomori, Harvey Siy, Masami Noro, Katsuro Inoue</p>
12:30 pm - 2:00 pm	Lunch	<p>Tool Demos (Empire Ballroom and Foyer) Session Chair: Mark Grechanik</p> <p>Senseo: Enriching Eclipse's Static Source Views with Dynamic Metrics David Röthlisberger, Marcel Härry, Alex Villazon, Danilo Ansaloni, Walter Binder, Oscar Nierstrasz, Philippe Moret</p> <p>Semantics-Based Code Search: Demonstration Proposal Steven Reiss</p> <p>MAJOR: Flexible Tool Development with Aspect-Oriented Programming Alex Villazon, Walter Binder, Philippe Moret, Danilo Ansaloni</p> <p>Visualizing the Java Heap: Demonstration Proposal Steven Reiss</p> <p>Proactively Managing Copy-and-Paste Induced Code Clones Daqing Hou</p> <p>BCC: Enhancing Code Completion for Better API Usability Daqing Hou</p> <p>GUIDE: A GUI DifferEntiator Qing Xie, Mark Grechanik, Chen Fu, Chad Cumby</p>	

2:00 pm - 3:30 pm	SOAT 2009 (Drawing Room) Organizers: Scott Tilley, Xiaoying Bai, Grace Lewis	Short Papers 3 (Empire Ballroom) Session Chair: Benoit Baudry Performance Impact Analysis with KPP using Application Response Measurement in E-Government Systems Namho Yoo Modularizing Error Recovery Jeeva Paudel, Christopher Dutchny Model-Driven Testing in Software Product Lines Beatriz Pérez Lamancha, Macario Polo, Ignacio García Data Transformation and Attribute Subset Selection: Do they Help Make Differences in Software Failure Prediction? Hao Jia, Fengdi Shu, Ye Yang, Qi Li The Squale Model - A Practice-based Industrial Quality Model Karine Mordal-Manet, Françoise Balmas, Simon Denier, Stéphane Ducasse, Harald Wertz, Jannik Laval, Fabrice Bellingard, Philippe Vaillergues	Short Papers 4 (Wedgwood Room) Session Chair: Tien Nguyen On Predicting the Time taken to Correct Bug Reports in Open Source Projects Prasanth Anbalagan, Mladen Vouk Interactive Views for Analyzing Problem Reports Patrick Knab, Martin Pinzger, Beat Fluri, Harald Gall Expertise Recommendation with Usage Expertise David Ma, David Schuler, Thomas Zimmermann, Jonathan Sillito An Empirical Study on the Risks of Using of Off-the-Shelf Techniques to Process Mailing List Data Nicolas Bettenburg, Emad Shihab, Ahmed E. Hassan A Model-Based Regression Test Selection Technique Leila Naslavsky, Hadar Ziv, Debra Richardson
3:30 pm - 4:00 pm	Afternoon Coffee Break		
4:00 pm - 5:30 pm	SOAT 2009 (Drawing Room)	Short Papers 5 (Empire Ballroom) Session Chair: Tom Zimmermann Beyond Generated Software Documentation - A Web 2.0 Perspective Philipp Schugerl, Juergen Rilling, Philippe Charland Recovering Design Rationale from Email Repositories Andrea De Lucia, Fausto Fasano, Claudia Grieco, Genny Tortora UI Traces: Supporting Maintenance of Interactive Software Andrew Sutherland, Kevin Schneider Recovering Traceability Links between a Simple Natural Language Sentence and Source Code using Domain Ontologies Takashi Yoshikawa, Shinpei Hayashi, Motoshi Saeki The End-to-End Use of Source Code Examples: An Exploratory Study Reid Holmes, Rylan Cottrell, Robert Walker, Joerg Denzinger Abstracting the Template Instantiation Relation in C++ Andrew Sutton, Ryan Holeman, Jonathan Maletic	Industry Session 2: Reverse Engineering (Wedgwood Room) Session Chair: Carl Worms Digging Deep: Software Reengineering supported by Database Reverse Engineering of a System with 30+ Years of Legacy Stefan Strobl, Mario Bernhart, Thomas Grechenig, Wolfgang Kleinert What Motivate Software Engineers to Refactor Source Code? Evidences from Professional Developers Yi Wang Software Maintainability Benefits from Annotation-driven Code Leho Nigul, Ernest Mah
5:30 pm - 6:30 pm	ICSM 2010 Announcement and Open Steering Committee Meeting (Empire Ballroom)		

THURSDAY, September 24, 2009

8:00 am - 9:00 am	Breakfast		
9:00 am - 10:30 am	<p>Panel - 25 years of ICSM (Empire Ballroom) Moderator: Scott Tilley</p>		
10:30 am - 11:00 am	Morning Coffee Break		
11:00 am - 12:30 pm	<p>Research Session 7: Dynamic Analysis (Wedgwood Room) Session Chair: Steven Reiss</p> <p>Object Aware Execution Trace Exploration Stefan Voigt, Johannes Bohnet, Jürgen Dölner</p> <p>A Combinatorial Approach to Building Navigation Graphs for Dynamic Web Applications Wenhua Wang, Yu Lei, Sreedevi Sampath, Raghu Kacker, Rick Kuhn, James Lawrence</p> <p>Effective and Efficient Localization of Multiple Faults using Value Replacement Dennis Jeffrey, Neelam Gupta, Rajiv Gupta</p>	<p>Research Session 8: Metrics and Measurement (Empire Ballroom) Session Chair: Andrian Marcus</p> <p>Modeling Class Cohesion as Mixtures of Latent Topics Yixun Liu, Denys Poshyvanyk, Rudolf Ferenc, Tibor Gyimóthy, Nikos Chrisochoides</p> <p>Introducing a Test Suite Similarity Metric for Event Sequence-Based Test Cases Penelope Brooks, Atif Memon</p> <p>Augmenting Static Source Views in IDEs with Dynamic Metrics David Röthlisberger, Marcel Härry, Alex Villazon, Danilo Ansaloni, Walter Binder, Oscar Nierstrasz, Philippe Moret</p>	<p>Research Session 9: Defect Analysis (Drawing Room) Session Chair: Mark Grechanik</p> <p>Analysis of Pervasive Multiple-Component Defects in a Large Software System Zude Li, Mechelle Gittens, Syed Murtaza, Nazim Madhavji, Andriy Miransky, David Godwin, Enzo Cialini</p> <p>An Investigation of the Relationships between Lines of Code and Defects Hongyu Zhang</p>
12:30 pm - 2:00 pm	Lunch		
2:00 pm - 3:30 pm	<p>Research Session 10: Static Analysis (Wedgwood Room) Session Chair: Panos Linos</p> <p>A Theoretical and Empirical Study of EFSM Dependence Kelly Androutsopoulos, Nicolas Gold, Mark Harman, Zheng Li, Laurence Tratt</p> <p>Refining Clustering Evaluation Using Structure Indicators Mark Shtern, Vassilios Tzerpos</p> <p>Incremental Call Graph Reanalysis for AspectJ Software Yu Lin, Sai Zhang, Jianjun Zhao</p>	<p>Research Session 11: Process Management (Empire Ballroom) Session Chair: Teresa Baldassarre</p> <p>Coordination and Productivity Issues in Free Software: the Role of Brooks Law Paul James Adams, Andrea Capiluppi, Cornelia Boldyreff</p> <p>Measuring the Progress of Projects Using the Time Dependence of Code Changes Omar Alam, Bram Adams, Ahmed E. Hassan</p> <p>What's hot and what's not: Windowed developer topic analysis Abram Hindle, Michael Godfrey, Richard Holt</p>	<p>Research Session 12: Concept and Traceability Recovery (Drawing Room) Session Chair: Jonathan I. Maletic</p> <p>On the use of Relevance Feedback in IR-based Concept Location Gregory Gay, Sonia Haiduc, Andrian Marcus, Timothy Menzies</p> <p>Feature Location in COBOL Mainframe Systems: an Experience Report Joris Van Geet, Serge Demeyer</p> <p>The Role of the Coverage Analysis during IR-based Traceability Recovery: a Controlled Experiment Andrea De Lucia, Rocco Oliveto, Genny Tortora</p>
3:30 pm - 4:00 pm	Afternoon Coffee Break		

4:00 pm - 5:30 pm	<p>Industry Session 3: Software Testing (Wedgwood Room) Session Chair: Carl Worms</p> <p>Towards a Distributed Execution Framework for JUnit Test Case Tauhida Parveen, Scott Tilley, Nigel Dailey, Pedro Morales</p> <p>Visualizing the Structure of Field Testing Problems Brian Chan, Ying Zou, Ahmed Hassan, Anand Sinha</p> <p>Using Dynamic Execution Data to Generate Test Cases Rozita Dara, Shimin Li, Weining Liu, Angi Ghorbani, Ladan Tahvildari</p>
6:00 pm - 10:00 pm	<p>ICSM Banquet (Edmonton Queen Riverboat)</p> <ul style="list-style-type: none"> • 6:00pm/6:20pm/6:40pm/7:00pm: Bus pickups from the Hotel Macdonald to the riverboat, or take 10-minute walk • 6:15pm-7:30pm: Boarding and drinks • 7:30pm-8:30pm: Dinner • 8:30pm-9:30pm: Boat Cruise • 9:30pm/9:50pm/10:10pm: Bus pickups from the riverboat to the Hotel Macdonald.

