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ISSRE 2009 *India*

The 20th International Symposium on Software Reliability Engineering

November 16-19, 2009 Mysuru, India

www.issre2009.org

Dear Colleague:

ISSRE is the technology world's leading forum on software reliability engineering. An intensive four day technical program provides an unmatched opportunity to expand your skills and competencies. Meet and interact with experts in your area from different industry verticals and geographies. We have grown into a unique forum with participants almost evenly distributed between Industry and Academia - a rare accomplishment for any conference.

Mysuru, India puts you in direct contact with one of the fastest growing, and now huge, software centers in the world. Infosys has offered free room and board for up to 350 participants at their new residential training center in Mysuru. With these subsidies our estimates indicate that attending ISSRE in India, including the cost of air tickets, can be less expensive than this conference was last year in Seattle.

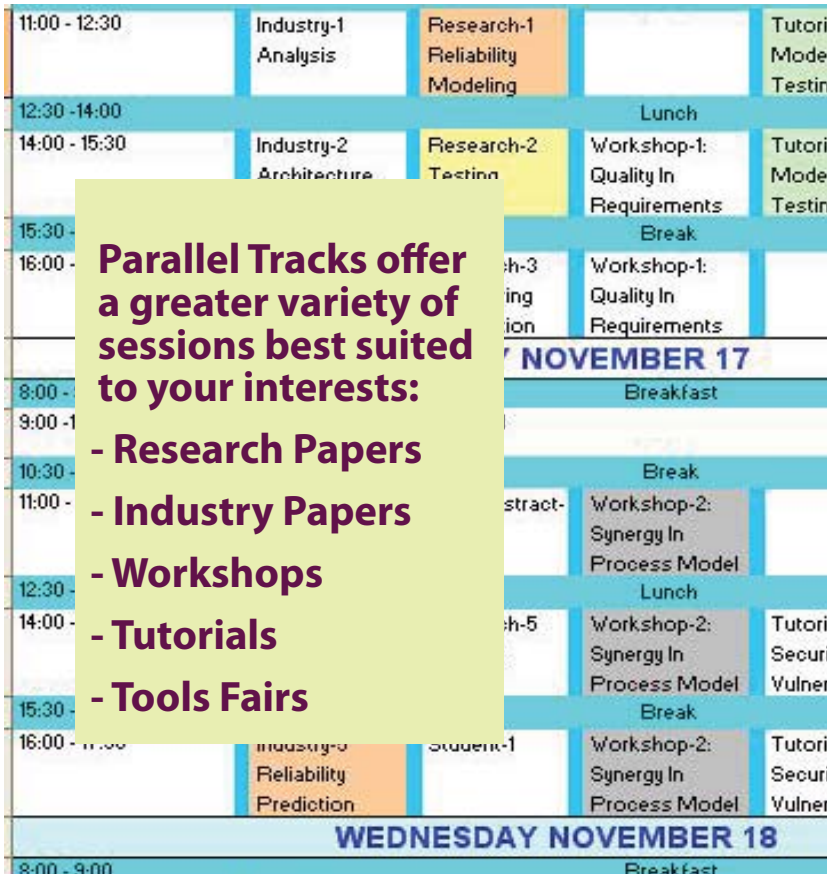
The program is designed with parallel tracks so different skill groups (such as, testing, process, reliability prediction, architecture, analysis) can concurrently attend sessions and make the best use of their time.

We look forward to your participation.

Ram Chillarege
General Chair, ISSRE 2009

Highlights

Keynotes from Industry leaders
Panels discuss and challenge hot topics
Over 90 globally sourced technical presentations
4 Workshops - organized by industry groups
9 Tutorials - taught by world-class experts
21 Research Papers - peer reviewed, very selective
25 Industry Papers - peer reviewed by industry committee
26 Fast Abstracts - lightly reviewed - new ideas
11 Student Papers - lightly reviewed - young blood
Tools Fair - IBM, Microsoft, and several others



Why attend ISSRE ?

ISSRE bridges Industry and Academia. 2008 was held at Microsoft, 2009 is at Infosys and 2010 will be at Cisco

- Engage with a unique, almost even, mix of industry and academia
- Learn and critique successful industry practices and methods
- Expand your skills and competencies through tutorials and workshops
- Meet experts from your technical area across different industry verticals
- Join the leading companies who regularly send their top talent to ISSRE

MONDAY NOVEMBER 16

	Papers 1 Track	Papers 2 Track	Workshop Track	Tutorials 1 Track	Tutorials 2 Track
8:00 - 9:00	Breakfast				
9:00 - 10:30	Plenary 1 Opening and Keynote				
10:30 - 11:00	Break				
11:00 - 12:30	Industry-1 Analysis	Research-1 Reliability Modeling		Tutorial-1: Model-Based Testing	
12:30 - 14:00	Lunch				
14:00 - 15:30	Industry-2 Architecture Modelling	Research-2 Testing	Workshop-1: Quality In Requirements	Tutorial-1: Model-Based Testing	Tutorial-2 Verification Tools
15:30 - 16:00	Break				
16:00 - 17:30	Industry-3 Testing I	Research-3 Monitoring Verification	Workshop-1: Quality In Requirements		Tutorial-2 Verification Tools

TUESDAY NOVEMBER 17

8:00 - 9:00	Breakfast				
9:00 - 10:30	Plenary 2 Keynote & Panel				
10:30 - 11:00	Break				
11:00 - 12:30	Research-4 Predicting Defects	Fast Abstract-1	Workshop-2: Synergy In Process Model		
12:30 - 14:00	Lunch				
14:00 - 15:30	Industry-4 ODC	Research-5 Security	Workshop-2: Synergy In Process Model	Tutorial-3 Security Vulnerabilities	Tutorial-4 Automation Tools
15:30 - 16:00	Break				
16:00 - 17:30	Industry-5 Reliability Prediction	Student-1	Workshop-2: Synergy In Process Model	Tutorial-3 Security Vulnerabilities	Tutorial-4 Automation Tools

WEDNESDAY NOVEMBER 18

8:00 - 9:00	Breakfast					
9:00 - 10:30	Plenary 3 Keynote & Panel					
10:30 - 11:00	Break					
11:00 - 12:30	Industry-6 Process	Research-6 Fault Analysis	Workshop-3 In Process Measurement			
12:30 - 14:00	Lunch					
14:00 - 15:30	Industry-7 Testing II	Research-7 Patterns Behavioral Models	Workshop-3 In Process Measurement	Tutorial-5 Model-Based Development In Practice	Tutorial-6 Software Availability Analysis	
15:30 - 16:00	Break					
16:00 - 17:30	Industry-8 Defect Data Analysis	Fast Abstract II	Workshop-3 In Process Measurement	Tutorial-5 Model-Based Development In Practice	Tutorial-6 Software Availability Analysis	

THURSDAY NOVEMBER 19

8:00 - 9:00	Breakfast					
9:00 - 10:30	Technical Committee Meeting	Technical Committee Meeting	Workshop-4 Embedded Software Reliability	Tutorial-7 Structured Safety Assurance	Tutorial-8: Orthogonal Defect Classificatio	Tutorial-9 Establishing Industrial Test
10:30 - 11:00	Break					
11:00 - 12:30			Workshop-4 Embedded Software Reliability	Tutorial-7 Structured Safety Assurance	Tutorial-8: Orthogonal Defect Classificatio	Tutorial-9 Establishing Industrial Test
12:30 - 14:00	Lunch					
14:00 - 15:30	Optional time for Tutorials - Repeats			Optional time for Tutorials - Repeats		
15:30 - 16:00	Break					
16:00 - 17:30						

Colors - examples of tracks by interest areas

- Reliability Prediction
- Testing
- Process Measurement and Management
- Embedded Systems

Create your own program

by choosing sessions across the four days. Colors only illustrate one concurrent mix of four to six different skills groups. Focus on Workshops or Papers for some days and pick Tutorials for others. Explore new areas!

Breakout sessions discuss issues in the latter part of the workshop and report them towards the end of the day. Sam Keene and Stefan Christiernin report results from their discussion group at ESR 2008 last year in Seattle, USA.

ISSRE Workshops have begun forming special interest subgroups that meet every year. The ESR Workshop is now in its third consecutive year.

Embeded Software Reliability ESR 2009

This workshop will bring together experts, providers, and users of tools and technologies for developing and evolving embedded software systems. The users include makers of home appliances, televisions, telephones, automobiles, aircrafts, and heavy machinery, as well as government organizations for space exploration and defense.

The providers include software companies and experts from consulting companies, universities and other research organizations working with design and development of tools and methods for achieving higher reliability and greater efficiency.

An excellent opportunity to connect with the community and learn about new tools, methods and issues.

Synergy in Process Models

The objective of this workshop is to explore the landscape of Process models currently in use in the Software Industry and provide an experiential outlook as to which models are better suited for what type of software context (E.g. Service vs. Product, Small / medium vs large, - Enterprise applications vs Embedded applications, generic versus Industry-specific etc.). It also provides an outlook as to how these Process models are poised to evolve to cater to the emerging Software Industry needs.

This workshop is expected to bring together Process Model experts who not only have an in-depth knowledge of various process models, but also, have learnt a number of lessons first hand.

In-Process Measurement

Industrial strength software development enforces numerous processes to deliver the product ontime. To improve software quality, including reliability, processes are often modified. However, it is often difficult to understand the impact of any one process change or addition on overall software reliability, since it can frequently take many months to get sufficient feedback from the field. If software measurements made early in the lifecycle can be found to predict ultimate release quality, we can then effectively isolate the influence of specific processes/practices and tune them appropriately to improve the resulting quality

Quality in Requirements

The goal of this workshop is to advance quality in requirements by answering some of the following questions and additional ones proposed by participants:

1. What are critical lessons learned or problems experienced in practice?

2. What are techniques and tools that help assure complete and accurate requirements?

3. What are effective measures of the quality of requirements?

4. How do we determine the Return on Investment (ROI) of improving the quality of requirements?

Four Workshops

Model Based Testing of Control Systems

A survey of verification tools for software reliability

Testing Program Security Vulnerabilities

Automation to Improve Reliability and Productivity - Tools

Model-based Development in Practice: Successful Selection and Deployment

A Methodology for Architecture-Based Software Availability Analysis

Structured Safety and Assurance Cases: Concepts, Practicalities and Research Directions

Orthogonal Defect Classification (ODC) A 10x for Root Cause Analysis

Establishing an Effective Industrial Test Program selecting the best Methods and Metrics

- Each tutorial is a half day
- We have disributed them across all four days of the conference.
- On the fourth day, Thursday, we currently have three tutorials scheduled. We have also kept the afternoon open, in case there is a lot of interest in some of the tutorials and we have an opportunity to run them again - provided the instructor is willing and available.

9 Tutorials from Experts

ISSRE Tutorials are taught by some of the best known people in the area, drawing from a world community of experts.

2009 has broken from the past in its mechanism of selecting tutorials. We now have an Industry Workgroup that advises us on topics of current interest and need.

Tutorials are not entry level. They are meant for the seasoned professional who wants to advance their expertise.

Formal Model Based Methodology for Developing Controllers for Nuclear Applications, Bhabha Atomic Research Centre

Application of Fault Tree Analysis in the interface of complex medical device data systems, Medtronic, Inc.

Blind Men and the Elephant: Piecing Together Hadoop for Diagnosis, Carnegie Mellon University

Finding Dependencies from Defect History,Wipro, Microsoft Corporation

Software Defect Prediction Via Operating Characteristic Curves, Concordia University, SAP

Nonlinear trends for several software metrics, Cisco Systems

A sequential model approach to improve software assurance, Cisco Systems

Applying Software Defect Prediction Model for reliable product quality, Alcatel-Lucent

Model Driven Testing with Timed Usage Models in the Automotive Domain, Audi

The Goals and Challenges of Click Fraud Penetration Testing Systems, Google, Inc.

Reliability : A Software Engineering Perspective, Philips Electronics India Ltd

Orthogonal Defect Classification (ODC) in Agile Development, IBM

Challenges and solutions in test automation of medical visualization applications, Philips Electronics India Ltd

Software Reliability Prediction in Philips Healthcare – An Experience Report, Philips

Design of safety-critical systems with ASCET, ETAS Automotive India Pvt. Ltd

Process for improving the quality and reliability of fixes for customer reported defects,

Introduction of Developer Testing in an Embedded Environment, Cisco Systems,

Static Analysis in Medical Device Firmware and Software Development - Reliability and Productivity, Medtronic

Architecting for Reliability – Detection and Recovery Mechanisms, Alcatel-lucent

Automated Verification of Enterprise Load Tests, Queen's University

ODC Product Profiling, Chillarege Inc., CAT Electronics

ODC Deployment - A Case Study at Caterpillar, Chillarege Inc., CAT Electronics

Software Fault Injection, Cisco Systems

Visualizing the Results of Field Testing, Queen's University

Application of the Architectural Analysis and Design Language (AADL) for Quantitative System Reliability and Availability Modeling, Aerospace Corp.

25 Industry Papers

ISSRE has an Industry committee specially designed to review industry papers. While many industry authors also submit into the Research track, we also have an Industry track to better suit industry needs.

All industry papers are peer reviewed, but by the industry committee that is more familiar with the style of work and results that industry cares about.

This year 25 industry papers were selected from ~45 submissions.

Complexity Reliability Model, Naval postgraduate school

Wavelet-based Approach for Estimating Software Reliability, Hiroshima University

Optimal Security Patch Release Timing Under Non-Homogeneous Vulnerability-Discovery Processes, Hiroshima University Japan

Applying the Composition Filter Model for Runtime Verification of Multiple-Language Software, University of Twente

Harnessing Web-based Application Similarities to Aid in Regression Testing, University of Virginia

Insights on Fault Interference for Programs with Multiple Bugs, UT-Dallas Yan Shi, UT-Dallas

Towards Behavioral Reflexion Models, Fraunhofer USA, CESE

Reducing Field Failures in System Configurable Software: Cost-Based Prioritization, IBM, University of Nebraska-Lincoln USA

Fault tree analysis of software-controlled component systems based on second-order probabilities, Fraunhofer IESE

Looking at Web Security Vulnerabilities from the Programming Language Perspective: A Field Study, University of Coimbra

Automated Identification of LTL Patterns in Natural Language Requirements, Jet Propulsion Laboratory, California State University Fresno

Towards a Unifying Approach in Understanding Security Issues, NCSU

Estimating the probability of failure when software runs are dependent: An empirical study, West Virginia University USA

On the Effectiveness of Unit Test Automation at Microsoft, NCSU, Microsoft

Putting it All Together: Using Socio-Technical Networks to Predict Failures, UC Davis, Microsoft Research, University of Zurich

Variance analysis in software fault prediction models, West Virginia University USA

Optimal Adaptive System Health Monitoring and Diagnosis For Resource Constrained Cyber-Physical Systems, University of Texas at Dallas

Efficiently Extracting Operational Profiles from Executio Logs, NCSU

Approximating Deployment Metrics to Predict Field Defects, ABB

Issues on the Design of Efficient Fail-Safe Fault Tolerance, University of Warwick

21 Research Papers

ISSRE Research papers are subjected to one of the most stringent peer review processes. Each paper is reviewed by 4 or more experts who each write a page long review. These reviews are discussed in a face-to-face program committee which met this June in Raleigh NC. ISSRE maintains a published code of ethics and conflict of interest policy. PC members leave the room when discussions occur on any paper where there is any potential conflict of interest.

Authors typically submit their best papers to ISSRE. This year, we selected 21 from over 80 submissions.

Minimally Invasive Data Concealment in NTFS

Operational Profile-based Test Suite Generation using a Genetic Algorithm

Software Reliability Assessment for a Gearbox Controller by Analysis of Operating Experience

EEstimation of Software Testing Effort: An Intelligent Approach

Business Rules Separation and Reuse Using MDA, OWL and AspectJ

Early Software Reliability Prediction Using ANN for Process Oriented Development at Prototype Level

Application of Virtual Machine in Embedded Software Simulation Testing

Verification of Safety-Critical Software Requirement Based on Petri-Net Model Checking

Random Testing with Dynamically Updated Test Profile

Comparative study on threat identification techniques for dependability requirements

Survivability Model for Voice over Internet Protocol using Markov Regenerative Process

A User Friendly Software Reliability Analysis Tool based on Development Process to Iteratively Manage Software Reliability

A Resource Allocation Framework for the Predictable Continuity of Mission-Critical Network Services

Software Testing Technique Based on an Extended Push-down Automaton for Undo/Redo Functions

Control theoretic approach for the Reduction of RTT in a distributed system

Software Assurance Arguments vs. Formal Mathematical Arguments – A Complementary Role

Integrating the content security with the QoS in data networks

Data Network performance modeling and control through prediction feedback

OS Driver Test Effort Reduction via Operational Profiling

Impact of Error Models on OS Robustness Evaluations

A Test Generation Algorithm for 3-Way Software Testing

Using software health and quality indicators

Constrained Covering Arrays: Resolving invalid level combination constraints

Micro Process Adherence for Delivering Reliable Software

Effective Unit test Design and Automated Debugging

A Study on SFMEA method for UML-based Software

26 Fast Abstracts

A Fast Abstract is a lightly reviewed, two-page technical article that requires a short talk at the conference. The goal is to promote current work, research, practices, opinions, experiences, and issues. This is an early communication of technical work and does not always require completed results like that of a journal publication. Authors can introduce new ideas to the community or state positions on controversial issues.

11 Student Papers

Exploring AdaBoosting Algorithm for Combining Software Reliability Models

Automated Stress Testing of Windows Mobile GUI Applications

Method for Reliability Estimation of COTS components based Software Systems

An Analytical Framework of Survivability Model for VoIP

A Study on Software Reliability Engineering Present Paradigms and its Future Considerations

A Rule Set to Detect Interference of Runtime Enforcement Mechanisms

A comparison of three alternative means for safety critical control

Combining Multiple Learners Induced on Multiple Datasets for Software Effort Prediction

Selection of Fuzzy Logic Mechanism for Qualitative Software Reliability Prediction

SRS_AODV: SECURE ROUTING SCHEME FOR AODV

Researches on the Multi-ontology based Avionics Electronics Systems Software Requirements Elicitation Method

Tools Fair

- IBM (Rational, Appscan & Telelogic)
- Parasoft (Code Quality, Security, SOA toos)
- Quest Software (Database tools)
- Serena (Agile Project Management)
- Armorize (focused on Application Security)
- Collabnet focused on Open Source
- Microsoft
- ETAS (part of Bosch)

Organization

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Registration

Category	Early Rate	After October 15
IEEE Member	$550	$660
IEEE Non-Member	$700	$825
Student IEEE Member	$200	$250
Student Non-IEEE Member	$250	$300
Retired Member	$250	$250
Accompanying Adult	$100	$100

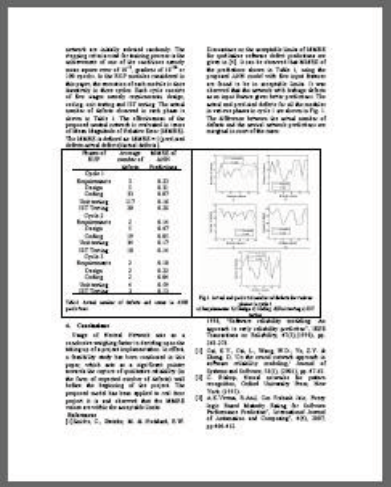
World-wide registration includes a ride-share taxi from Bengaluru airport (BLR) to Mysuru. If your travel requires a private taxi, then that can be arranged for an additional charge.

Infosys has also provide the foreign traveller a few extra days of stay, free on their residential campus. Read details on the website.

Register at www.issre2009.org

Infosys - Offers free rooms to ISSRE

Infosys has generously offered us a limited number of rooms (with two beds) at their residential training facility. These will be available free to participants, should you choose to stay on campus. During your registration process, please indicate if you choose to elect this option. We will confirm availability after your registration.



One of the discussion groups in the Embedded Software Workshop at ISSRE 2007 in Sweden.