The 30th Annual International Computer Software and Applications Conference

COMPSAC 2006

Chicago, USA, September 18-21, 2OO6

Beginning 2006, COMPSAC is designated as the IEEE Computer Society Signature Conference on Software Technology and Applications.

COMPSAC is a major international forum for researchers, practitioners, managers, and policy makers interested in computer software and applications. It was first held in Chicago in 1977, and since then it has been one of the major forums for academia, industry, and government to discuss the state of art, new advances, and future trends in software technologies and practices. The technical program includes keynote addresses, research papers, industrial case studies, panel discussions and fast abstracts. It also includes a number of workshops on emerging important topics.

COMPSAC 2006 At-a-Glance

	Monday (9/18)	Tuesday (9/19)	Wednesday (9/20)	Thursday (9/21)
8:00-9:30	CoSTEP Keynote 1: George Cybenko	CoSTEP Keynote 2: Werner Vogels	CoSTEP Plenary Panel: Chair - Stephen Yau	CoSTEP Keynote 3: Steve Fisher
9:30-10:00	**AM Break**	**AM Break**	**AM Break**	**AM Break**
10:00 - 11:30	Regular Paper Session R1: Testing 1	Regular Paper Session R5: Testing 2	Regular Paper Session R14: Testing 4	Regular Paper Session R17: Formal Methods/Models 2
	Regular Paper Session R2: Requirements/Design 1	Regular Paper Session R6: Web Services 1	Regular Paper Session R15: Pervasive Computing 2	Regular Paper Session R18: Testing 6
	Regular Paper Session R3: Security 1	Panel 2: Trustworthy Computing	Workshop 1: ESAS (session 1)	F1: Fast Abstract
	Tutorial 1 **(9:30-13:00)**	Regular Paper Session R7: Requirements/Design 2	Short Paper Session S3: Design/ Security 3	Workshop 4: IWSC (session 1)
	Tutorial 2 **(9:30-13:00)**		D1: Doctoral Symposium	Short Paper Session S6: Security 4
	Tutorial 3 **(9:30-13:00)**			
11:30-13:30	**Lunch**	**Lunch**	**Lunch**	**Lunch**
13:30-15:00	Short Paper Session S1: Pervasive/Performance 1	Regular Paper Session R8: Testing 3	Short Paper Session S4: Testing 5	Workshop 1: ESAS (session 4)
	Panel 1: E-security, Granular Computing and Web Intelligence	Regular Paper Session R9: Web Services 2	Regular Paper Session R16: Metrics	Workshop 3: SPTPA (session 1)
	Regular Paper Session R4: Security 2	Regular Paper Session R10: Formal Methods/Models 1	Workshop 1: ESAS (session 2)	F2: Fast Abstract
	Tutorial 2 **(13:30-17:00)**	Regular Paper Session R11: Architecture 1	Panel 4: Just Enough Requirements Traceability	Workshop 4: IWSC (session 2)
	Tutorial 4 **(13:30-17:00)**		D2: Doctoral Symposium	Regular Paper Session R19: Applications
15:00-15:15	**Reception (15:00-18:00):** **Host: Deborah Cooper, President of IEEE Computer Society**	**PM Break**	**PM Break**	**PM Break**
15:15-16:45		Regular Paper Session R12: Maintenance	Panel 5: Global SE projects and how to prepare our students	Workshop 5: TQACBS
		Short Paper Session S2: Web Services/Applications 3	Short Paper Session S5: Requirements/Design 3	Workshop 3: SPTPA (session 2)
		Panel 3: SE future from perspective of USA, Europe, India and Asia, and the research community	Workshop 1: ESAS (session 3)	F3: Fast Abstract
		Regular Paper Session R13: Architecture 2	Workshop 2: QATWBA	Workshop 4: IWSC (session 3)
			D3: Doctoral Symposium	IEEE CSDP Session
		CoSTEP Banquet (18:30-22:00): The Museum of Science & Industry	**COMPSAC 2007 Planning Meeting. All Welcome. (16:45-18:30)**	

Note: Please see session details for room allocation.

COMPSAC 2006 Tutorials

Monday September 18 2006

9:30-13:00

Tutorial 1: **Testing in a Quasi-Agile Software Development Environment**
Instructor: Timothy D. Korson, Korson Consulting **(Room: Augusta National A)**

•*Abstract*: This tutorial focuses on practical issues faced by increasing numbers of testers today. These issues arise from the fact that most test organizations are still structured around traditional software development practices even though many software development teams are heading full steam into modern agile software development techniques. QA managers trying to encourage best practices as recommended by CMMI and SPICE find themselves at odds with developers trying to adopt best practices as recommended by the Agile Manifesto. This leaves corporate QA stuck coping with an organizational and technical paradigm shift that traditional QA policies and practices are inadequate to handle. In the highly iterative environment characteristic of these agile development projects, development and testing processes are much more tightly integrated. System testers are expected to test early immature increments of the software, and are often called upon to plan, support and review the unit and component-level testing process. Developers, in addition to unit testing, may be called upon to assist with the automation of certain system-level tests. Risk assessment and overall test asset allocation must also be adapted.

The attendee will learn to integrate development and testing processes according to best current software engineering practices. Attendees learn how to create and execute effective tests *at all levels and for all development phases* for modern software systems. The presentation covers organizational issues for the testing process that are introduced by the aggressive iterative, incremental nature of agile software development projects. Specific testing techniques that are covered include incrementally deriving system test cases from requirements as well as ways to exploit the well specified interfaces of components. In addition to the discussion of techniques and best practices, this tutorial addresses how to adapt, survive, and hopefully even thrive in mixed culture environments, where the developers are coming from an agile mindset, but some or all of the stakeholders, managers, testers, and others in the organization are coming from a traditional mindset.

Tutorial 3: **Best Practices for Software Quality Specification, Testing, and Certification of COTS and Bespoken Systems (Room: Augusta National B)**
Instructor: Hans-Ludwig Hausen, Fraunhofer Institute, St. Augustin, Germany

•*Abstract*: The seminar will cover the principles and the normative quality characteristics as well as the standardized procedures of information quality assurance resp. software system quality assurance (comprising V&V, test, measurement and assessment) for procedural, object-oriented and agent-based dependable software systems.

Attendees will exercise proven techniques for goal-directed measurement, scaling and assessment for software certification. Assessment of both the software product as well as the software process will be discussed with respect to its relevance for such acceptance assessments.

A standardized process model for measurement, assessment and certification of dependable software will be used to make the attendees familiar with this comprehensive assessment procedure and to learn how to embed it into today's standardized or non-standardized software processes.

Basic knowledge in mathematics and some knowledge of software methods and tools are required. Emphasis will be given to selected advanced topics depending on the needs of participants.

9:30-13:00, lunch break, 13:30-17:00

Tutorial 2: **An Introduction to Computer Forensics**
Instructor: Warren Harrison, Portland State University **(Room: Turnberry)**

•*Abstract*: Long the domain of law enforcement, computer forensics is beginning to enter the mainstream of computing sciences as digital devices increasingly become a ubiquitous part of daily life. Unlike many fields within the computing domain, advances are not so much limited by technology as they are by the artificial constraints imposed by statutory and constitutional limitations. This tutorial will introduce participants to those limitations, discuss the principles and practices of contemporary computer forensics, and explore the current and future challenges for software technologists working in this space.

13:30-17:00

Tutorial 4: **Testing Object-Oriented and Web-Based Applications**
Instructor: David C. Kung, University of Texas at Arlington **(Room: Augusta National B)**

•*Abstract*: Software quality is an important aspect of a software system. Software testing is a

software quality assurance activity to ensure that the desired software quality objectives are met. Although numerous software testing methods have been reported in the literature, how can a practitioner implement and apply the test methods in practice with minimal effort and maximal gain is usually not addressed. This is also true for object-oriented (OO) software and web-based application testing.

The proposed tutorial is aimed to provide a practical introduction to methods and tools for OO software and web-based application testing. The emphasis will be the use of existing free software tools to implement and apply the test generation methods in practice. In particular, an integrated framework for streamlining several free software tools to implement various test methods will be presented and demonstrated. The participants will have hands-on experience to testing OO software using a prototype of the framework. By the end of the tutorial the participants will gain a basic understanding of OO software testing, know how to use the tools to generate and execute test cases and analyze the test results with respect to software quality requirements objectives.

This tutorial is aimed for OO software and web-based application developers and testers. In addition, software project managers can benefit from this tutorial by gaining a basic understanding of software testing in general and what are the available free resources. The materials presented in this tutorial may also be useful for instructors who is offering or planning to offer an OO software and/or web-based application testing course.

COMPSAC 2006 Program

Monday September 18 2006

08:00-9:30 Opening Session (Room: Rosemont ABCD (Main Lobby)
• **Opening Remark and Awards Presentation:** Deborah Cooper, 2006 President, IEEE Computer Society
• **CoSTEP Keynote Address 1:** *Practical Autonomic Computing,* George Cybenko, Professor, Dartmouth College

9:30-10:00 AM Break

10:00-11:30 Parallel Sessions

Session 1: Regular Paper Session R1: Testing 1
Chair: Neelam Gupta **(Room: London)**
• *Proportional Intensity-Based Software Reliability Modeling with Time-Dependent Metrics:* Koichiro Rinsaka, Kazuya Shibata, Tadashi Dohi
• *Automatic Identification of Change Points for the System Testing Process*: Joao Cangussu, Michael Baron
• *Backtracking Algorithms and Search Heuristics to Generate Test Suites for Combinatorial Testing*: Jun Yan, Jian Zhang

Session 2: Regular Paper Session R2: Requirements/Design 1
Chair: George A. Papadopoulos **(Room: Pine Valley)**
• *Phrasing in Dynamic Requirements Trace Retrieval*: Xuchang Zou, Raffaella Settimi, Jane Cleland-Huang
• *An Instance-based Structured Object Oriented Method for Co-analysis/Co-design of Concurrent Embedded Systems*: Matthew Ryan, Sule Simsek, Xiaoqing (Frank) Liu, Bruce McMillin, Ying Cheng
• *A Methodology for Structured Object-Oriented Elicitation and Analysis of Temporal Constraints in Hardware/Software Co-analysis and Co-design of Real-Time Systems*: Yan Sun, Xiaoqing (Frank) Liu, Bruce McMillin

Session 3: Regular Paper Session R3: Security 1
Chair: Pankaj Jalote **(Room: Vienna)**
• *A Pattern-Based Technique for Developing UML Models of Access Control Systems:* Dae-Kyoo Kim, Priya Gokhal
• *Efficacy of Hidden Markov Models Over Neural Networks in Anomaly Intrusion Detection:* Mohammad Al-Subaie, Mohammad Zulkernine
• *An ontology based approach to software comprehension- Reasoning about security concerns in source code:* Yonggang Zhang, Juergen Rilling, Volker Haarslev

11:30-13:30 Lunch Break

13:30-15:00 Parallel Sessions

Session 4: Short paper Session S1: Pervasive/Performance 1
Chair: Jason Nieh **(Room: London)**
• *A Novel Structure-oriented Difference Approach for Software Artifacts:* Tien Nguyen
• *Location Updates In Cellular Networks Using Bloom Filters:* Kamala Subramaniam, Alan Tharp, Arne Nilsson
• *Distributed Processes on Tree Hash:* Kyosuke Yasuda, Takao Miura

- *Trading integrity for availability by means of explicit runtime constraints:* Lorenz Froihofer, Johannes Osrael, Karl M. Goeschka
- *A Run-time Adaptive and Code-size Efficient XML Parser:* Yanming Zhou, Mingbin Qu
- *Performance Analysis of an Asnchronous Web Server:* Swapna Gokhale, Upsorn Praphamontripong, Aniruddha Gokhale, Jeff Gray

Panel Session 1: E-security, Granular Computing and Web Intelligence

Organizer: T.Y. Lin, San Jose State University, USA **(Room: Pine Valley)**

Panelists: Shsaku Tsumoto, Shimane University, Japan

Ning Zhong, Beijing University of Technology, China

Session 5: Regular paper Session R4: Security 2

Chair: Abdeslam En-Nouaary **(Room: Vienna)**

- *Integrating static and dynamic analysis for detecting vulnerabilities:* Ashish Aggarwal, Pankaj Jalote
- *Security Consistency in UML Designs:* Orest Pilskalns, Daniel Williams, Damir Aracic, Anneliese Andrews
- *A Service-Oriented Design Framework for Secure Network Applications:* Hiroshi Wada, Junichi Suzuki, Katsuya Oba

15:00-18:00 CoSTEP Reception (Rosemont CD); Host: Deborah Cooper, 2006 President, IEEE Computer Society

Tuesday September 19 2006

08:00-9:30 Plenary Session (Room: Rosemont ABCD (Main Lobby))

- **CoSTEP Keynote Address 2: Werner Vogels, CTO, Amazon.com**

9:30-10:00 AM Break

10:00-11:30 Parallel Sessions

Session 6: Regular Paper Session R5: Testing 2

Chair: Kai-Yuan Cai **(Room: Paris)**

- *Testing Scenario Implementation with Behavior Contracts:* Donglin Liang, Kai Xu
- *On the Detection Conditions of Double Faults Related to Terms in Boolean Expressions:* Man Lau, Ying Liu, Yuen Yu
- *Test Case Prioritization Using Relevant Slices:* Dennis Jeffrey, Neelam Gupta

Session 7: Regular Paper Session R6: Web Services 1

Chair: Yaw-Chung Chen **(Room: Turnberry)**

- *Performance and Availability Analysis of an E-Commerce Site:* Swapna Gokhale, Jijun Lu
- *Automated Agent Synthesis for Situation Awareness in Service-based Systems:* Stephen S. Yau, Haishan Gong, Dazhi Huang, Wei Gao, Luping Zhu

Panel Session 2: Trustworthy Computing (Room: Rosemont AB)

Organizer: Ann Miller, University of Missouri, Rolla, USA

Panelists: O. Sami Sayjdari, Cyber Defense Agency, USA

John McLean, Naval Research Laboratory, USA

Jeff Voas, Science Applications International Corporation, USA

Session 8: Regular Paper Session R7: Requirements/Design 2

Chair: Jane Cleland-Huang **(Room: United A)**

- *A Coordination Framework for Software Component Based Development:* Jiang Guo
- *An Approach for Developing Adaptive, Mobile Applications with Separation of Concerns:* Nearchos Paspallis, George A. Papadopoulos
- *CAPIS Model Based Software Design Method for Sharing Experts' Thought Processes:* Katsunori Oyama, Atsushi Takeuchi, Hiroshi Fujimoto

11:30-13:30 Lunch Break

13:30-15:00 Parallel Sessions

Session 9: Regular Paper Session R8: Testing 3

Chair: Joao Cangussu **(Room: Paris)**

- *A Network-level Distributed Fault Injector for Experimental Validation of Dependable Distributed Systems:* Gabriela Jacques-Silva, Roberto Jung
- *Reference Models and Automatic Oracles for the Testing of Mesh Simplification Software for Graphics Rendering:* W.K. Chan, S.C. Cheung, Jeffrey Ho, T.H. Tse
- *Forgetting Test Cases:* Kwok Ping Chan, T. Y. Chen, Dave Towey

Session 10: Regular Paper Session R9: Web Services 2

Chair: Dick Simmons **(Room: Turnberry)**

- *Web Service Retrieval: An Approach based on Context Ontology*: Zhi Jin, Lin Liu
- *A Communication Virtual Machine*: Yi Deng, S. Masoud Sadjadi, Peter Clarke, Chi Zhang, Vagelis Hristidis, Raju Rangaswami, Nagarajan Prabakar
- *Quantitative Analysis on Web Objects' Cacheability*: Chi-Hung Chi, Lin Liu, LuWei Zhang

Session 11: Regular Paper Session R10: Formal Methods/Models 1

Chair: Hongji Yang **(Room: Rosemont AB)**

- *Verifying Java Programs By Theorem Prover HOL:* Anduo Wang, Fei He, Ming Gu, XiaoYu Song
- *Model Checking with Induction:* Kuangnan Chang, David Kung
- *On the Distribution of Property Violations in Formal Models: An Initial Study:* Jimin Gao, Mats Heimdahl, David Owen, Tim Menzies

Session 12: Regular Paper Session R11: Architecture 1

Chair: Ralph Johnson **(Room: United A)**

- *An Aspect-Oriented Approach to Resource Composition in Petri net-based Software Architectural Models:* Tae-hyung Kim, Carl Chang
- *Engineering Reconfigurable Product Families - Architecting the Variability Infrastructure of a Product Family On-Chip:* Michel Jaring
- *A Biologically-Inspired Autonomic Architecture for Self-Healing Data Centers:* Paskorn Champrasert, Junichi Suzuki

15:00-15:15 PM Break

15:15-16:45 Parallel Sessions

Session 13: Regular Paper Session R12: Maintenance

Chair: Jian Zhang **(Room: Paris)**

- *An Experimental Study on Software Aging and Rejuvenation in Web Servers:* Rivalino Matias Jr., Paulo J. F. Filho
- *A Formal Model Driven Approach to Dependable Software Evolution:* Feng Chen, Hongji Yang, Bing Qiao

Session 14: Short paper Session S2: Web Services/Applications 3

Chair: James Cross **(Room: Turnberry)**

- *Modeling Web Accessibility: A Case Study on Texas A&M University People Website:* Yong Wang, Dick Simmons
- *Tool for analysis and simulation of TTCAN communication in distributed systems:* Jose Antonio de Frutos, Esther Cadinanos, Juan Ignacio Perez, Sara Garcia
- *Moving Software from Expense to Asset:* Krishnan R, Margaret Nadworny
- *Automated negotiation for service contracts:* Russell Lock
- *ARIMAmmse: An Improved ARIMA-based Software Productivity Prediction Method:* Li Ruan, Yongji Wang, Fengdi Shu, Haitao Zeng
- *An Interface Theory Based Approach to Verification of Web Services:* Zhenbang Chen, Ji Wang, Wei Dong, Zhichang Qi

Panel Session 3: Software Engineering future from perspective of USA, Europe, India and Asia, and the research community (Room: Rosemont AB)

Organizer: Dick B. Simmons, Texas A&M University

Panelists: Bhavani Thuraisingham, University of Texas at Dallas

Barrie Thompson, University of Sunderland, UK

Carl K. Chang, Iowa State University

Krishna Kavi, University of North Texas

Session 15: Regular Paper Session R13: Architecture 2

Chair: Ashish Jain **(Room: United A)**

- *Detecting Data Races in Framework-based Applications:* Federico Balaguer, Thuc Ho, Ralph Johnson
- *Tool Support to Model-based Quality Analysis of Software Architectures:* Qian Zhang, Jian Wu, Hong Zhu
- *Generating Domain Specific Graphical Modeling Editors from Meta:* Rabih Zbib, Ashish Jain, Devasis Bassu, Hira Agrawal

18:30-22:00 CoSTEP Banquet, The Museum of Science & Industry, 57th Street and Lakeshore Drive, Chicago, IL 60637-2093; Bus Transportation provided.

Wednesday September 20 2006

08:00-9:30 Plenary Session (Room: Rosemont ABCD (Main Lobby)

- **Panel: Future Trends of Software Technology and Applications**

Chair: Stephen S. Yau, Arizona State University, USA

Panelists: Paul C. Clements, Carnegie Mellon University

Warren Harrison, Portland State University and IEEE Software Magazine

John C. Knight, University of Virginia

9:30-10:00 AM Break

10:00-11:30 Parallel Sessions

Session 16: Regular Paper Session R14: Testing 4

Chair: T. H. Tse **(Room: Pine Valley)**

- *Automatic Validation of Java Page Flows Using Model-Based Coverage Criteria:* Jonatan Alava, Tariq King, Peter Clarke
- *A Case Study for Invalidating the Markovian Property of GUI Software Structural Profile*: Bei-Bei Yin, Yan Shi, Cheng-Gang Bai, Kai-Yuan Cai

- *A Systematic Regression Testing Method and Tool for Software Components*: Jerry Gao, Deepa Gopinathan, Quan Mai, Jingsha He

Session 17: **Regular Paper Session R15: Pervasive Computing 2**
Chair: Swapna Gokhale **(Room: Turnberry)**
- *Highly Reliable Mobile Desktop Computing in Your Pocket:* Shaya Potter, Jason Nieh
- *Proxy-Based Pervasive Multimedia Content Delivery:* Chi-Hung Chi, Henry Palit, Lin Liu

Session 18: **Short Paper Session S3: Design/ Security 3**
Chair: Mohammad Zulkernine **(Room: Paris)**
- *Prevent Feature Interactions Using Constraints:* Jihong Zuo, Qianxiang Wang, Hong Mei
- *Trustworthy Systems Build Upon a Trusted Platform Module:* Matt Barrett, Clark Thomborson
- *Separating functional and non-functional concerns through coordination: an application to reliability:* Poirot Pierre-Etienne, Shangping Ren, Jerzy Nogiec, Jeffery Tsai
- *SSRD+: A Privacy-aware Trust and Security Model for Resource Discovery in Pervasive Computing Environment:* Moushumi Sharmin, Shameem Ahmed, Sheikh Ahamed, Haifeng Li
- *Security Design Based on Social Modelling:* Lin Liu, Chi-hung Chi, Eric Yu, John Mylopoulos

11:30-13:30 Lunch Break
13:30-15:00 Parallel Sessions
Session 19: **Short Paper Session S4: Testing 5**
Chair: Eric Wong **(Room: Pine Valley)**
- *A Technique to Reduce the Test Case Suites for Regression Testing Based on a Self-Organizing Neural Network Architecture:* Adenilso Simao, Luciano Senger, Rodrigo Mello
- *Realization of Systematic Reliability Analysis of Decomposable Systems:* Sung Kim, Garrett Hoff
- *Automating the Generation of Test Cases from Object-Z Specifications:* Adnan Ashraf, Aamer Nadeem
- *Ways to Benefit from a Class Test Order:* Yvan Labiche
- *The Validation Methods for Artifact Specifications in a Workflow Schema:* Feng-Jian Wang, Chia-Lin Hsu, Huin-Jen Hsu

Session 20: **Regular Paper Session R16: Metrics**
Chair: Sheikh Iqbal Ahamed **(Room: Turnberry)**
- *Design Structural Stability Metrics and Post-Release Defect Density: An Empirical Study:* Mahmoud Elish, David Rine
- *Software Effort Estimation Based on Use Cases Object-Oriented Software:* Marcio Braz, Silvia Vergilio
- *Scale Free in Software Metrics:* Jing Liu, Keqing He, Yutao Ma
- *An Agent-Based Metric for Quality of Services over Wireless Networks:* Yaw-Chung Chen, Wen-Yen Chen

Panel Session 4: **Just Enough Requirements Traceability (Room: Paris)**
Organizer: Jane Huang, Depaul University
Panelists: Brad Appleton, SCM Process & Tools Architect
      Theresa Dennis, Sterigenics Corp
      Mikio Aoyama, Nanzan University
      Martin Glinz, University of Zurich

15:00-15:15 PM Break
15:15-16:45 Parallel Sessions
Panel Session 5: **Global software engineering projects and how to prepare our students (Room: Pine Valley)**
Organizer: Sheikh Iqbal Ahamed, Marquette University
Panelists: Rajiv Ramnath, Ohio State University, USA
      Venu Vasudevan, Motorola, USA
      Monica Adiya, Marquette University, USA
      Umesh Bellur, IIT Bombay, India

Session 21: **Short Paper Session S5: Requirements/Design 3**
Chair: Feng-Jian Wang **(Room: Turnberry)**
- *Choosing the Right Time to Compose Aspectual Scenarios:* Joao Araujo, Jon Whittle, Ana Moreira
- *Self-Management of COTS Component-Based Systems Using Wrappers:* Michael Shin, Fernando Paniagua
- *Intelligent Classification and Retrieval of Software Components:* Andreas Andreou, Dimitrios Vogiatzis, George Papadopoulos
- *Traceability Between Software Architecture Models:* Yaodong Feng, Gang Huang, Jie Yang, Hong Mei
- *Achieving Dependable Component-Based Systems Through Generative Aspect Oriented Component Adaptation:* Xiaodong Liu, Yankui Feng, Jon Kerridge
- *The Model and Implementation of Component Array Container:* Zhao Liu, Gang Huang, Hong Mei

16:45-18:30 COMPSAC 2007 Planning Meeting, All Welcome. (Room: Grand Cypress AB)

Thursday September 21 2006

08:00-9:30 Plenary Session (Room: Rosemont ABCD (Main Lobby)
- **CoSTEP Keynote Address 3:** *Service Computing: The AppExchange Platform*, Steve Fisher, salesforce.com

9:30-10:00 AM Break
10:00-11:30 Parallel Sessions
Session 22: **Regular Paper Session R17: Formal Methods/Models 2**
Chair: David Kung **(Room: Pine Valley)**
- *Efficient Modeling of Hierarchical Dialog Flows for Multi-Channel Web Applications:* Matthias Book, Volker Gruhn
- *A Formal Approach to Pre-Market Review for Medical Device Software:* Raoul Jetley, S. Purushothaman Iyer, Paul Jones
- *Modeling the "Symptomatic Fixes" Archetype in Enterprise Computer Security:* Shalom N. Rosenfeld, Ioana Rus, Michel Cukier

Session 23: **Regular Paper Session R18: Testing 6**
Chair: Wu Chou **(Room: Turnberry)**
- *Architecting a Testing Framework for Publish/Subscribe Applications:* Anton Michlmayr, Pascal Fenkam, Schahram Dustdar
- *An Empirical Study on the Selection of Good Metamorphic Relations:* Johannes Mayer, Ralph Guderlei

Session 24: **Short Paper Session S6: Security 4**
Chair: Clark Thomborson **(Room: Grand Cypress AB)**
- *An Aspect-Oriented Approach to Security Requirements Analysis:* Dianxiang Xu, Vivek Goel, Kendall Nygard
- *A Software Architectural Approach to Security By Design:* Arnab Ray, Rance Cleaveland
- *Reflective, Model-Based Data Access with the Type-Safe Entity Container:* Gernot Schmoelzer, Christian Kreiner, Zsolt Kovacs, Michael Thonhauser

11:30-13:30 Lunch Break
13:30-15:00 Parallel Sessions
Session 25: **Regular Paper Session R19: Applications**
Chair: Hira Agrawal **(Room: Grand Cypress AB)**
- *A Performance Engineering Tool for Tiered Software Systems:* Vibhu Saujanya Sharma, Pankaj Jalote, Kishor S Trivedi
- *Accomplishments and Challenges of Protein Ontology:* Amandeep Sidhu, Tharam Dillon, Elizabeth Chang, Farookh Hussain
- *Alert Based Monitoring of Stock Trading Systems:* Edward W.Y. Ho, Dickson K.W. Chiu, Patrick C.K. Hung

15:00-15:15 PM Break
15:15-16:45 Parallel Sessions
IEEE CSDP: Software Engineering Certification Birds-of-a-feather (Room: Grand Cypress AB)

COMPSAC 2006 Workshops

Workshop 1: International Workshop on Engineering Semantic Agent Systems (ESAS 2006)

Organiser and Chair: Atilla Elci, Eastern Mediterranean University, Turkey; Mamadou Tadiou Kone, Laval University, Canada; Tharam S. Dillon, University of Technology Sydney, Australia

Wednesday September 20 2006
10:00 - 11:30, Lunch Break, 13:30-15:00, PM Break, 15:15-16:45 (Room: Grand Cypress AB)
Session 1: **SWS & search**
Chair: Xian Shen
- *Discovery and scoring of semantic Web services based on client requirement(s) through a semantic search agent:* Duygu Celik, Atilla Elci
- *A Semantic ranking for hitting results of matchmaking of services:* Xian Shen, Xin Jin, Rongfang Bie, Yunchuan Sun
- *Agent based offline electronic voting:* Mehmet Tahir Sandikkaya, Bülent Orencik

Session 2: **Ontologies & Schema**
Chair: Stanislav Ustymenko
- *Consensus Ontology Generation in a Socially Interacting MultiAgent System*: Ergun Bicici

- *An Agent oriented logic for belief and trust*: Stanislav Ustymenko, Daniel Schwartz
- *Entaglement partitioning of quantum particles for data clustering*: Dianxun Shuai, Qing Shuai

Session 3: MAS/SOA dev paradigms
Chair: Atilla Elci

- *Model-driven agile development of reactive multi-agent systems*: James Kirby
- *Understanding requirements: aspect oriented software development*: Deepak Dahiya
- *Mine detection and route planning using agent based system*: Kashif Zafar, Rauf Baig, Shahzad Badar Qazi, Saima Zafar

Thursday September 21 2006
13:30-15:00 (Room: Pine Valley)
Session 4: Security & mobile agents
Chair: Ahmed Elmisery

- *An improved free roaming mobile agent security protocol against truncation attack*: Darren Xu, Lein Harn, Mayur Narasimhan, Junzhou Luo
- **Secure e-payment using multi-agent** architecture: Ahmed Elmisery

Workshop 2: The Third International Workshop on Quality Assurance and Testing Web-Based Applications (QATWBA 2006)

Organiser and Chair: Hong Zhu, Oxford Brookes University, UK; David Kung, University of Texas at Arlington, USA
Wednesday September 20 2006
15:15-16:45 (Room: Paris)
Chair: David Kung

- *A Framework for Service-Oriented Testing of Web Services:* Hong Zhu
- *A Multi-Agent Framework for Testing Distributed Systems:* Hany EL Yamany, Miriam Capretz, Luiz Capretz
- *A Framework of Model-Driven Web Application Testing:* Nuo Li, Qin-qin Ma, Ji Wu, Mao-zhong Jin, Chao Liu
- *Testability of Software in Service-Oriented Architecture:* W. T. Tsai, Jerry Gao, Xiao Wei, Yinong Chen

Workshop 3: Security, Privacy, and Trust for Pervasive Applications (SPTPA 2006)

Organiser and Chair: Sheikh Iqbal Ahamed, Marquette University, USA; Mohammad Zulkernine, Queens University, Canada
Thursday September 21 2006
13:30-15:00, PM Break, 15:15-16:45 (Room: Turnberry)
Session 1:
Chair: Mohammad Zulkernine

- **Keynote:** *Some Issues for Security, Privacy, and Trust for Pervasive Computing Systems*, Matt Mutka, Michigan State University
- *Security Analysis of RFID Authentication for Pervasive Systems using Model Checking*: Hyun-Seok Kim and Jin-Young Choi
- *Intrusion Detection in Pervasive Networks Based on a Chi-Square Statistic Test*: Bo Zhou, Qi Shi, and Madjid Merabti

Session 2:
Chair: Sheikh Iqbal Ahamed

- **Invited speaker:** *Drivers in pervasive platforms (application drivers, computing trajectory). privacy and security challenges*, Venu Vasudevan, Department manager of pervasive platforms and architectures applications research, Motorola labs
- *Property-Based Peer Trust in the Sleeper Service Discovery Protocol*: John Buford, Emre Celebi and Phyllis Frankl
- *Application of Fuzzy Logic in Federated Trust Management for Pervasive Computing*: Zhengping Wu and Alfred Weaver

Workshop 4: The Third International Workshop on Software Cybernetics (IWSC 2006)

Organiser and Chair: James H. Graham, University of Louisville, USA; Kai-Yuan Cai, Beijing University of Aeronautics and Astronautics, China
Thursday September 21 2006
10:00 - 11:30, Lunch Break, 13:30-15:00, PM Break, 15:15-16:45 (Room: United A)
Chair: TBD

- *A Dynamic Partitioning Approach for GUI Testing*, Kai-Yuan Cai, Lei Zhao and Feng Wang
- *Automatic Stress and Load Testing for Embedded Systems:* Mohamad S. Bayan and Joao W. Cangussu

- *Early Software Reliability Prediction with Extended ANN Model:* Q.P. Hu, M. Xie, S.H. Ng, and Yuanshun Dai
- *A New Generalized Particle Dynamics Model For Software Cybernetics:* Dianxun Shuai and Qing Shuai
- *Self-Organizing Software Processes Based on Particle Dynamics Model:* Dianxun Shuai and Qing Shuai
- *A Visual Constraint Specifying Approach for Adaptive Software:* Qianxiang Wang, Min Li, Na Meng
- *Theory of Enterprise Command and Control:* Jay Bayne
- *Self-Metamorphic-Testing Components:* Sami Beydeda

Workshop 5: Second International Workshop on Testing and Quality Assurance for Component-Based Systems (TQACBS 2006)

Organiser and Chair: Stephen Yau, Arizona State University, USA; Jerry Gao, San Jose State University, USA; Sami Beydeda, The Federal Finance Office, Germany
Thursday September 21 2006
15:15-16:45 (Room: Pine Valley)
Chair: Sami Beydeda

- *The MORABIT approach to runtime component testing:* Dima Suliman, Barbara Paech, Colin Atkinson, Daniel Brenner, Matthias Merdes, Rainer Malaka
- *Automated Health-Assessment of Software Components using Management Instrumentation:* Fariaz Karim, Harish Thanneer
- *A Practical Approach for Automated Test Case Generation Using Statecharts:* Valdivino Santiago, Ana Amaral, Nandamudi Vijaykumar, Maria de Fatima Mattiello-Francisco, Eliane Martins, Odnei Lopes
- *Quality Assurance of Open Source Components in Communities and Companies:* Pekka Maki-Asiala, Mari Matinlassi

COMPSAC 2006 Doctoral Symposium

Organizer: Sahra Sedigh-Ali
Wednesday September 20 2006
10:00-11:30, Lunch Break, 13:30-15:00, PM Break, 15:15-16:45 (Room: United A)
Session Chairs: Sahra Sedigh-Ali, Aditya Mathur, Ralph Johnson

- *Information Privacy Management in Smart Home Environments: Modeling, Verification, and Implementation*: Ryan Babbitt
- *SymbioticSphere: A Biologically-Inspired Autonomic Architecture for Self-Managing Network Systems*: Paskorn Champrasert
- *A General Purpose Framework for Wireless Sensor Network Applications*: Ayman Faza
- *Can the Genetic Algorithm Be a Good Tool for Software Engineering Searching Problems?*: Hsinyi Jiang
- *A Control-Theoretic Aid to Managing the Construction Phase in Incremental Software Development*: Scott David Miller
- *A Model-Driven Framework for Domain-Specific Software Development and Domain Specific Language for Secure Applications*: Hiroshi Wada
- *Intrusion Detection Techniques in Wireless Ad-hoc Networks*: Xia Wang
- *QoS-Based Service Composition*: Jinchun Xia

COMPSAC 2006 Fast Abstract

Organizer: Sahra Sedigh-Ali
Thursday September 21 2006
10:00 - 11:30, Lunch Break, 13:30-15:00, PM Break, 15:15-16:45 (Room: Cypress Point)
Session Chairs: Aditya Mathur, T. Y Chen, Eric Wong

- *Technical Solution to Automate Smoke Test Using Rational Functional Tester and Virtualization Technology*: Nai Yan Zhao and Mi Wan Shum
- *Identifying and testing for insecure paths in cryptographic protocol Implementations*: K R Jayaram
- *A Continuous Improvement Model in ImPProS*: Sandro Ronaldo Bezerra Oliveira
- *Building a UML Profile for On-Chip DistributedPlatforms*: Tuomas Lindroth
- *Dynamic Object Viewers for Java*: James H. Cross II, T. Dean Hendrix, Larry A. Barowski, and Jhilmil Jain
- *Autonomous Real-Time Monitoring of Hydrological Environments*: Thomas Freiburger, John Koch, and Valerio Plessi
- *An Autonomous and Adaptable Wireless Device for Flood Monitoring*: Valerio Plessi, Filippo Bastianini, and Sahra Sedigh-Ali
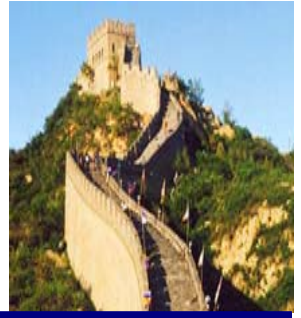
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The creation of trustworthy and dependable software spans all aspects of software engineering. COMPSAC is a unique forum to bring together these facets and their major stakeholders. Building on the trustworthy, secure, and dependable software themes of highly successful recent COMPSAC conferences, the technical theme for the 31st conference is SOFTWARE ENGINEERING -- CRITICAL FEATURES and INFRASTRUCTURES

The program of COMPSAC 2007 will continue to feature research and industrial practice papers with a wide range of topics, focusing on the software engineering of critical infrastructure systems such as, but not limited to, civil, telecommunications, and medical systems. To properly engineer such systems, the foundations, methodologies, and mechanisms that support the design, modelling, and evaluation of software systems must come from diverse sources. Topics of interest include requirement analysis, co-analysis and co-design, modelling, design, development, testing, measurement, verification and validation for performance, safety, security, and dependability constraints. Effective construction of these systems is not limited solely to the field of computer science and engineering and is truly a multidisciplinary effort. Multidisciplinary work, research and development software prototypes, industry-university collaborations, all based on new emerging and critical technologies will be of particular interest to this conference. All accepted papers will be published in the conference proceedings in hardcopy and on-line version by the IEEE Computer Society.

Authors are invited to submit original, unpublished research papers as well as industrial practice papers. Detailed instructions for electronic paper submission, panel and workshop proposals, tutorial proposals, and review process can be found at http://www.compsac.org/. The length of the camera-ready of an accepted full paper and short paper will be limited to 8 and 4 (IEEE Proceedings style) pages, respectively, and printed on 10-12 point fonts. Please follow the IEEE Computer Society Press Proceedings Author Guidelines to prepare your papers. At least one author of each accepted paper is required to pay full registration fee to the conference and present the paper. One Best Paper award and 1-3 Best Student Paper Awards will be presented by COMPSAC 2007. The first author of the best student papers must be full-time students.

IMPORTANT DATES

◆ **November 1, 2006:** Workshop Proposals due
◆ **January 15, 2007:** Abstract due
◆ **January 31, 2007:** Full Paper and Short Paper due
◆ **March 15, 2007:** Decision Notification (electronic)
◆ **April 15, 2007:** Camera-Ready copy and Pre-registration due

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Program co-Chair: Bruce McMillin at ff@umr.edu

Information on accepted workshops and the submissions of workshop papers will be available at the conference website http://www.compsac.org/

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For more detailed and updated information, please refer to: http://www.compsac.org/

For further information, please contact: Carl Chang, Chair, Standing Committee, at chang@iastate.edu