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

<table>
<thead>
<tr>
<th>Monday (9/18)</th>
<th>Tuesday (9/19)</th>
<th>Wednesday (9/20)</th>
<th>Thursday (9/21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:30</td>
<td>CoSTEP Keynote 1: George Cybenko</td>
<td>CoSTEP Keynote 2: Werner Vogels</td>
<td>CoSTEP Plenary Panel: Chair - Stephen Yau</td>
</tr>
<tr>
<td>9:30-10:00</td>
<td>AM Break</td>
<td>AM Break</td>
<td>AM Break</td>
</tr>
<tr>
<td>10:00 - 11:30</td>
<td>Regular Paper Session R1: Testing 1</td>
<td>Regular Paper Session R5: Testing 2</td>
<td>Regular Paper Session R14: Testing 4</td>
</tr>
<tr>
<td></td>
<td>Regular Paper Session R2: Requirements/Design 1</td>
<td>Regular Paper Session R6: Web Services 1</td>
<td>Regular Paper Session R15: Pervasive Computing 2</td>
</tr>
<tr>
<td></td>
<td>Tutorial 1 (9:30-13:00)</td>
<td>Regular Paper Session R7: Requirements/Design 2</td>
<td>Short Paper Session S3: Design/ Security 3</td>
</tr>
<tr>
<td></td>
<td>Tutorial 2 (9:30-13:00)</td>
<td>Tutorial 3 (9:30-13:00)</td>
<td>Workshop 1: ESAS (session 1)</td>
</tr>
<tr>
<td></td>
<td>Lunch</td>
<td>Lunch</td>
<td>F1: Fast Abstract</td>
</tr>
<tr>
<td>13:30-15:00</td>
<td>Short Paper Session S1: Pervasive/Performance 1</td>
<td>Regular Paper Session R8: Testing 3</td>
<td>Short Paper Session S4: Testing 5</td>
</tr>
<tr>
<td></td>
<td>Panel 1: E-security, Granular Computing and Web Intelligence</td>
<td>Regular Paper Session R9: Web Services 2</td>
<td>Workshop 3: SPTPA (session 1)</td>
</tr>
<tr>
<td></td>
<td>Regular Paper Session R4: Security 2</td>
<td>Regular Paper Session R10: Formal Methods/Models 1</td>
<td>Workshop 1: ESAS (session 2)</td>
</tr>
<tr>
<td></td>
<td>Tutorial 2 (13:30-17:00)</td>
<td>Regular Paper Session R11: Architecture 1</td>
<td>Panel 4: Just Enough Requirements Traceability</td>
</tr>
<tr>
<td></td>
<td>Tutorial 4 (13:30-17:00)</td>
<td>D1: Doctoral Symposium</td>
<td>Workshop 4: IWSC (session 2)</td>
</tr>
<tr>
<td>15:00-15:15</td>
<td>Reception (15:00-18:00): Host: Deborah Cooper, President of IEEE Computer Society</td>
<td>PM Break</td>
<td>Workshop 1: ESAS (session 4)</td>
</tr>
<tr>
<td></td>
<td>15:15-16:45</td>
<td>PM Break</td>
<td>Workshop 5: TQACBS</td>
</tr>
<tr>
<td></td>
<td>CoSTEP Banquet (18:30-22:00): The Museum of Science &amp; Industry</td>
<td>PM Break</td>
<td>Workshop 3: SPTPA (session 2)</td>
</tr>
</tbody>
</table>

Note: Please see session details for room allocation.
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 in the development process, 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 agile 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.


**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 examine proven techniques for goal-directed measurement, scaling and assessment for software certification. Assessment of both the software product as well as the whole 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, few practitioners 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.
Session 17: Regular Paper Session R15: Pervasive Computing
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
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 Thompsonor
- Functional and non-functional concerns through coordination: an application to reliability: Poitou Pierre-Etienne, Shangping Ren, Jerry Nogice, Jeffery Tsai

Session 19: Short Paper Session S4: Testing
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: Ademido 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 Ahmed (Room: Turnberry)
- 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 Wang, Depaul University
Panelists: Brad Appleton, SCM Process & Tools Architect
- Theresa Dennis, Sterigenics Corp
- Mikio Aoyama, Nanzen University
- Martin Glinz, University of Zurich

Panel Session 5: Global software engineering projects and how to prepare our students (Room: Pine Valley)
Organizer: Sheikh Iqbal Ahmed, Marquette University
Panelists: Rajiv Rammah, Ohio State University, USA
- Venu Vasudevan, Motorola, USA
- Monica Aditya, Marquette University, USA
- Umesh Bellur, IIT Bombay, India

Session 21: Short Paper Session S5: Requirements/Design
Chair: Feng-Jian Wang (Room: Turnberry)
- Choosing the Right Time to Compose Aspects 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

COMPSAC 2006 Workshops

Organizer and Chair: Atilla Elci, Eastern Mediterranean University, Turkey, Mamadou Tidjou Kong, Lalav University, Canada; Tharam Dillon, University of Technology Sydney, Australia

Session 2: Ontologies & Schema
Chair: Stanislav Ustymenko
- Consensus Ontology Generation in a Socially Interacting MultiAgent System: Ergun Bicici
COMPSAC 2006 Technical Program

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

**Session 3: MAS/SoA dev paradigms**
**Chair:** Atilla Elici
- 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, Rafa 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 Ham, Mayar 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

**Session 1:**
- Keynote: Some Issues for Security, Privacy, and Trust for Pervasive Computing Applications, Mohammad Zulkernine, Queen’s University, Canada

**Session 2:**
- 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 Sleever Service Discovery Protocol: John Buford, Emre Celebi and Phyliss Frankl
- Application of Fuzzy Logic in Federated Trust Management for Pervasive Computing: Zhengqiu Wu and Alfred Weaver

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

**Organiser and Chair:** Sheikh Iqbal Ahmed, Marquette University, USA; Mohammad Zulkernine, Queen’s University, Canada

**Thursday September 21 2006**
13:30-15:00, PM Break, 15:15-16:45 (Room: Turnberry)

**Session 1:**
  - 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:**
- 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 Sleever Service Discovery Protocol: John Buford, Emre Celebi and Phyliss Frankl
  - Application of Fuzzy Logic in Federated Trust Management for Pervasive Computing: Zhengqiu 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
- A New Generalized Particle Dynamics Model For Software Cybernetics: Dianxun Shuai and Qing Huai
- Self-Organizing Software Processes Based on Particle Dynamics Model: Dianxun Shuai and Qing Huai
- 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:**


**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)

- 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: Faiyaz Karim, Harish Thanveer
- A Practical Approach for Automated Test Case Generation Using Statecharts: Valdivino Santiago, Ana Amaral, Nandanami Vijaykumar, Maria de Fatima Mattiello-Francisco, Eliane Martins, Odsei Lopes
- Quality Assurance of Open Source Components in Communities and Companies: Pekka Maki-Astia, Mart 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 Babbit
- 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: Jinping 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: Dai Yan Zhao and Mi Wan Shum
- Identifying and testing for insecure paths in cryptographic protocol Implementations: K R Jayaram
- A Continuous Improvement Model in ImproS: Sandro Ronaldo Bezerra Oliveira
- Building a UML Profile for On-Chip Distributed Platforms: Taimos 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

Sponsored by the IEEE Computer Society
Call for Contributions
The 31st Annual International Computer Software and Applications Conference
COMPSAC 2007
Beijing, China, July 24 - 27, 2007

With support of

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.

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, 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

SUBMISSION
Upload regular papers and fast abstracts in PDF, Postscript or RTF format at http://www.compsac.org/
Submit workshop and panel proposals in plain text via e-mail to Program co-Chair: Bruce McMillin at bff@umr.edu
Information on accepted workshops and the submissions of workshop papers will be available at the conference website http://www.compsac.org/

GENERAL INQUIRIES
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