

2011 IEEE 35th Annual Computer Software and Applications Conference Workshops

(COMPSACW 2011)

**Munich, Germany
18 – 22 July 2011**

**Volume 2
Pages 1-523**



**IEEE Catalog Number: CFP1167K-PRT
ISBN: 978-1-4577-0980-7**

2011 35th IEEE Annual Computer Software and Applications Conference Workshops COMPSACW 2011

Table of Contents

Message from the Workshops Chairs	xvii
IWSC 2011 - The Eighth IEEE International Workshop on Software Cybernetics	xix
ONIT 2011 - The Third IEEE International Workshop on Open NGN and IMS Testbeds	xxi
STPSA 2011 - The Sixth IEEE International Workshop on Security, Trust, and Privacy for Software Applications	xxiii
STA 2011 - The Third IEEE International Workshop on Software Test Automation	xxv
CORCS-IEESD 2011 - The Third IEEE International Workshop on Component-Based Design of Resource-Constrained Systems/The Third IEEE International Workshop on Industrial Experience in Embedded System Design	xxvii
CloudApp 2011 - The Second IEEE International Workshop on Applied Cloud Computing	xxx
QUORS 2011 - The Fifth IEEE International Workshop on Quality Oriented Reuse of Software	xxxii
CFSE 2011 - The Third IEEE International Workshop on Computer Forensics in Software Engineering	xxxiv
ESAS 2011 - The Sixth IEEE International Workshop on Engineering Semantic Agent Systems	xxxvi

SAPSE 2011 - The Third IEEE International Workshop on Security Aspects of Process and Services Engineering.....	xli
SSS 2011 - The Fourth IEEE International Workshop on Service Science and Systems.....	xlili
REFS 2011 - The Fourth IEEE International Workshop on Service Science and Systems.....	xliv
IWPD 2011 - The Second IEEE International Workshop on Program Debugging	xlviii

IWSC 2011: The Eighth IEEE International Workshop on Software Cybernetics Session 1

Stateflow to Extended Finite Automata Translation	1
<i>Meng Li and Ratnesh Kumar</i>	

IWSC 2011: The Eighth IEEE International Workshop on Software Cybernetics Session 2

Adaptive RTP Rate Control Method	7
<i>Uras Tos and Tolga Ayav</i>	
Fuzzy Control-Based Software Self-Adaptation: A Case Study in Mission Critical Systems	13
<i>Qiliang Yang, Jian Lü, Jianchun Xing, Xianping Tao, Hao Hu, and Yang Zou</i>	
A Sufficient Condition for Parameters Estimation in Dynamic Random Testing	19
<i>Junpeng Lv, Hai Hu, and Kai-Yuan Cai</i>	

IWSC 2011: The Eighth IEEE International Workshop on Software Cybernetics Session 3

A Performance Guarantee Approach for Cloud Applications Based on Monitoring	25
<i>Jin Shao and Qianxiang Wang</i>	
Distributed Monitoring and Adaptation of Multiple QoS in Service-Based Systems	31
<i>Stephen S. Yau and Dazhi Huang</i>	
Software Fault Localization Based on Centrality Measures	37
<i>Ling-Zan Zhu, Bei-Bei Yin, and Kai-Yuan Cai</i>	

IWSC 2011: The Eighth IEEE International Workshop on Software Cybernetics Session 4

Future Directions of Software Cybernetics: A Position Paper	43
<i>Ron S. Kenett</i>	
Panel Session: Future Directions of Software Cybernetics	45
<i>Stephen S. Yau</i>	

ONIT 2011: The Third IEEE International Workshop on Open NGN and IMS Testbeds Session 1

Keynote: Mobile Service Evolution und Research Trends in Future Internet	46
<i>Kurt Tutschku</i>	

ONIT 2011: The Third IEEE International Workshop on Open NGN and IMS Testbeds Session 2

Policies to Enable Serving Untrusted Services on Alternative (Non-3GPP) and Untrusted Access Networks in EPS	48
<i>Rebecca Copeland and Noel Crespi</i>	
A Framework for the Management of Operator Policies and User Preferences for Service Compositions in the IP Multimedia Subsystem	54
<i>Mosiuoa Tsietsi, Alfredo Terzoli, and George Wells</i>	
A Dynamic Host Configuration Protocol Based Service Discovery Mechanism	62
<i>Stephan Massner and Tom Weber</i>	

ONIT 2011: The Third IEEE International Workshop on Open NGN and IMS Testbeds Session 3

IMS Threat and Attack Surface Analysis Using Common Vulnerability Scoring System	68
<i>Sami Petäjäsoja, Heikki Kortti, Ari Takanen, and Juha-Matti Tirilä</i>	
End-to-End QoS Model for Mobile WiMAX Systems	74
<i>Sunghyun Cho, Jae-Hyun Kim, and Jonghyung Kwun</i>	

ONIT 2011: The Third IEEE International Workshop on Open NGN and IMS Testbeds Session 4

HIVE - Enabling ETSI IMS Plugtests Events	78
<i>Giulio Maggiore, Julius Mueller, Julien de Chanaud, and Andreas Röth</i>	
IMS/NGN Service Lab: Testbed for Creating Innovative IMS/NGN Service Applications	83
<i>Shin-ichi Handa, Junnosuke Yamada, Hiroya Minami, Daichi Namikawa, and Michio Shimomura</i>	

Demo: Teleweaver - Next Generation Enabler for Rural Telecentres and Access Nodes	89
<i>Mosiuoa Tsietsi</i>	

STPSA 2011: The Sixth IEEE International Workshop on Security, Trust, and Privacy for Software Applications Session 1

Detecting Code Injection Attacks in Internet Explorer	90
<i>Blake Anderson, Daniel Quist, and Terran Lane</i>	
Test-Driving Static Analysis Tools in Search of C Code Vulnerabilities	96
<i>George Chatzieftheriou and Panagiotis Katsaros</i>	

STPSA 2011: The Sixth IEEE International Workshop on Security, Trust, and Privacy for Software Applications Session 2

Injecting Comments to Detect JavaScript Code Injection Attacks	104
<i>Hossain Shahriar and Mohammad Zulkernine</i>	
Adaptive Rule-Based Malware Detection Employing Learning Classifier Systems: A Proof of Concept	110
<i>Jonathan J. Blount, Daniel R. Tauritz, and Samuel A. Mulder</i>	
Impact of Adding Security to Safety-Critical Real-Time Systems: A Case Study	116
<i>Andrew J. Kornecki and Wendy F. Stevenson</i>	

STPSA 2011: The Sixth IEEE International Workshop on Security, Trust, and Privacy for Software Applications Session 3

Secure Communication via Shared Knowledge and a Salted Hash in Ad-Hoc Environments	122
<i>Alexander D. Kent and Lorie M. Liebrock</i>	
The Security Cost of Content Distribution Network Architectures	128
<i>Paul Giura and Gustavo de los Reyes</i>	

STA 2011: The Third IEEE International Workshop on Software Test Automation Session 1

Dealing with Test Automation Debt at Microsoft	136
<i>Jean Hartmann</i>	

STA 2011: The Third IEEE International Workshop on Software Test Automation Session 2

Automated Test Case Generation for Web Applications from a Domain Specific Model	137
<i>Arne-Michael Törsel</i>	
Petri Net Based Verification of Causal Dependencies in Electronic Control Unit Test Cases	143
<i>Sebastian Thiel and Frank Derichsweiler</i>	
Interface-Based Automated Testing for Open Software Architecture	149
<i>Xiaoying Bai, Hao Lu, Yao Zhang, Renwei Zhang, Linping Hu, and Hong Ye</i>	
Achieving High Branch Coverage with Fewer Paths	155
<i>Yu Dong, Mengxiang Lin, Kai Yu, Yi Zhou, and Yinli Chen</i>	

STA 2011: The Third IEEE International Workshop on Software Test Automation Session 3

Error-Based Software Testing and Analysis	161
<i>William E. Howden</i>	
Specification and Verification of Time Properties in Distributed Automation Systems during Test Planning Phase	168
<i>Silvije Jovalekić and Tri Nguyen</i>	
Towards Rapid Creation of Test Adaptation in On-line Model-Based Testing	174
<i>Kim Nylund, Erik Östman, Dragos Truscan, and Risto Teittinen</i>	

STA 2011: The Third IEEE International Workshop on Software Test Automation Session 4

Statistical Evaluation of Test Sets Using Mutation Analysis	180
<i>Fevzi Belli, Mutlu Beyazit, Axel Hollmann, and Nevin Güler</i>	
Mutation Analysis of Magento for Evaluating Threat Model-Based Security Testing	184
<i>Lijo Thomas, Weifeng Xu, and Dianxiang Xu</i>	
An Improved Technique of Fitness Evaluation for Evolutionary Testing	190
<i>Seon Yeol Lee, Hyun Jae Choi, Yeon Ji Jeong, Tae Ho Kim, Heung Seok Chae, and Carl K. Chang</i>	

CORCS-IEESD 2011: The Third IEEE International Workshop on Component-Based Design of Resource-Constrained Systems/The Third IEEE International Workshop on Industrial Experience in Embedded System Design Session 1

IT Simply Works: Simplicity and Embedded Systems Design	194
<i>Tiziana Margaria, Barry D. Floyd, and Bernhard Steffen</i>	

CORCS-IEESD 2011: The Third IEEE International Workshop on Component-Based Design of Resource-Constrained Systems/The Third IEEE International Workshop on Industrial Experience in Embedded System Design Session 2

Towards Automatic Reconfiguration of Aviation Software Systems	200
<i>Stefan Burger and Oliver Hummel</i>	
Predicting Timing Performance of Advanced Mechatronics Control Systems	206
<i>J. Voeten, T. Hendriks, B. Theelen, J. Schuddemat, W. Tabingh Suermondt, J. Gemei, K. Kotterink, and C. van Huët</i>	
A Case Study on SDF-Based Code Generation for ECU Software Development	211
<i>Guangxin Li, Rong Zhou, Rongqing Li, Weimin He, Guilin Lv, and T. John Koo</i>	

CORCS-IEESD 2011: The Third IEEE International Workshop on Component-Based Design of Resource-Constrained Systems/The Third IEEE International Workshop on Industrial Experience in Embedded System Design Session 3

A Burst-Aware Scheduling Scheme Supporting Quality of Service in WiMAX Networks	218
<i>Ya-Yun Cheng and Yaw-Chung Chen</i>	
Automatic Synthesis and Adaption of Gray-Box Components for Embedded Systems - Reuse vs. Optimization	224
<i>Etienne Borde and Jan Carlson</i>	
Specifying Communication Behaviours between Components with Real-Time rCOS - A Case Study ATP	230
<i>Dehui Du and Xijiao Xiong</i>	

CORCS-IEESD 2011: The Third IEEE International Workshop on Component-Based Design of Resource-Constrained Systems/The Third IEEE International Workshop on Industrial Experience in Embedded System Design Session 4

A Prototype of Model-Based Design Tool and Its Application in the Development Process of Electronic Control Unit	236
<i>Rongqing Li, Rong Zhou, Guangxin Li, Weimin He, Xiaoqian Zhang, and T. John Koo</i>	
A Model Transformation Approach Based on Homomorphic Mappings between UML Activity Diagrams and BPEL4WS Specifications of Grid Service Workflows	243
<i>Yousra Bendaly Hlaoui and Leila Jemni Benayed</i>	
Channel Modeling for Wireless Underground Sensor Networks	249
<i>Hu Xiaoya, Gao Chao, Wang Bingwen, and Xiong Wei</i>	

CloudApp 2011: The Second IEEE International Workshop on Applied Cloud Computing Session 1

A Combined Workload Planning Approach for Multi-tenant Business Applications	255
<i>Christof Momm and Wolfgang Theilmann</i>	
A Framework for Resource Allocation Strategies in Cloud Computing Environment	261
<i>M. Asad Arfeen, Krzysztof Pawlikowski, and Andreas Willig</i>	

CloudApp 2011: The Second IEEE International Workshop on Applied Cloud Computing Session 2

Towards a Generic Cloud-Based Virtual Research Environment	267
<i>Bastian Roth, Robin Hecht, Bernhard Volz, and Stefan Jablonski</i>	
Overlay Cloud Networking through Meta-Code	273
<i>Dag Johansen and Joseph Hurley</i>	
An Interactive Web-Based Visualization Tool: Design and Development Cycles	279
<i>Bahtijar Vogel</i>	

CloudApp 2011: The Second IEEE International Workshop on Applied Cloud Computing Session 3

Using Web Search Results and Genetic Algorithm to Improve the Accuracy of Chinese Spam Email Filters	286
<i>Kai-Shin Lu and Carl K. Chang</i>	
An Approach to Explore Mobile Software Engineering Advances in Cloud Computing Environment	292
<i>Weider D. Yu and Hongbin Yuan</i>	
SLA-Aware Application Deployment and Resource Allocation in Clouds	298
<i>Vincent C. Emeakaroha, Ivona Brandic, Michael Maurer, and Ivan Breskovic</i>	

QUORS 2011: The Fifth IEEE International Workshop on Quality Oriented Reuse of Software Session 1

Model-Based Scheduling Analysis for Software Projects	304
<i>Frank Padberg and David Weiss</i>	
Software Reliability Model with Coxian Distribution of Length of Intervals between Errors Detection and Fixing Moments	310
<i>Vladimir P. Bubnov, Anatoly D. Khomonenko, and Alexey V. Tyrva</i>	

QUORS 2011: The Fifth IEEE International Workshop on Quality Oriented Reuse of Software Session 2

An Approach for Evaluating the Effectiveness of Design Patterns in Software Evolution	315
<i>Nien-Lin Hsueh, Lin-Chieh Wen, Der-Hong Ting, William Chu, Chih-Hung Chang, and Chorng-Shiuh Koong</i>	
Aspect-Oriented Security and Exception Handling within an Object Oriented System	321
<i>Richard Millham and Evans Dogbe</i>	
Exploring How to Support Software Revision in Software Non-intensive Projects Using Existing Techniques	327
<i>Haruhiko Kaiya, Kenichiro Hara, Kyotaro Kobayashi, Akira Osada, and Kenji Kajiri</i>	

QUORS 2011: The Fifth IEEE International Workshop on Quality Oriented Reuse of Software Session 3

A Lightweight Component-Based Development Approach for Enterprise Applications	335
<i>Jingang Zhou, Dazhe Zhao, and Jiren Liu</i>	
A Scenario-Based Approach for Requirements Elicitation for Software Systems Complying with the Utilization of Ubiquitous Computing Technologies	341
<i>Mohammed Alawairdhi and Eisa Aleisa</i>	
XML-Based Reusable Component Repository for Embedded Software	345
<i>Chih-Hung Chang, Chih-Wei Lu, William C. Chu, Chao-Tung Yang, Pao-Ann Hsiung, Nien-Lin Hsueh, Chorng-Shiuh Koong, and Kuei-Kai Shao</i>	

QUORS 2011: The Fifth IEEE International Workshop on Quality Oriented Reuse of Software Session 4

Lightweight Software Product Line Based Privacy Protection Scheme for Pervasive Applications	351
<i>Zakwan Jaroucheh, Xiaodong Liu, Sally Smith, and Huiqun Zhao</i>	
Using Markov-Chains to Model Reliability and QoS for Deployed Service-Based Systems	356
<i>Huanyin Yi, Changhai Jiang, Hai Hu, Kai-Yuan Cai, and Aditya P. Mathur</i>	
Detecting Artifact Anomalies in Temporal Structured Workflow as Reusable Assets	362
<i>Hwai-Jung Hsu and Feng-Jian Wang</i>	

CFSE 2011: The Third IEEE International Workshop on Computer Forensics in Software Engineering

Towards an Engineering Approach to File Carver Construction	368
<i>Leon Aronson and Jeroen van den Bos</i>	
Protection of Intellectual Property in Web Communities by Modular Digital Watermarking	374
<i>Svetozar Ilchev and Zlatoliliya Ilcheva</i>	

ESAS 2011: The Sixth IEEE International Workshop on Engineering Semantic Agent Systems

A Functional Approach to Agent Development: Research Agenda	380
<i>Alex Muscar and Costin Bădică</i>	
Finding Suitable Course Material through a Semantic Search Agent for Learning Management Systems of Distance Education	386
<i>Duygu Çelik, Atilla Elçi, and Eray Elverici</i>	

SAPSE 2011: The Third IEEE International Workshop on Security Aspects of Process and Services Engineering Session 1

Expressiveness Considerations of XML Signatures	392
<i>Meiko Jensen and Christopher Meyer</i>	
Business Process as a Service: Chances for Remote Auditing	398
<i>Rafael Accorsi</i>	

SAPSE 2011: The Third IEEE International Workshop on Security Aspects of Process and Services Engineering Session 2

A Privacy Preserving Reputation Protocol for Web Service Provider Selection	404
<i>Omar Hasan, Lionel Brunie, and Ernesto Damiani</i>	
Medical Technology in Smart Homes: Exploring the User's Perspective on Privacy, Intimacy and Trust	410
<i>Martina Ziefle, Carsten Röcker, and Andreas Holzinger</i>	
Formal Approaches to Mode Conversion and Positioning for Vehicle System	416
<i>Wen Su, Fan Yang, Xiaofeng Wu, Jian Guo, and Huibiao Zhu</i>	

SSS 2011: The Fourth IEEE International Workshop on Service Science and Systems Session 1

Service Modeling: A Model Based Approach for Business and It Alignment	422
<i>Vedran Hrgovic, Wilfrid Utz, and Dimitris Karagiannis</i>	
Improving Query Suggestion for Digital Libraries	428
<i>Lemen Chao, Yong Zhang, and Chunxiao Xing</i>	
Interoperable Spatial Information System Architecture Based on Ubiquitous ID Infrastructure	435
<i>Shinsuke Kobayashi, Yukihiko Shigesada, Noboru Koshizuka, and Ken Sakamura</i>	

SSS 2011: The Fourth IEEE International Workshop on Service Science and Systems Session 2

An Intelligent Information System for Maternal and Child Health Care	441
<i>Lei Chen, Ji-Jiang Yang, Qing Wang, and Ming-yu Wang</i>	
Analyzing the Digital Home's Quality of Service	446
<i>Antonin Chazalet, Sébastien Bolle, and Serge Martin</i>	
Optimized Service Discovery Using QoS Based Ranking: A Fuzzy Clustering and Particle Swarm Optimization Approach	452
<i>Rajni Mohana and Deepak Dahiya</i>	

REFS 2011: The Fifth IEEE International Workshop on Requirements Engineering for Services Session 2

Goal-Driven Adaptation of Service-Based Systems from Runtime Monitoring Data	458
<i>Xavier Franch, Paul Grünbacher, Marc Oriol, Benedikt Burgstaller, Deepak Dhungana, Lidia López, Jordi Marco, and João Pimentel</i>	
Reconciling Requirements and Implementation via Reengineering for Context-Aware Service Evolution	464
<i>Jianchu Huang, Hongji Yang, and Lei Liu</i>	
The Influence of Context on Intentional Service	470
<i>Salma Najar, Manuele Kirsch-Pinheiro, and Carine Souveyet</i>	
Matching User Requirements with Query Formulations in Intentional Service Oriented Computing	476
<i>Saïd Assar and Kadan Aljoumaa</i>	
Considering Technology Representation in Service-Oriented Business Models	482
<i>Eliel Morales, Xavier Franch, Alicia Martínez, and Hugo Estrada</i>	

REFS 2011: The Fifth IEEE International Workshop on Requirements Engineering for Services Session 3

Augmenting Cloud Requirements Engineering with Meta-Services	488
<i>Rainer Schmidt</i>	
Conceptualisation of Hybrid Service Models: An Open Models Approach	494
<i>Wilfrid Utz, Robert Woitsch, and Dimitris Karagiannis</i>	
Spectrum Analysis for Software Quality Requirements Using Analyses Records	500
<i>Haruhiko Kaiya, Shunichi Suzuki, Toru Ogawa, Masaaki Tanigawa, Masahiro Umemura, and Kenji Kaijiri</i>	

Identifying Service Requirements in Solution and Infrastructure Improvement
Projects504
Xiping Song and Beatrice Hwong

**IWPD 2011: The Second IEEE International Workshop on Program
Debugging Session 2**

On the Consensus-Based Application of Fault Localization Techniques506
Vidroha Debroy and W. Eric Wong

Debugging Debugging512
Kinsun Tam

Tracing Static Fields of Embedded Parallel Java Applications516
Sascha Uhrig

Author Index520