The Thirty-first Annual
International Computer Software
and Applications Conference

(COMPSAC 2007)

Beijing, China
23 – 27 July 2007

Pages 1-596
# TABLE OF CONTENTS

## SECURITY TRACK

### REGULAR PAPER SESSIONS

### SECURITY IN COMMUNICATION (SECURITY 1)

[IAPF: A Framework for Enhancing Web Services Security](#)
Navya Sidharth, Jigang Liu

[A Scalable Service Scheme for Secure Group Communication in Grid](#)
Yunfa Li, Hai Jin, Deqing Zou, Jieyun Chen, Zongfen Han

[An End-to-End Detection of Wormhole Attack in Wireless Ad-hoc Networks](#)
Xia Wang, Johnny Wong

### MODELING SECURITY (SECURITY 2)

[An Omnipresent Formal Trust Model (FTM) for Pervasive Computing Environment](#)
Munirul M. Haque, Sheikh I. Ahamed

[An Authentication Based Lightweight Device Discovery (ALDD) Model for Pervasive Computing Environment](#)
Munirul M. Haque, Sheikh I. Ahamed, Haifeng Li, KM Asif

[Defining and Detecting Bad Smells of Aspect-Oriented Software](#)
Komsan Srivisut, Pornsiri Muenchaisri

### VULNERABILITIES - DETECTING AND ASSESSMENT (SECURITY 3)

[Mining User Query Logs to Refine Component Description](#)
Yan Li, Shaobin Cheng, Lu Zhang, Bing Xie, Jiasu Sun

[A Machine Learning-Based Reliability Assessment Model for Critical Software Systems](#)
Venkata U.B. Challagulla, Farokh B. Bastani, Raymond A. Paul, Wei-Tek Tsai, Yinong Chen

[A Static Analysis Framework for Detecting SQL Injection Vulnerabilities](#)
Xiang Fu, Xin Lu, Boris Peltsverger, Shijun Chen, Kai Qian, Lixin Tao

## SHORT PAPER SESSIONS

### INFRASTRUCTURE, NETWORKING AND SECURITY (SECURITY 4)

[A Model-Driven Framework for Representing and Applying Design Patterns](#)
Ghizlane El Boussaidi, Hafedh Mdi

[Infrastructure Hardening: A Competitive Coevolutionary Methodology Inspired by Neo-Darwinian Arms Races](#)
Travis Service, Daniel Tauritz, William Siever
REQUIREMENTS

DESIGN AND MODELING (REQUIREMENTS 1)

Structuring 2-way Branches in Binary Executables ................................................................. 85
Tao Wei, Jian Mao, Wei Zou, Yu Chen

FLEXCM - A Component Model for Adaptive Embedded Systems ........................................ 89
Sindolfo Miranda Filho, Luiz Eduardo Cunha Leite, Guido Lemos, Silvio Meira

Structuring Software Functional Requirements for Automated Design and Verification ........... 97
Sukhamay Kundu

PUTTING MODELS TO RUN (REQUIREMENTS 2)

Understanding and Classifying Requirements for Computer-Aided Healthcare Workflows ........ 105
Xiping Song, Beatrice Hwong, Gilberto Matos, Arnold Rudorfer

Deriving Formal Specifications from Informal Requirements ..................................................... 113
Dubravka Ilic

A Model-Based Object-Oriented Approach to Requirement Engineering (MORE) .................. 121
Chi-Hi Lu, William C. Chu, Chi-Hung Chang, Ching Huey Wang

Tool Support to Implementing Business Rules in Database Applications .................................. 125
Liwen Lin, Suzanne M. Embury, Brian C. Warboys

EVENT-BASED AND STATE-BASED MODELING (REQUIREMENTS 3)

Using UML Activity Diagrams and Event B for Distributed and Parallel Applications ................ 129
Ahlem Ben Younes, Leila Jemni Ben Ayed

Integration of Agent-Oriented Conceptual Models and UML Activity Diagrams Using Effect Annotations ............................................................. 137
Mosfiher Bhuian, M.M. Zahidul Islam, Aneesh Krishna, Aditya Ghose

A Data Mining Approach for Software State Definition .......................................................... 145
Bei-Bei Yin, Cheng-Gang Bai, Kai-Yuan Cai

ONTOLOGY FOR REQUIREMENTS ELICITATION (REQUIREMENTS 4)

Towards a Multiple Ontology Framework for Requirements Elicitation and Reuse .................. 153
Zong-yong Li, Zhi-xue Wang, Ying-ying Yang, Yue Wu, Ying Liu

SREM: A Service Requirement Elicitation Mechanism Based on Ontology ............................... 160
Jian Xiang, Lin Liu, Wei Qiao, Jingwei Yang

Ontology Learning by Clustering Based on Fuzzy Formal Concept Analysis ............................ 168
Wen Zhou, Zong-tian Liu, Yan Zhao
ANALYSIS & MODELING (REQUIREMENTS 5)

A Method of Requirement Inconsistency Analysis
Zhang Yinkun, Yin Peng, Cui Duwu, Xia Hui

Analysis of Conflicts Among Non-functional Requirements Using Integrated Analysis of Functional and Non-functional Requirements
Vishal Sadana, Xiaoqing Frank Liu

A Metamodel for the Notation of Graphical Modeling Languages
Xiao He, Zhiyi Ma, Weizhong Shao, Ge Li

LIFE CYCLE

INTERNET AND WEB-BASED SYSTEMS (LIFE CYCLE 1)

A Satisfaction Driven Approach for the Composition of Interactive Web Services
Shuchao Wan, Jun Wei, Jingyu Song, Hua Zhong

Knowledge Hiding in Data Mining by Transaction Adding and Removing
Xiaoming Zhang

Performance Evaluation of Notifications in a Web Services and P2P-Based Network Management Overlay
Clarissa Cassales Marquezan, Carlos Raniery Paula dos Santos, Ewerton Monteiro Salvador, Maria Janilce Bosquirolli Almeida, Sérgio Luis Cechin, Lisandro Zambenedetti Granville

COMPONENT-BASED SOFTWARE AND ARCHITECTURE (LIFE CYCLE 2)

Iterative Planning in the Context of Automated Code Synthesis
Jicheng Fu, Farokh B. Bastani, I-Ling Yen

Automating Dynamic Reconfiguration for Non-stop Dataflow Systems
Wei Li, Zhikun Zhao

An Architectural Framework for the Design and Analysis of Autonomous Adaptive Systems
Kendra Cooper, João W. Cangussu, Eric Wong

EMBEDDED SYSTEMS (LIFE CYCLE 3)

Flexible Application Software Generation for Heterogeneous Multi-processor System-on-Chip
Xavier Guerin, Katalin Popovici, Wassim Youssef, Frédéric Rousseau, Ahmed Jerraya

A Semantic Anchoring Infrastructure for the Design of Embedded Systems
Graham Hemingway, Hang Su, Kai Chen, T. John Koo

Concurrency Control Modularization with Aspect-Oriented Programming
Sérgio Soares, Paulo Borba, Ricardo Lima
PROCESS AND MAINTENANCE (LIFE CYCLE 4)

Tracking Projects through a Three-Dimensional Software Development Model .................................. 254
Juan Li, Nan Jiang, Mingshu Li, Qing Wang, Yanwu Yang

Traceability Link Evolution Management with Incremental Latent Semantic Indexing ...................... 262
Hsin-yi Jiang, Tien N. Nguyen, Carl K. Chang, Fei Dong

Identifying Software Decompositions by Applying Transaction Clustering on Source Code .................. 270
Renuka Sindhgatta, Krishnakumar Pooloth

QUALITY OF SERVICE

QUALITY OF SERVICE AND PERFORMANCE (QOS 1)

Performance Prediction of Service-Oriented Applications Based on an Enterprise Service Bus .................. 278
Yan Liu, Ian Gorton, Liming Zhu

An Online Monitoring Approach for Web Services .............................................................................. 286
Qianxiang Wang, Yonggang Liu, Min Li, Hong Mei

SQS: A Secure and QoS Guaranteed Solution for Mobile Service ...................................................... 294
Chao Tong, Xiaopeng Gao, Wei Chen, Xiang Long

QUALITY OF SERVICE AND SERVICE COMPOSITION (QOS 2)

An Interaction Instance Oriented Approach for Web Application Integration in Portals ......................... 302
Jingyu Song, Jun Wei, Shuchao Wan, Hua Zhong

QoS-aware Service Composition Based on Tree-Coded Genetic Algorithm ...................................... 310
Chuming Gao, Meiling Cai, Huowang Chen

Dynamic Reconfigurable Testing of Service-Oriented Architecture .................................................... 317
Xiaoying Bai, Dezheng Xu, Guilan Dai, Wei-Tek Tsai, Yinong Chen

SHORT PAPERS

MODELING AND VALIDATION FOR QUALITY OF SERVICE (QOS 3)

Validity Checking on Grid Service Composition .................................................................................. 325
Jing Zhou, Guosun Zeng

A Fast Replica Selection Algorithm for Data Grid .............................................................................. 329
Dafei Yin, Bin Chen, Yu Fang

Improving the Accuracy of UML Class Model Recovery .................................................................. 333
Kun Wang, Waweih Shen

Connectors Conveying Software Architecture Evolution ................................................................. 337
Dalila Tamzalit, Nassima Sadou, Mourad Oussalah
QUALITY

REGULAR PAPER SESSIONS

VALIDATION AND ASSESSMENT (QUALITY 1)

Piping Classification to Metamorphic Testing: An Empirical Study Towards Better Effectiveness for the Identification of Failures in Mesh Simplification Programs .................................................. 341
  W.K. Chan, Jeffrey C. F. Ho, T.H. Tse

Risk Assessment in Early Software Design Based on the Software Function-Failure Design Method ................................................................................................................................. 349
  Jayson P. Vucovich, Robert B. Stone, Xiaoring Liu, Irem Y. Tumer

SRAE: An Integrated Framework for Aiding in the Verification and Validation of Legacy Artifacts in NASA Flight Control Systems ............................................. 357
  Andres Orrego, Gregory Mundy

QUANTIFICATION (QUALITY 2)

Architecture-Based Software Reliability: Why Only a Few Parameters Matter? ........................................ 365
  Katerina Goseva-Popstojanova, Margaret Hamill

On Identifying Bug Patterns in Aspect-Oriented Programs ................................................................. 373
  Sai Zhang, Jianjun Zhao

Measuring and Assessing Software Reliability Growth through Simulation-Based Approaches ................................................................. 381
  Chu-Ti Lin, Chin-Yu Huang, Chuan-Ching Sue

COVERAGE AND PRIORITIZATION FOR TESTING (QUALITY 3)

Effective Fault Localization Using Code Coverage ............................................................................... 389
  W. Eric Wong, Yu Qi, Lei Zhao, Kai-Yuan Cai

A Study of Enhanced MC/DC Coverage Criterion for Software Testing ............................................. 397
  Jun-Ru Chang, Chin-Yu Huang

Test Case Prioritization for Black Box Testing .................................................................................... 405
  Bo Qiu, Changhai Nie, Baowen Xu, Xiaofang Zhang

SPECIFICATION AND VERIFICATION (QUALITY 4)

Formal Verification of Protocol Properties of Sequential Java Programs ............................................. 413
  Ying Jin

Unified Property Specification for Hardware/Software Co-verification ............................................. 421
  Fei Xie, Huaiyu Liu

Model Checking Aspect-Oriented Design Specification ..................................................................... 429
  Dianxiang Xu, Izzat Alsmadi, Weifeng Xu
ANALYSIS AND TESTING (QUALITY 5)

Parameter and Return-Value Analysis of Binary Executables .......................................................... 437
Jingbo Zhang, Rongcai Zhao, Jianmin Pang

Test Case Generation for Collaborative Real-Time Editing Tools .................................................. 445
Lian Yu, Wenping Xiao, Changyan Chi, Lin Ma, Hui Su

Contract-Based Testing for Web Services ......................................................................................... 453
Guilan Dai, Xiaoying Bai, Yongbo Wang, Fenfjun Dai

SHORT PAPER SESSION:

QUALITY, DIVERSITY AND SERVICES (QUALITY 6)

Architectural Adaptation Addressing the Criteria of Multiple Quality Attributes in Mission-Critical Systems ........................................................................................................................................... 461
Xiaofeng Cui, Yanchun Sun, Gang Huang, Hong Mei

A Quality Verification Model for Design Pattern ............................................................................. 465
Nien-Lin Hsueh, Peng-Hua Chu, Jonathan Lee, William Chu

Bivariate Software Fault-Detection Models ....................................................................................... 469
Tomotaka Ishii, Tadashi Dohi, Hiroyuki Okamura

Construction of an Agile Software Product-Enhancement Process by Using an Agile Software Solution Framework (ASSF) and Situational Method Engineering .............................................................................................................. 473
Asif Qumer, Brian Henderson-Sellers

Model Oriented Evolutionary Redocumentation ................................................................................. 477
Feng Chen, Hongji Yang

INDUSTRIAL TRACK

PROCESS MODELS (INDUSTRIAL TRACK 1)

State of Modernization Practice in Four Swedish Organizations .................................................. 481
Mira Kajko-Mattsson, Mi Ta, Lukas Wilczek

ePVM—An Embeddable Process Virtual Machine ........................................................................ 489
Thomas Weigold, Thorsten Kramp, Peter Bühler

State-Based Process Description Model in Chinese E-government Affair System .......................... 497
Yunxiang Zheng, Lei Li, Hai Wan

Analyzing and Re-structuring Product Line Dependencies ............................................................... 501
Juha Savolainen, Ian Oliver, Varvana Myllärniemi, Tomi Männistö

DATA, REPOSITORIES, DESIGN METHODS (INDUSTRIAL TRACK 2)

Towards a Design Methodology for Multiprocessor Platforms .................................................. 505
Dragos Truscan, Tiberiu Seceleanu, Hannu Tenhunen, Johan Liljus

Specification, Design and Implementation of a Reuse Repository .................................................. 509
Vanilson Arruda Burégio, Eduardo Santana Almeida, Daniel Lucrédio, Silvio Meira
DataWarp: Empowering Applications to Make Progress in the Face of Contradictory or Inconsistent Data..........................................................513
Stephen Crouch, Peter Henderson, Robert John Walters

VOEditor: A Visual Environment for Ontology Construction and Collaborative Querying of Semantic Web Resources ..........................................................521
Ling Li, Shengqun Tang, Lina Fang, Ruliang Xiao, Xinguo Deng, Youwei Xu, Yang Xu

NETWORKING AND DISTRIBUTION (INDUSTRIAL TRACK 3)

Mobile Game Development: Object-Orientation or Not ..........................................................528
Weishan Zhang, Dong Han, Thomas Kunz, Klaus Marius Hansen

A Dynamic-Reconfigurable Architecture for Protocol Stacks of Networked Systems ..................536
Mahdi Niamanesh, Rasool Jalili

A Study on Distributed Resource Information Service in Grid System ..................................540
Jiuyuan Huo, Liqun Liu, Li Liu, Yi Yang, Lian Li

FAST ABSTRACT

SESSION 1: SOFTWARE ENGINEERING METHODS AND TOOLS

Services Oriented Architecture: Integration Requirement ..........................................................544
Aurélie Aurilla Bechina Arntzen

Comparing Fault-based Testing Strategies of General Boolean Specifications .........................546
Zhenyu Chen, Baowen Xu, Changhai Nie

Patterns Topology for Performance Evaluation ......................................................................548
M. E. Fayad

Mining Software Repositories to Understand the Performance of Individual Developers ..........550
Shen Zhang, Yongji Wang, Feng Yuan, Li Ruan

Adaptive Performance Tuning for Internet-Based Workflows ............................................552
Paolo Vercesi, Alberto Bartoli

Towards Capability Maturity in Software Review ..................................................................554
Jun Yu, Bin Xu, Hua Hu

Fuxi: An Agile Development Environment for Embedded Systems ....................................556
Zhongbin Wang

OCL4X: An Action Semantics Language for UML Model Execution ..................................558
Ke Jiang, Lei Zhang, Shigeru Miyake

SESSION 2: SOFTWARE APPLICATIONS

Towards an Aspect-Oriented Intrusion Detection Framework ..............................................560
Zhi Jian Zhu, Mohammad Zulkernine

An Innovative Workflow Product Structure ......................................................................562
Haiping Zha, Jianmin Wang

Matrix-Based Change Impact Analysis for Component-Based Software ..................................564
Chengying Mao, Jinlong Zhang, Yansheng Lu
A Novel Authentication Scheme Based on Trust-Value Updated Model in Ad hoc Network ………566
Ya-tao Yang, Zheng Yuan, Yong Fang, Ping Zeng

Luv: A Programming Language for Describing Human Relationships ........................................568
Michael De La Maza

Execution Mechanism of Service Proxy in the Web Services Composition Execution Engine ……..570
Chunming Gao, Xiaojuan Yuan, Huowang Chen

Study on GML Spatial Interoperability Based on Web Service ........................................................572
Shuliang Zhang, Jiayan Gan, LiZhi Miao, Guonian Lv, Jiazh Huang

Web System for Electronic Nautical Charts Service Based on ArcIMS ...................................580
Feixiang Zhu, Yingjun Zhang, Berlin Zhu

DOCTORAL SYMPOSIUM

Challenges in Selecting COTS Component Guidelines ...............................................................582
Walisa Romsaiyud, Somnuk Kereto

Management and Control of Coding and Testing of Component-Based Software ........................585
Tatiane Macedo Prudencio Lopes, Clovis Torres Fernandes

Sabnam Sengupta, Swapan Bhattacharya

Model Checking of Component Connectors ...........................................................................594
Mohammad Izadi, Ali Movaghar, Farhad Arbab

Towards End User Service Composition ..................................................................................597
Xuanzhe Liu, Gang Huang, Hong Mei

AOASIA 2007 WORKSHOP: THIRD IEEE ASIAN WORKSHOP ON ASPECT-ORIENTED SOFTWARE DEVELOPMENT

Specifying Pointcut in AspectJ ........................................................................................................600
Yi Wang, Jianjun Zhao

A Tool for Compiler Construction Based on Aspect-Oriented Specifications ...............................606
Damijan Rebernak, Maijan Mernik

Aop-based Automated Unit Test Classification of Large Benchmarks .........................................612
Cyrille Artho, Zhongwei Chen, Shinichi Honiden

Aspect-Based Instrumentation for Locating Memory Leaks in Java Programs ............................618
Kung Chen, Ju-Bing Chen

A Combined Concept Location Method for Java Programs .........................................................624
Dapeng Liu, Shaochun Xu
EMOBS 2007 WORKSHOP: THE FIRST IEE INTERNATIONAL WORKSHOP ON ENGINEERING MOBILE-BASED SOFTWARE AND APPLICATIONS

SESSION 1: APPLICATIONS AND SERVICES
SESSION CHAIR: JINGSHA HE

OPEN ADDRESS: EMOBS07 ORGANIZERS (JERRY GAO, JINGSHA HE, AND AXEL KUPPER)

An Instant Messaging Framework for Flexible Interaction with Rich Clients
Matthias Book, Volker Gruhn

Understanding 2D-Barcode Technology and Applications in M-Commerce - Design and Implementation of a 2D Barcode Processing Solution
Jerry Zeyu Gao, Lekshmi Prakash, Rajini Jagatesan

An Optimization Method for Real-Time Natural Phenomena Simulation on WinCE Platform
Ning Liu, Rong Li, Zhenyu Yang, Hongyang Chao

SESSION 2: KEY TECHNOLOGIES FOR M-COMMERCE
SESSION CHAIR: AXEL KUPPER

MiniWap: Navigating WAP with Minimo
Vu Hong Khiem, Kibong Kang, Keung Hae Lee

A One-Dimensional Probabilistic Model of Wireless Multihop Internet Access
Chun-Yen Hsu, Jean-Lien C. Wu, Shun-Te Wang

A Distributed Intrusion Detection Scheme for Mobile Ad Hoc Networks
Yingfang Fu, Jingsha He, Guorui Li

SESSION 3: MIDDLEWARE AND SERVICE PLATFORMS
SESSION CHAIR: HSING MEI (PARALLEL SESSIONS)

An Aspect Oriented Middleware Architecture for Adaptive Mobile Computing Applications
Celso Maciel Da Costa, Marcelo Da Silva Strzykalski, Guy Bernard

A Virtual Machine-Based Programming Environment for Rapid Sensor Application Development
Jui-Nan Lin, Jiun-Long Huang

SESSION 4: AMBIENT INTELLIGENCE AND PERVERSIVE COMPUTING
SESSION CHAIR: LEE KEUNG HAE (PARALLEL SESSION)

A Framework for Local Ambient Intelligence: The Aml-Space Project
Chen Rui, Hou Yin-bin, Huang Zhang-qin, Zhang Yong, Li Hui

A Service Discovery Architecture Based on Anycast in Pervasive Computing Environments
Li Zhang, Zhen-lian Shi, Qi Shen
**SESSION 5: MOBILITY SUPPORT**  
**SESSION CHAIR: JERRY GAO**

Vs Golf - Developing Location-based Multi-player Games .......................................................... 690  
Georg Treu, Johannes Martens, Matthias Schicker, Mark Breisinger, Axel Kupper

Speed-Based Mobility Management for Heterogeneous Wireless Networks Networking ........... 696  
Ming-Hsien Yu, Hsing Mei

A Mobile Database Design Methodology for Mobile Software Solutions ................................... 702  
Weider D. Yu, Sunita Sharma

---

**ESAS 2007 WORKSHOP: THE SECOND IEEE INTERNATIONAL WORKSHOP ON ENGINEERING SEMANTIC AGENT SYSTEMS**

**SESSION 1: APPLICATIONS**  
**SESSION CHAIR: ATILLA ELCLI**

Trend Analysis Using a Temporal Web Ontology Language in News Domains ......................... 706  
Sang-Kyun Kim, Kyu-Chul Lee

Construction of Collaborative Design Environment Based on Multi-agent ................................ 712  
Xiangzhong Feng

Multi-Agent Systems-Based Hierarchy Grid Middleware .......................................................... 716  
Jia Chen, Yue Wu, Ming Li, Bei Hui

---

**SESSION 2: PLATFORMS**  
**SESSION CHAIR: ADITYA GHOSE**

OWL-Based Description for Agent Interaction ........................................................................... 720  
Yong-Feng Lin, Jason Jen-Yen Chen

Adaptive Agent Model: An Agent Interaction and Computation Model ..................................... 726  
Liang Xiao, Dave Robertson, Madalina Croitoru, Paul Lewis, Srinandan Dashmapatra, David Dupplaw, Bo Hu

Extending the Gaia Methodology for the Design and Development of Agent-based Software Systems ................................ 732  
Wei Huang, Elia El-Darzi, Li Jin

---

**SESSION 3: MODELS**  
**SESSION CHAIR: MASOUD MOHAMMADIAN**

An Ontology-based Semantic Resource Sharing Model in P2P System .................................... 739  
Dan Wang, Rongjuan Zhao
KEYNOTE SPEECH:

Actor Eco-systems: From High-Level Agent Models to Executable Processes via Semantic Annotations
Aditya Ghose, George Koliadis

POSITION PAPERS:

Intelligent Agents and P2P Semantic Web
Mehmet A. Orgun

A Distress Call: Needing Tools to Large-Scale Semantic-Aware Agent Systems
Atilla Elci

Semantic Web and Intelligent Agents Research and Practice
Masoud Mohammadian

IWSC 2007 WORKSHOP: THE FOURTH IEEE INTERNATIONAL WORKSHOP ON SOFTWARE CYBERNETICS

SESSION 1: PAPERS I
SESSION CHAIR: ADITYA MATHUR

Prioritizing Coverage-Oriented Testing Process --An Adaptive-Learning-Based Approach and Case Study
Fevzi Belli, Mubariz Eminov, Nida Gokce

MASS: Middleware-Based Adaptive Software System
Qianxiang Wang

SESSION 2: INVITED TALKS
SESSION CHAIR: KAI-YUAN CAI

An Approach to Adaptive Distributed Execution Monitoring for Workflows in Service-based Systems
Stephen S. Yau, Dachi Huang, Luping Zhu

A Family of Software Reliability Growth Models
Harald A. Stieber

SESSION 3: PANEL DISCUSSION:

Social Modeling for System Security
W. Eric Wong
SESSION 4: PAPERS II
SESSION CHAIR: BOJAN CUKIC

Towards Controllable Requirements Engineering Processes Based on Cybernetics ........................................... 778
Lin Liu, Zhi Jin, Ruqian Lu

Adaptive Web Services Testing ...................................................................................................................... 782
Xiaoying Bai, Yinong Chen, Zhongkai Shao

A Control-Theoretic Approach to QoS Adaptation in Data Stream Management Systems Design ............................................................. 786
Hai Hu, Chang-Hai Jiang, Kai-Yuan Cai, W, Eric Wong

IWSSE 2007 WORKSHOPS: THE FIRST IEEE INTERNATIONAL WORKSHOP ON SECURITY IN SOFTWARE ENGINEERING

SESSION 1:
SESSION CHAIR: MICHAEL JIANG

ACIR: An Aspect-Connector for Intrusion Response ................................................................................................. 792
Mohammad Gias Uddin, Hossain Shahriar, Mohammad Zulkernine

Test Generation from Security Policies Specified in Or-BAC ............................................................................ 798
Keqin Li, Laurent Mounier, Roland Groz

An Adaptive Security Model for Multi-agent Systems and Application to a Clinical Trials Environment .............. 804
Liang Xiao, Andrew Peet, Paul Lewis, Srinandan Dashmapatra, Carlos Saez, Madalina Croitoru, Javier Vicente, Horacio Gonzalez-Velez, Magi Lluch I Ariet

SESSION 2:
SESSION CHAIR: MICHAEL JIANG

Avoiding Privacy Violation for Resource Sharing in Ad hoc Networks of Pervasive Computing Environment ............................................................. 810
KM Asif, Sheikh I. Ahamed, Nilothpal Talukder

Conformance Checking of Access Control Policies Specified in XACML .................................................................. 816
Vincent C. Hu, Evan Martin, Jee Hyun Hwang, Tao Xie

Process Activities Supporting Security Principles .................................................................................................... 822
Koen Buyens, Riccardo Scandariato, Wouter Joosen

KASET 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON DEVELOPMENT AND APPLICATION OF KNOWLEDGE BASED SOFTWARE ENGINEERING TOOL

SESSION 1: GENERAL SOFTWARE ENGINEERING AND TOOL CHAIR: RUDOLF RAMLER

Setting and Evaluation of Flexible Points on Software User Interface ........................................................................ 828
Limin Shen, Wenwen Jiang, Chunyan Gao
Observing Distributions in Size Metrics: Experience from Analyzing Large Software Systems
Rudolf Ramler, Klaus Wolfmaier, Thomas Natschlager

Software Reliability Growth Modelling Using a Weighted Laplace Test Statistic
Yan Luo, Torsten Bergander, A. Ben Hamza

SESSION 2: KNOWLEDGE-BASED SOFTWARE ENGINEERING TOOL
CHAIR: LI JIANG

A Collaborative System for Software Engineering Education
Hong Zhang, Hongjun Su

A Tool for Requirements Engineering Process Development-A Knowledge Engineering Perspective
Li Jiang, Armin Eberlein

Agents, Cases-based Reasoning and Their Relation to the Mexican Software Process Model (moprossoft)
Elena Cardenas Vargas, Hanna Oktaba, Silvia Guardatti Buemo, Ana Lilia Laureano Cruces

SESSION 3: PROGRAMMING TOOLS AND TECHNIQUES
CHAIR: LIN PENG HUANG

Type-Safe Dynamic Update Transaction
Shi Zhang, LinPeng Huang

Ontologies, JavaBeans and Relational Databases for Enabling Semantic Programming
Ioannis N. Athanasiadis, Ferdinando Villa, Andrea-Emilio Rizzoli

CGR: A Tool for Programming Using Schemes
J. Garcia, A. Gavilanes, A. Gil, P. J. Martin

SESSION 4: SYSTEM MODELLING, RISK AND POLICY MANAGEMENT
CHAIR: HSIN-YI JIANG

System Modification Case Studies
Yulin Ding, Yan Zhang

A History-Based Automatic Scheduling Model for Personnel Risk Management
Hsinyi Jiang, Carl K. Chang, Jinchun Xia, Shuxing Cheng

Managing Policy Interactions in KNX-Based Smart Homes
Mohamed Shehata, Armin Eberlein, Abraham 0. Fapojuwo
QUORS 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON QUALITY ORIENTED REUSE OF SOFTWARE

PANEL DISCUSSION SESSION

SESSION 1: ASPECTS AND SE
SESSION CHAIR: XIAODONG LIU, NAPIER UNIVERSITY, UK

Improvement of Object-Oriented System Analysis and Design with Aspects ...........................................901
Yanhong Guo, Guifa Teng, Yueli Li, Fang Wang, Yang Zhao, Jianbin Ma

Using Aspect Orientation in Understanding Legacy COBOL Code ..........................................................907
Jianjun Pu, Zhuopeng Zhang, Jian Kang, Yang Xu, Hongji Yang

A Connector-Centric Approach to Aspect-Oriented Software Evolution ..................................................913
Yiming Liu, Wenyun Zhao, Xin Peng, Shan Tang

SESSION 2: COMPONENTS AND QOS
CHAIR: HONGJI YANG, DE MONTFORT UNIVERSITY, UK

The Empirical Studies on Quality Benefits of Reusing Software Components ...........................................919
Jingyue Li, Anita Gupta, Jon Anlid Breurrezen, Reidar Conradi

A Product Line Based Aspect-Oriented Generative Unit Testing Approach to Building Quality Components .................................................................923
Yankui Feng, Xiaodong Liu, Jon Kerridge

An Automatic Connector Generation Method for Dynamic Architecture ..................................................929
Yiming Yang, Xin Peng, Wenyun Zhao

Four Automated Approaches to Analyze the Quality of UML Sequence Diagrams ..................................935
Marcel F. Van Amstel, Christian F. J. Lange, Michel R. V, Chaudron

KEYNOTE SESSION: HONG ZHU, OXFORD BROOKES UNIVERSITY

SESSION 3: INTERNET APPLICATIONS
CHAIR: MARCEL VAN AMSTEL, TECHNOLOGY UNIVERSITY EINDHOVEN, NETHERLANDS

QoS-driven Service Selection Optimization Model and Algorithms for Composite Web Services .................................................................942
Wentao Zhang, Yan Yang, Shengqun Tang, Lina Fang

Verification of Web Service Conversations Specified in WSCL ..........................................................949
Zhifeng Gu, Juanzi Li, Jie Tang, Bin Xu, Ruobo Huang

Quality Metrics for Internet Applications: Developing "New" from "Old" ..................................................955
Shikun Zhou, Xiaodong Liu
## SESSION 1: WORKSHOP KEYNOTE
### CHAIR: ERIC YU

**REFS Keynote: "Requirements for Services: Does It Make Sense?"**

*Al Davis*

---

## SESSION 2: RE FOR SERVICE
### CHAIR: ZHI JIN

- **An Intentional Perspective to Service Modeling and Discovery**
  *Colette Rolland, Rim-Samia Kaabi*

  *Changai Sun, Marco Aiello*

- **Requirements for QoS-based Web Service Description and Discovery**
  *Kyriakos Kritikos, Dimitris Plexousakis*

- **Towards an Agile Infrastructure to Provision Devices, Applications, and Networks: A Service-oriented Approach**
  *Sandy Liu, Bruce Spencer, Yong Liang, Bo Xu, Libo Zhang, Martin Brooks*

- **An Object-Oriented Modular Petri-Nets for Modeling Service Oriented Applications**
  *Ching Huey Wang, Feng Jian Wang*

---

## SESSION 3: RE AND SERVICES
### CHAIR: JIAN YANG

- **Requirements, Plato's Cave, and Perceptions of Reality**
  *Alan M. Davis, Kesav V. Nori*

- **Non-functional Computing: Towards a More Scientific Treatment to Non-functional Requirements**
  *Kai-Yuan Cai*

- **Developing Non-Functional Requirements for a Service-Oriented Software Platform**
  *Xiping Song*

- **Experiences in Accurately Estimating Electronic Forms Conversion Services with a Spiral Estimate Process**
  *Dai Zhoulin, Gu Yi, Jun Liu, Xu Yi Jie*

- **An Adaptive User Requirements Elicitation Framework**
  *Cheng Bo, Meng Xiang-Wu, Chen Jun-Liang*

- **Frameworks of Composite Services Execution Engine with Feedback Control**
  *Chunming Gao, Huang Tan, Huowang Chen*

- **Managing Business Process Risk Using Rich Organizational Models**
  *Moshiur Bhuiyan, Zahidul Islam, George Koliadis, Anesh Krishna, Aditya Ghose*
SACT 2007 WORKSHOP: THE SECOND IEEE ASIA-PACIFIC WORKSHOP ON SOFTWARE ARCHITECTURES AND COMPONENT TECHNOLOGIES

SESSION 1: SOFTWARE PATTERNS, FRAMEWORKS AND ARCHITECTURES
CHAIR: JUN HAN

A Composite Design Pattern for Object Frameworks .................................................................1021
D. Thu Tran, T. B. Tran Huynh

Extracting High-level Component-Connector Views from Detailed UML Models: A Case Study .........................................................1027
Arvind W, Kiwelekar, Rushikesh K. Joshi

SESSION 2: COMPONENT SOFTWARE AND TECHNOLOGIES
CHAIR: HONGYU ZHANG

Dynamic Reconfiguration of Distributed Data Flow Systems ......................................................1033
Zhikun Zhao, Wei Li

Visualization of Concurrent Program Executions ......................................................................1039
Cyrille Artho, Klaus Havelund, Shinichi Honiden

AOP-based Testability Improvement for Component-Based Software .....................................1045
Chengying Mao

Salome Platform Component Model for Numerical Simulation ..............................................1051
Andre Ribes, Christian Caremoli

SEASS 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON SOFTWARE ENGINEERING FOR ADAPTIVE SOFTWARE SYSTEMS

The Four Major Challenges of Engineering Adaptive Software Architectures ..........................1057
Jun Han, Alan Colman

SESSION 1: SOFTWARE ARCHITECTURE

A Service-Oriented Approach for Flexible Information Resource Integration .........................1063
Zhuohao Wang, Zhuofeng Zhao, Jun Fang

Adaptability Evaluation of Software Architectures: A Case Study .........................................1069
Pentti Tarvainen

SESSION 2: REQUIREMENT ENGINEERING AND DECISION MAKING

Decision Support for Dynamic Adaptation of Business Systems Based on Feature Binding Analysis ..................................................................................................................1075
Liwei Shen, Xin Peng, Wenyun Zhao

Towards Requirements Engineering for Context Adaptive Systems .......................................1081
Wassiou Sitou, Bernd Spanfelner
SESSION 3: DOMAIN SPECIFIC ADAPTATION

Toward Runtime Self-adaptation Method in Software-Intensive Systems Based on Hidden Markov Model
Hua Wang, Jing Ying

Machine Learning Prediction and Web Access Modeling
Wenyong Feng, Karan Vij

SLA-based Data Integration on Database Grid
Tiezheng Nie, Guangqi Wang, Derong Shen, Mei Jiang Li, Ge Yu

A Framework for Separation of Concerns in Concurrent Programming
Rafael Ramirez, Andrew E. Santosa

SECAD 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON SOFTWARE ENGINEERING CHALLENGES IN THE AUTOMOTIVE DOMAIN

Method Based on OSEKNDX Platform Using Model-based and Autocode Technology for Diesel ECU Software Development
Chunyang Mu, Lining Sun, Zhijiang Du, Yanchun Chen

A Component Model for the AUTOSAR Virtual Function Bus
Dietmar Schreiner, Karl M. Goschka

Repository Based Infrastructures for Effective Automotive Software Creation - an Experience Report
Olaf Kath, Marc Born, Michael Soden

SPAC 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON SOFTWARE PATTERNS: ADDRESSING CHALLENGES

Component Oriented Design Style
Jing-Ying Chen

A Framework for Open Distributed System Design
Alexei Iliasov, Alexander Romanovsky, Budi Arief, Linas Latihinis, Elena Troubitsyna

STPSA 2007 WORKSHOP: THE SECOND IEEE INTERNATIONAL WORKSHOP ON SECURITY, TRUST, AND PRIVACY FOR SOFTWARE APPLICATIONS

SESSION 1: SECURITY, PRIVACY AND TRUST IN SOFTWARE APPLICATIONS-I
CHAIR: MOHAMMAD ZULKER NINE, QUEEN’S UNIVERSITY, CANADA

A Soft Constraint Privacy Model Based on Identifiability
Weifeng Chen, Zhen Liu, Anton Riabov

Security Enhancement of a Novel Proxy Key Generation Protocol
Chung-Chou Tsai, Kuan-Chieh Liao, Tzung-Her Chen, Wei-Bin Lee
SESSION 2: SECURITY, PRIVACY AND TRUST IN SOFTWARE APPLICATIONS-II
CHAIR: SHEIKH IQBAL AHAMED, MARQUETTE UNIVERSITY, USA

An Efficient Software Implementation of AES-CCM for IEEE 802.1 Ii Wireless Standard ..................1157
Abdul Samiah, Arshad Aziz, Nassar Ikram

Towards the Modeling of Personal Privacy in Ubiquitous Computing Environments .......................1163
Ryan Babbitt, Johnny Wong, Carl Chang

A Mutual Authentication and Key Exchange Scheme from Bilinear Pairings for Low Power Computing Devices ..........................................................................................................................1168
Yuh-Min Tseng, Tsu-Yang Wu, Jui-Di Wu

TEST 2007 WORKSHOP: THE FIRST IEEE INTERNATIONAL WORKSHOP ON TESTING EMERGING SOFTWARE TECHNOLOGY

SESSION 1: TEST MODELS, METHODS AND TOOLS FOR NEW TECHNOLOGIES
CHAIR: N.N.

Effect of the Delay Time in Fixing a Fault on Software Error Models ..................................................1174
Jung-Hua Lo

Automated Testing EJB Components Based on Algebraic Specifications .............................................1180
Liang Kong, Hong Zhu, Bin Zhou

Built-in Regression Testing for Component-based Software Systems ..................................................1186
Chengying Mao

Towards Automatic Regression Test Selection for Web Services .........................................................1192
Michael Ruth, Sehun Oh, Adam Lou, Brian Horton, Olin Gallet, Marcel Mata, Shengru Tu

SESSION 2: TEST MODELS, METHODS AND TOOLS FOR TRADITIONAL TECHNOLOGIES
CHAIR: HONG ZHU

Generating User Acceptance Test Plans from Test Cases .................................................................1198
Karl R. P. H. Leung, W. L. Yeung

Client Based Object-oriented Cohesion Metrics .................................................................................1204
Sami Makela, Ville Leppanen

MemScroll: Dynamic Memory Errors Detector in C Programs .......................................................1210
Dae Wan Cho, Seunguk Oh, Hyeon Soo Kim

Learning Parameterized State Machine Model for Integration Testing .............................................1216
Muzammil Shahbaz, Keqin Li, Roland Groz

Author Index