Welcome from the ITNG 2013 General Chair

Conference Organization

Reviewers

Information Systems and Internet Technology

A Tree-Based Web Service Indication Scheme for Service Tracking in Vehicular Ad-Hoc Networks

Chyi-Ren Dow, Chih-Yu Chueh, Yu-Hong Lee, and Shiow-Fen Hwang

Reducing the Impact of Massive Multiplayer Online Games on the Internet Using SCTP

David Burgos-Amador, Jesús Martínez-Cruz, and Sergio Recio-Pérez

SIP: A Simple Tool for Inspecting and Evaluating WSDL Specifications

Mario Beron, German Montejano, Daniel Riesco, Pedro R. Henriques, and Narayan Debnath

Blind Certificates for Secure Electronic Voting

Víctor Mateu, Francesc Sebé, and Magda Valls

Considering Interdependent Protection Goals in Domain-Specific Contexts: The di.me Case Study

Fatih Karatas, Marcel Heupel, Mohamed Bourimi, Dogan Kesdogan, and Sophie Wrobel

Non-blocking Atomic Commitment Algorithm in Asynchronous Distributed Systems with Unreliable Failure Detectors

Sung-Hoon Park, Jea-Yep Lee, and Su-Chang Yu

Web Portal Usability Tests for the Nevada Climate Change Portal

Ivan Gibbs, Sergiu M. Dascalu, and Frederick C. Harris

Semi-automated Analysis Software for a Novel Biochemistry Assay

Joseph M. Vesco, Frederick C. Harris, Sergiu M. Dascalu, Del R. Jackson, and Josh E. Baker

Attack Scenario Prediction Methodology

Seraj Fayyad and Christoph Meinel

A Comparative Evaluation of Web Services Description Approaches

Hajar Omrana, Ibrahim El Bitar, Fatima-Zahra Belouadha, and Ounsa Roudiès
Modeling a Facilities Management and Information System by UML ..........................................................65  
Leo Espinoza, Heldy Espinoza, and Wenying Feng

A Web-Enabled Approach for Generating Data Processors ..........................................................71  
Jigarkumar Patel, Sohei Okamoto, Sergiu M. Dascalu, and Frederick C. Harris

A Boundary Value Analysis Tool - Design and Description ..........................................................77  
Narayan Deb Nath, Adam Kruger, and Melinda Alexander

GajaNindu: A Distributed System Management Framework with User-Defined Management Logic ..................................................83  
Sumedha Kodithuwakku, Lakmal Padmakumara, Ishara Premadasa, Shameera Rathnayaka, Vishaka Nanayakkara, and Srinath Perera

Mining Auto-generated Test Inputs for Test Oracle ..........................................................89  
Weifeng Xu, Hanlin Wang, and Tao Ding

Software Engineering Education

One-Semester CS Capstone: A 40-60 Teaching Approach ..........................................................97  
Hisham M. Haddad

Applying Interdisciplinarity and Agile Methods in the Development of a Smart Grids System ..................................................103  
Marcelo Paiva Ramos, Gustavo Ravanfani Matuck, Ciro Fernandes Matrigrani, Samoel Mirachi, Eliezer Segetti, Marco Leite, Adisson Marques Da Cunha, and Luiz Alberto Vieira Dias

Human Computer Interaction (HCI) and Brain Machine Interface

Gender Classification with Human Gait Based on Skeleton Model ..........................................................113  
Kohei Arai and Rosa Andrie

Experimental Evaluation of Usability Heuristics ..........................................................119  
Freddy Paz, Daniela Villanueva, Cristian Rusu, Silvana Roncagliolo, and José Antonio Pow-Sang

Evaluating the Usability of Interactive Digital Television Applications ..................................................127  
Andrés Solano, César Collazos, Cristian Rusu, and Luis Merchán

Using a Wireless Sensors Network in the Sustainable Management of African Palm Oil Solid Waste ..................................................133  
Mauro Jiménez, Alejandra Jiménez, Pablo Lozada, Santiago Jiménez, and Cristhy Jiménez

Assessing the Usability of University Websites in Saudi Arabia: A Heuristic Evaluation Approach ..................................................138  
Mutlaq B. Alostaibi

A Comparison of Usability Testing Methods for an E-Commerce Website: A Case Study on a Malaysia Online Gift Shop ..................................................143  
# Wavelets and Validated Numerics

Two Problems of Wavelet Packet Transform ................................................................. 153
  *Makoto Kobayashi and Kazushi Nakano*

Parallelization of Discrete Stochastic Arithmetic on Multicore Architectures ........ 160
  *F. Jézéquel, J.-L. Lamotte, and O. Chubach*

Digital Image Watermarking for Authentication Based on the Dyadic Wavelet
Transform and Interval Arithmetic .............................................................................. 167
  *Ryuji Ohura and Teruya Minamoto*

Some Remarks on the Optimal Error Estimates for the Finite Element Method on
the L-Shaped Domain ................................................................................................. 173
  *Takehiko Kinoshita and Mitsuhiro T. Nakao*

A Sinc Method for an Eigenvalue Problem of a Differential Operator with Periodic
Coefficients and Its Comparison with Hill’s Method ............................................ 179
  *Ken’ichiro Tanaka*

# High Performance Computing Architectures

On the Performance of Apache Hadoop in a Tiny Private IaaS Cloud ....................... 189
  *Gabriel Loewen, Michael Galloway, and Susan Vrbsky*

Advanced Instruction Folding for an Object-oriented Processor ............................ 196
  *Anthony S. Fong, C.H. Yau, and Yijun Liu*

Hardware Multi-processor Design for Highly-Demanding Applications ................. 200
  *Lech Jówki and Yahya Jan*

Workload Based Optimization Model for Parallel Disk Systems ............................ 206
  *Fangyang Shen and Bing Qi*

An Area-Time Efficient Architecture for 16 x 16 Decimal Multiplications ............ 210
  *Ming Zhu and Yingtao Jiang*

A Novel Flash Fast-Locking Digital PLL: Verilog-AMS Modeling and Simulations .... 217
  *Mahmoud Fawzy Wagdy and Sandesh Maraliga Jayaram*

# Model-Based Software Development

Exploiting UML Semantic Variation Points to Generate Explicit Component
Interconnections in Complex Systems .......................................................................... 225
  *Federico Ciccozzi, Antonio Cicchetti, and Mikael Sjödin*

Automated Generation of Use Case Diagrams from Problem Frames Using Formal
Concept Analysis ......................................................................................................... 233
  *Amina A. Imam, Haitham S. Hanza, and Riham Abdel Moneim*

Parser Combinators: A Practical Application for Generating Parsers for NMR Data  241
  *Matthew Fenwick, Gerard Weatherby, Heidi JC Ellis, and Michael R. Gryk*
A Model-Driven Approach to the Automated Creation of ADF Applications .................................................................247
Mohammed Alodib

Range Analyzer: An Automatic Tool for Arithmetic Overflow Detection in Model-Based Development .........................................................254
Renato Matuzaki Honda and Luiz Alberto Vieira Dias

On Combining Model-Based Analysis and Testing .............................................................................................................260
Mehrdad Saadatmand and Mikael Sjödin

Rule-Based Generation of Mobile User Interfaces ................................................................................................................267
Andreas Schuler and Barbara Franz

CARD-RM: A Reference Model for Airborne Software ...........................................................................................................273
Johnny Cardoso Marques, Sarasuaty Megume Hayashi Yelisetty, Adilson Marques Da Cunha, and Luiz Alberto Vieira Dias

Alternative Representation of Aspects ............................................................280
Sabah Al-Fedaghi

Computer Information Technology Education

Computer Science and Interdisciplinarity: A Case Study on an Undergraduate Program .........................................................289
Adriana Da Silva Jacinto, Tatiana Martins Almeri, Etiene Lamas, Luiz Alberto Vieira Dias, and Adilson Marques Da Cunha

Learner Satisfaction of E-Learning in Workplace: Case of Oil Company in Middle East .........................................................................................294
Muhammed Al-Qahtani, Mansour Al-Qahtani, and Hatim Al-Misehal

Utilizing Technology in Education Environment: A Case Study ........................................................................................................299
Basit Shahzad and Esam Alwagait

Software Testing

Integration of Root Cause Analysis into a Model-Based Testing Process of a Mobile Switching Server .......................................................305
Mikko Nieminen, Tomi Räty, and Risto Teittinen

Random Cluster Sampling on X-Machines Test Cases ..............................................................................................................310
Yasir Imtiaz Khan and Sadia Kausar

Encoding Test Requirements as Constraints for Test Suite Minimization ......................................................................................317
José Campos and Rui Abreu

The Test Path Generation from State-Based Polymorphic Interaction Graph for Object-Oriented Software ........................................323
Ching-Seh Wu, Chi-Hsin Huang, and Yen-Ting Lee

Validation of Model-Based Testing in Hardware in the Loop Platform ..........................................................................................331
Janne Keränen and Tomi Räty
SynConSMutate: Concolic Testing of Database Applications via Synthetic Data
Guided by SQL Mutants..........................................................................................................................337
Tanmoy Sarkar, Samik Basu, and Johnny Wong

Towards Test Focus Selection for Integration Testing Using Method Level Software Metrics
................................................................................................................................................................343
Shadi Banitaan, Mamdouh Alenezi, Kendall Nygard, and Kenneth Magel

Applying Testing to Enhance Software Product Quality .............................................................................349
Etienne Lamas, Luis Alberto Vieira Dias, and Adilson Marques Da Cunha

Runtime Monitors to Detect and Prevent Union Query Based SQL Injection Attacks ...............................357
Ramya Dharam and Sajjan G. Shiva

Test Case Generation for Modified Code Using a Variant of Particle Swarm Optimization (PSO) Algorithm ..................................................................................................................363
Shailesh Tiwari, K.K. Mishra, and A.K. Misra

Automated Test Data Generation for Coupling Based Integration Testing of Object Oriented Programs Using Evolutionary Approaches ..........................................................................................369
Shaukat Ali Khan and Aamer Nadeem

Hybrid Usability Methodology: Integrating Heuristic Evaluation with Laboratory Testing across the Software Development Lifecycle ........................................................................................................375
Ashok Sivaji, Mohamed Redzuan Abdullah, Alan G. Downe, and Wan Fatimah Wan Ahmad

Information Security and Privacy

Improving the Efficiency and Effectiveness of Penetration Test Automation .............................................387
Kevin P. Haubris and Joshua J. Pauli

Reversible Image Hiding Scheme for High Quality Based on Histogram Shifting .......................................392
Dae-Soo Kim, Gil-Je Lee, and Kee-Young Yoo

Investigation of Static and Dynamic Android Anti-virus Strategies ..................................................................398
Yan Ma and Mehrdad Sepehri Sharbaf

WLAN Location Privacy: A Client Server Based Architecture ........................................................................404
Muhammad Junaid Khan and Haider Abbas

Security Concerns in Cloud Computing ........................................................................................................411
Issa M. Khalil, Abdallah Khreisah, Salah Bouktif, and Azeem Ahmad

White Box AES Using Intel’s New AES Instructions .....................................................................................417
Shay Gueron

Look into My Eyes: A Survey of Biometric Security .....................................................................................422
Alexander Eng and Luay A. Wahsheh
Social Networking Applications and Knowledge Management

Characteristics of Social Network Fatigue .................................................................431
Thara Ravindran, Alton Y.K. Chua, and Dion Hoe-Lian

Perception and Use of Social Networking Sites among Undergraduate Students in Kuwait ........................................................................................................................................................................439
Samir N. Hamade

User Participation in Social Networks: The Case of Balatarin, an Online Persian-Language Social Bookmarking System .........................................................................................................................................................................445
Asreen Rostami

The Role of Affect on the Acceptance of Web 2.0 as Organizational Knowledge Sharing Systems ..........................................................................................................................................................................................450
Angela Lee Siew Hoong, Tong-Ming Lim, and Rasimah Aripin

Networking and Wireless Communications

Applying the Software-to-Data Paradigm in Next Generation E-Health Hybrid Clouds ...........................................................................................................................................................................................................459
Christoph Thuemmler, Julius Mueller, Stefan Covaci, Thomas Magedanz, Stefano de Panfilis, Thomas Jell, and Anastasius Gavras

Localized QoS Routing with End-to-End Delay Guarantees .........................................................................................................................................................................................................................................464
Fahd M. Aldosari and Fahad Alradady

Subjective Evaluation of Latency and Packet Loss in a Cloud-Based Game ...........................................................................................................................................................................................................473
Victor Clincy and Brandon Wilgor

Path-Finding Algorithm for Ground Multiple Sensor Nodes Detection of Quad-rotor-typed UAV ...........................................................................................................................................................................................................477
Hanshang Li, Ling Wang, Shuo Pang, and Massood Towhidnejad

Flow Control Mechanism for Wireless Network-on-Chip ...................................................................................................................................................................................................................................................483
Ling Wang, Zhen Wang, and Yingtao Jiang

New Approach towards Generation of Automatic Variable Key to Achieve Perfect Security ...........................................................................................................................................................................................................489
Rajat Subhra Goswami, Swarnendu Kumar Chakraborty, Abhinandan Bhunia, and C.T. Bhunia

A Benchmarking Algorithm to Determine Maximum Stability Data Gathering Trees for Wireless Mobile Sensor Networks ...........................................................................................................................................................................................................492
Natarajan Meghanathan and Philip D. Mumford

Multilaterally Secure Communication Anonymity in Decentralized Social Networking ...........................................................................................................................................................................................................498
Philipp Schwarte, Mohamed Bourimi, Marcel Heupel, Dogan Kesdogan, Rafael Gimenez, Sophie Wrobel, and Simon Thiel

Wireless Broadband Measurement in California ..........................................................................................................................................................................................................................................................505
Youngjoon Byun, Sathya Narayanan, Stephanie Mott, Ken Biba, Jason Schwenkler, Robert Osborn, and Michael Morris
A Sampling Diagnostics Model for Neural System Training Optimization ........................................510
Denis Avila Montini, Gustavo Ravanhani Matuck, Adilson Marques Da Cunha,
Luiz Alberto Vieira Dias, Alexandre Lima Possebon Ribeiro, and Alessandra Avila Montini

Energy Efficient Information Assured Routing Based on Hybrid Optimization
Algorithm for WSNs ......................................................................................................................518
Kashif Saleem and Norsheila Fisal

Modeling Cognitive Radio Networks for Efficient Data Transfer Using Cloud Link ..................525
Yenumula B. Reddy and Stephen Ellis

Supporting of Mobility by Cooperation Nodes in the Wireless Sensor Network
Routing ........................................................................................................................................531
Miresmaeil Mirnabibaboli, Mher Markosyan, and Hassa Hejr

Peer to Peer Technologies

Breast Cancer Segmentation Using Bacterial Foraging Algorithm ..............................................541
R.B. Dubey, Sujata Bhatia, M. Hanmandlu, and Shantaram Vasikarla

Parent Selection via Reinforcement Learning in Mesh-Based P2P Video Streaming ..................546
Muge Fesci Sayit, Yagiz Kaymak, Kemal Deniz Teket, Cihat Cetinkaya, Sercan Demirci,
and Geylani Kardas

A Study on the Bootstrapping Architectures for Scalable Private Reappearing Overlay
Network ......................................................................................................................................552
Chin Teck Min, Tong Ming Lim, and Mauthe Andreas

Data Mining

PARNT: A Statistic based Approach to Extract Non-Taxonomic Relationships
of Ontologies from Text ...............................................................................................................561
Ivo Serra, Rosario Girardi, and Paulo Novais

The Impact of Body Mass Index on Low Birth Weight ...............................................................567
M. Abdollahian

Similarity Search Problem Research on Multi-dimensional Data Sets .........................................573
Yong Shi and Brian Graham

Capability Analysis for Modulus of Elasticity and Modulus of Rupture ....................................578
M. Abdollahian

Zinc-Protoporphyrin Metabolite Level Affected by Work Environment Stresses .......................584
Ray R. Hashemi, Mahmood Bahar, Azita Bahrami, Nicholas R. Tyler, and Matthew Antonelli

Supply Chain Technology Acceptance, Adoption, and Possible Challenges: A Case
Study of Service Organizations of Saudi Arabia .........................................................................590
Habib Ullah Khan, Shafiq Ahmad, and Mali Abdollahian

Coupling Recursive Hyperspheric Classification with Linear Discriminant Analysis
for Improved Results ..................................................................................................................596
Salyer B. Reed, Tyson R.C. Reed, and Sergiu M. Dascalu
Forecasting Wet Land Rice Production for Food Security .........................................................................................602

M. Abdollahian and L. Lasmini

User-Defined Inverted Index in Boolean, Rule-Based Entity Resolution Systems ..........................................................608

Yinle Zhou, John R. Talburt, and Eric Nelson

Analysing the Problem and Main Approaches for Ontology Population ...................................................................613

Carla Faria, Rosario Girardi, and Paulo Novais

A Case Study on the Construction of Application Ontologies ......................................................................................619

Luis Eduardo Santos, Rosario Girardi, and Paulo Novais

Software Security

Rule-Based Source Level Patching of Buffer Overflow Vulnerabilities ........................................................................627

Hossain Shahriar and Hisham M. Haddad

Detecting Cross-Site Scripting Vulnerability Using Concolic Testing ........................................................................633

Michelle E. Ruse and Samik Basu

Software Safety and Security for Programmable Logic Controllers ........................................................................639

Csilla Farkas and Sidney Valentine

Drop-In Control Flow Hijacking Prevention through Dynamic Library Interception ......................................................640

Alessandro Barenghi, Gerardo Pelosi, and Fabio Pozzi

Setting Up of a Cloud Cyber Infrastructure Using Xen Hypervisor ........................................................................648

Michael Terrell and Natarajan Meghanathan

Platform for Verification of Electromagnetic Analysis Attacks against Cryptographic Circuits ...........................................653

Masaya Yoshikawa and Toshiya Asai

Potpourri

A Systematic Mapping Study on Architectural Analysis ..........................................................................................661

Cagatay Catal and Muratcan Atalay

A User-centric Approach towards Understanding the Influences of Social Tags Choices for Academic Papers .................665

Khasfariyati Razikin, Dion H. Goh, and Chei Sian Lee

Real-time, High-resolution Diagnosis for Osteoarthritis in the Rat Using

Common-Path Fourier-Domain Optical Coherence Tomography ........................................................................671

Sang Hun Park, Dong Ho Shin, Bang Young Kim, Myoung Young Lee, Heung Ki Baik, Dong Heon Lee, Jeong Hwan Seo, and Chul-Gyu Song

An Empirical Evaluation of Refactoring Crosscutting Concerns into Aspects Using

Software Metrics.........................................................................................................................................................674

Joyce M.S. França, Cato Augusto R. Dos Santos, Kênia S. de Oliveira, and Michel S. Soares

Extensions of SysML for Modeling an Aspect Oriented Software Architecture

with Multiple Views ...............................................................................................................................................680

Kênia S. de Oliveira, Joyce M.S. França, and Michel S. Soares
Node Filtering and Face Routing for Sensor Network .......................................................... 686
   Laxmi P. Gewali and Umang Amatya

An IEEE 802.21 MIH Functionality Assisted Proxy Mobile IPv6 for Reducing Handover Latency and Signaling Cost .......................................................... 692
   Pyung Soo Kim, Mun Suck Jang, and Eung Hyuk Lee

A Two-Hashing Table Multiple String Pattern Matching Algorithm .................................. 696
   Chouvalit Khancome, Veera Boonjing, and Pisit Chanvarasuth

Empowering Knowledge Sharing Behaviours through Means Oriented vs. Goal Oriented Cultures: The Impact of Organizational Culture on Knowledge Sharing ................................................... 702
   Hanan Al Mehairi

Evaluation of Multiscale Entropy based HRV for Ectopic Beats ........................................ 706
   Butta Singha and Gurmej Singh

Delineation of ECG Wave Components Using K-Nearest Neighbor (KNN) Algorithm: ECG Wave Delineation Using KNN .................................................. 712
   Indu Saini, Dilbag Singh, and Arun Khosla

Posters

A Meta-algorithm for Planning Optimization in a software Production Line ................................ 721
   Denis Avila Montini, Paulo Marcelo Tasinaffo, Luiz Alberto Vieira Dias, Alvaro Augusto Neto,
   Adilson Marques Da Cunha, and Alessandra Avila Montini

Public-Key Based Efficient Key Distribution in Bluetooth ........................................... 727
   Saif Rahman, Yiruo He, and Huapeng Wu

Two New Modified Schemes of Aggressive Packet Combining Schemes in Achieving Better Throughput .......................................................... 729
   Swarnendu K. Chakraborty, Rajat S. Goswami, Abhinandan Bhunia, and Chandan T. Bhunia

   Haitham Hamza, Amr Kamel, and Khaled Shams

A Comparative Research between SCRUM and RUP Using Real Time Embedded Software Development .......................................................... 734
   Strauss Cunha Carvalho, Felipe Rafael Motta Cardoso, Adilson Marques Da Cunha,
   and Luiz Paulo Zanetti

Interdisciplinarity in Computer Science: A Case Study on Graduate Courses .................. 736
   Adriana Da Silva Jacinto, Etiene Lamas, Luiz Alberto Vieira Dias, Adilson Marques Da Cunha,
   and Tatiana Martins Almeri

An Ophthalmologist’s Tool for Predicting Deterioration in Patients with Accommodative Esotropia .......................................................... 738
   Susan P. Imberman, Sarah Zelikovitz, and Irene Ludwig
3D Visualization of Space Distribution of Electrical Characteristics in Compound Structures Reconstructed by General Ray Method ................................. 743
  Alexandre Grebennikov

A Two-Step Approach for Mining Service Cooperation ........................................ 745
  Ling-Yao Huang and Wei-Lun Chang

Teaching Students to Design and Implement Social Networks Using MVC as a Capstone Experience ................................................................. 747
  Alan Shaw

Analysis of Classical and Quantum Resources for the Quantum Linear Systems Algorithm ................................................................. 749
  Jon Inoaye

Optimizing the Cost of Software Quality - A Path to Delivery Excellence ..................... 754
  B. John Osteen, Karthik Jegannathan, and Suresh Ramanan

Investigating Benefits and Limitations of E-Procurement in B2B Automakers Companies in Iran .................................................................................. 757
  Behnam Bahreman

An Approach to Heterogeneous Database Migration ......................................................... 759
  Qian Wang, Chun Yu, and Naijia Liu

On the Finite Element Method with Riesz Bases and Its Applications to Some Partial Differential Equations ......................................................... 761
  Naohiro Fukuda, Tamotu Kinoshita, and Takayuki Kubo

Examining the Relationship between IT Governance Domains, Maturity, Mechanisms, and Performance: An Empirical Study toward a Conceptual Framework ................................................ 767
  Hamdi Alagha

A Model on Dynamic Threshold Multi-Secret Sharing Scheme using Pell’s Equation with Jacobi Symbol ................................................................. 773
  Kondala Rao M, KVSSRSS Sarma, and PS Avadhani

Linear Programming with Fuzzy Objective Function ......................................................... 777
  Ibraheem Aloyan

Text-to-Onto Miner: A Concept Driven and Interval Controlled Ontology Builder ................ 779
  Vicky Min-How Lim, Tong-Ming Lim, and Wong Siew Fan

Online Teaching and Learning Strategies for Programming-intensive Courses ........................................ 781
  Venkat N. Gudivada, Rajeev Agrawal, and Chunbo Chu

Author Index ........................................................................................................... 783