## Table of Contents – Part I

### Software Engineering

**Use of Agents in Building Integration Tool for Component-Based Application** .......................................................... 1  
*Ebtehal Alsaggaf and Fathy Albouraey*

**Towards Incorporation of Software Security Testing Framework in Software Development** ..................................................... 16  
*Nor Hafeizah Hassan, Siti Rahayu Selamat, Shahrin Sahib, and Burairah Hussin*

**A Performance Modeling Framework Incorporating Cost Efficient Deployment of Multiple Collaborating Instances** ...................... 31  
*Razib Hayat Khan and Poul E. Heegaard*

**Software Quality Models: A Comparative Study** ........................................... 46  
*Anas Bassam AL-Badareen, Mohd Hasan Selamat, Marzanah A. Jabar, Jamilah Din, and Sherzod Turaev*

### Network

**QTCP: An Optimized and Improved Congestion Control Algorithm of High-Speed TCP Networks** ........................................ 56  
*Barketullah Qureshi, Mohamed Othman, Shamala Sabraminiam, and Nor Asila Wati*

### Bioinformatics and E-Health

**A Study on the Forecast of Meridian Energy and Biochemical Test by Using Bio-inspired NeuroMolecular Computing Model** ........ 68  
*Yo-Hsien Lin and Hao-En Chueh*

**A Model of Knowledge Management System and Early Warning System (KMS@EWS) for Clinical Diagnostic Environment** ........... 78  
*Norzaliha Mohamad Noor, Rusli Abdullah, and Mohd Hasan Selamat*

### Biometrics Technologies

**ICT Evaluation for Knowledge Sharing among Senior Citizens Community** ......................................................... 92  
*Sharanjit Kaur Dhillon*
Subthreshold SRAM Designs for Cryptography Security
Computations ................................................................. 104
  Adnan Abdul-Aziz Gutub

A Development of Integrated Learning System for Visual Impaired .... 111
  Wan Fatimah Wan Ahmad, Rustam Asnawi, and
  Sufia Ruhayani Binti Zulkefl

Fingerprint Singularity Detection: A Comparative Study ............... 122
  Ali Ismail Awad and Kensuke Baba

The Development of Software Evaluation and Selection Framework for
Supporting COTS-Based Systems: The Theoretical Framework ........ 133
  Fauziah Baharom, Jamaiah Hj. Yahaya, and Feras Tarawneh

Recipe Generation from Small Samples: Incorporating an Improved
Weighted Kernel Regression with Correlation Factor .................. 144
  Mohd Ibrahim Shapiai, Zuwairie Ibrahim, Marzuki Khalid,
  Lee Wen Jau, Soon-Chuan Ong, and Vladimir Pavlovich

Applying Feature Selection Methods to Improve the Predictive Model
of a Direct Marketing Problem........................................ 155
  Ding-Wen Tan, Yee-Wai Sim, and William Yeoh

Visualizing MDS Coordinates of Multiple Information in Color for
Attribute-Based Two-Dimensional Space .............................. 168
  M. Bakri C. Haron, Siti Zaheera Zainal Abidin, and
  Zamalia Mahmud

User Interface and Interaction Design Considerations for Collaborative
Learning Using Augmented Reality Learning Object.................. 179
  T. Makina and Sazilah Salam

Augmented Reality Remedial Paradigm for Negative Numbers:
AVCTP ........................................................................... 188
  Elango Periasamy and Halimah Badioze Zaman

A Framework for Defining Malware Behavior Using Run Time Analysis
and Resource Monitoring .................................................. 199
  Mohamad Fadli Zolkipli and Aman Jantan

Success Factors in Cost Estimation for Software Development
Project ........................................................................... 210
  Zulkefli Mansor, Saadiah Yahya, and Noor Habibah Hj Arshad
Web Engineering

Transactional Web Services Composition: A Genetic Algorithm
Approach ................................................................. 217
Yong-Yi FanJiang, Yang Syu, Shang-Pin Ma, and Jong-Yih Kuo

Dejan Lavbić and Marko Bajec

A Greedy Approach for Adapting Web Content for Mobile Devices ...... 244
Rajibul Anam, Chin Kuan Ho, and Tek Yong Lim

QoS-Aware Web Services Selection with Interval-Valued Intuitionistic Fuzzy Soft Sets .................................. 259
Xiuqin Ma, Norrozila Sulaiman, and Mamta Rani

DBrain Portal for Collaborative BioGrid Environment .................. 269
Al Farisi and Mohd Fadzil Hassan

Assessing the Use of Mash-Ups in Higher Education .................. 278
Rabiu Ibrahim and Alan Oxley

Influence of Informal Visual Environments and Informal Motivational Factors on Learners’ Aesthetic Expectations from Formal Learning Visual Environments ........................................ 292
Sadia Riaz, Dayang Rohaya Awang Rambli, Rohani Salleh, and Arif Mushtaq

Zero Watermarking for Text on www Using Semantic Approach ........ 306
Nighat Mir

Sentiment Classification from Online Customer Reviews Using Lexical Contextual Sentence Structure ............... 317
Aurangzeb khan, Baharum Baharudin, and Khairullah khan

Neural Network

Experimental Approximation of Breast Tissue Permittivity and Conductivity Using NN-Based UWB Imaging ......................... 332
Saleh Alshehri, Sabira Khatun, Adznan Jantan,
R.S.A. Raja Abdullah, Rozi Mahmud, and Zaiki Awang

Banking Deposit Number Recognition Using Neural Network ........ 342
Bariah Yusob, Jasni Mohamad Zain,
Wan Muhammad Syahrir Wan Hussin, and Chin Siong Lim
Features Selection for Training Generator Excitation Neurocontroller Using Statistical Methods .......................... 353
Abdul Ghani Abro, Junita Mohamad Saleh, and Syafrudin bin Masri

Intelligent Decision Support Model Based on Neural Network to Support Reservoir Water Release Decision .................. 365
Wan Hussain Wan Ishak, Ku Ruhana Ku-Mahamud, and Norita Md Norwawi

The Effect of Adaptive Momentum in Improving the Accuracy of Gradient Descent Back Propagation Algorithm on Classification Problems .................................................. 380
M.Z. Rehman and N.M. Nawi

Fuzzy Models for Complex Social Systems Using Distributed Agencies in Poverty Studies ........................... 391
Bogart Yail Marquez, Manuel Castanon-Puga, Juan R. Castro, E. Dante Suarez, and Sergio Magdaleno-Palencia

Parallel and Distributed

Grid Jobs Scheduling Improvement Using Priority Rules and Backfilling ................................................. 401
Zafriil Rizal M. Azmi, Kamalrulnizam Abu Bakar, Abdul Hanan Abdullah, Mohd Shahir Shamsir, Rahiwan Nazar Romli, and Syahrizal Azmir MD Sharif

Dynamic Load Balancing Policy in Grid Computing with Multi-Agent System Integration .......................... 416
Bakri Yahaya, Rohaya Latip, Mohamed Othman, and Azizol Abdullah

Dynamic Multilevel Dual Queue Scheduling Algorithms for Grid Computing .................................................. 425
Syed Nasir Mehmood Shah, Ahmad Kamil Bin Mahmood, and Alan Oxley

Communications in Computer and Information Science: Performance Improvement and Interference Reduction through Complex Task Partitioning in a Self-organized Robotic Swarm .................. 441
Mehrdad Jangjou, Alireza Bagheri, Mohammad Mansour Riahi Kashani, and Koosha Sadeghi Oskoooyee

A Semantic Service Discovery Framework for Intergrid ................................................................. 448
Mahamat Issa Hassan and Azween Abdullah

Agent-Based Grid Resource Management .................................. 463
Ognian Nakov, Plamenka Borovska, Adelina Aleksieva-Petrova, Anastasios Profitis, and Luka Bekiarov
# Table of Contents – Part I

## E- Learning

Current Practices of Programming Assessment at Higher Learning Institutions .................................................. 471

*Rohaida Romli, Shahida Sulaiman, and Kamal Zuhairi Zamli*

*Learn with Me: Collaborative Virtual Learning for the Special Children* .......................................................... 486

*Nia Valeria and Bee Theng Lau*

Potential of Using Virtual Environment for Aircraft Maintenance Learning System in Making Tacit Knowledge Explicit ............................................................. 506

*N.S. Jamain and Z.M. Kasirun*

Trainees’ Competency Based-Assessment Methods in Cyber Forensics Education or Training Programmes – A Review .......................................................... 517

*Elfadil Sabeil, Azizah Bt Abdul Manaf, Zuraini Ismail, and Mohamed Abas*

Survey of Software Engineering Practices in Undergraduate Information System Projects ........................................ 527

*Nor Shahida Mohamad Yusop, Kamalia Azma Kamaruddin, Wan Faezah Abbas, and Noor Ardian Abd Rahman*

## Ontology

Health Ontology Generator, Distiller and Accumulator .......................................................... 538

*Yip Chi Kiong, Sellappan Palaniappan, and Nor Adnan Yahaya*

## Image Processing

A New Model of Securing Iris Authentication Using Steganography .................................................. 547

*Zaheera Zainal Abidin, Mazani Manaf, and Abdul Samad Shibhatullah*

Tamper Localization and Lossless Recovery Watermarking Scheme .................................................. 555

*Siau-Chuin Liew and Jasni Mohamad Zain*

A New Performance Trade-Off Measurement Technique for Evaluating Image Watermarking Schemes .......................................................... 567

*Mir Shahriar Emami, Ghazali Bin Sulong, and Jasni Mohamad Zain*

Malaysian Car Plates Recognition Using Freeman Chain Codes and Characters’ Features ........................................ 581

*Nor Amizam Jusoh and Jasni Mohamad Zain*

Improving the Robustness of ISB Watermarking Techniques by Repetition of the Embedding .......................................................... 592

*Akram M. Zeki, Azizah A. Manaf, and Shayma’a S. Mahmod*
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometrically Invariant Watermarking Based on Local Generalized</td>
<td>600</td>
</tr>
<tr>
<td>Orthogonalized Complex Moments</td>
<td></td>
</tr>
<tr>
<td><em>Hai Tao, Jasni Mohamad Zain, Mohammad Masroor Ahmed, and Ahmed Abdalla</em></td>
<td></td>
</tr>
<tr>
<td>Hierarchical Groups with Low Complexity Block Compensation for</td>
<td>612</td>
</tr>
<tr>
<td>Reconstruction Video Sequences</td>
<td></td>
</tr>
<tr>
<td><em>Ta-Te Lu, Tsung-Hsuan Tsai, and Jia-Yuan Wu</em></td>
<td></td>
</tr>
<tr>
<td>Gait Classification by Support Vector Machine</td>
<td>623</td>
</tr>
<tr>
<td><em>Hu Ng, Hau-Lee Tong, Wooi-Haw Tan, and Junaidi Abdullah</em></td>
<td></td>
</tr>
<tr>
<td>Selecting Significant Features for Authorship Invarianceness in Writer</td>
<td>637</td>
</tr>
<tr>
<td>Identification</td>
<td></td>
</tr>
<tr>
<td><em>Azah Kamilah Muda, Satrya Fajri Pratama, Yun-Huoy Choo, and Noor Azilah Muda</em></td>
<td></td>
</tr>
<tr>
<td>Pixel Mask Analyzer (PMA): Noise Removal in Gland Detection for Colon</td>
<td>652</td>
</tr>
<tr>
<td>Cancer Image</td>
<td></td>
</tr>
<tr>
<td><em>Mohd Yamin Ahmad, Yasmin Anum Mohd Yusof, Siti Aishah Md. Ali, and Azlinah Mohamed</em></td>
<td></td>
</tr>
<tr>
<td>A Review of Bio-inspired Algorithms as Image Processing Techniques...</td>
<td>660</td>
</tr>
<tr>
<td><em>Noor Elaiza Abdul Khalid, Norharyati Md Ariff, Saadiah Yahya, and Noorhayati Mohamed Noor</em></td>
<td></td>
</tr>
<tr>
<td>The Use of Elimination Method and Nearest Neighbor for Oil Palm</td>
<td>674</td>
</tr>
<tr>
<td>Fruit Ripeness Indicator</td>
<td></td>
</tr>
<tr>
<td><em>Mohamad Fatma Susilawati, Azizah Abdul Manaf, and Suriayati Chuprat</em></td>
<td></td>
</tr>
<tr>
<td>Crowd Analysis and Its Applications</td>
<td>687</td>
</tr>
<tr>
<td><em>Nilam Nur Amir Sjarif, Siti Marimyam Shamsuddin, Siti Zaiton Mohd Hashim, and Siti Sophiayati Yuhuniz</em></td>
<td></td>
</tr>
<tr>
<td>Iris Segmentation: A Review and Research Issues</td>
<td>698</td>
</tr>
<tr>
<td><em>Abduljalil Radman, Kasmiran Jumari, and Nasharuddin Zainal</em></td>
<td></td>
</tr>
<tr>
<td>Splitting Strategies for Video Images Processing in Medical Data Grid</td>
<td>709</td>
</tr>
<tr>
<td><em>Mien May Chong and Rohaya Binti Latip</em></td>
<td></td>
</tr>
<tr>
<td>Comparison of Linear Discriminant Analysis and Support Vector Machine in Classification of Subdural and Extradural Hemorrhages</td>
<td>723</td>
</tr>
<tr>
<td><em>Hau-Lee Tong, Mohammad Faizal Ahmad Fauzi, Su-Cheng Haw, and Hu Ng</em></td>
<td></td>
</tr>
</tbody>
</table>
A New Approach for Adjusting Braille Image Skewness in Optical Braille Recognition ................................................................. 735
   Abdul Malik S. Al-Salman, Ali El-Zaart, and Abdu Gomai

Multilevel Thresholding Method Based on Aggressive Particle Swarm Optimization .......................................................... 747
   Habibullah Akbar, Nanna Suryana, and Shahrin Sahib

Author Index ................................................................. 759
Table of Contents – Part II

Information and Data Management

A Mean Mutual Information Based Approach for Selecting Clustering Attribute .......................................................... 1
Hongwu Qin, Xiuqin Ma, Jasni Mohamad Zain, Norrozila Sulaiman, and Tutut Herawan

A Soft Set Model on Information System and Its Application in Clustering Attribute Selection ............................................. 16
Hongwu Qin, Xiuqin Ma, Jasni Mohamad Zain, Norrozila Sulaiman, and Tutut Herawan

Alternative Model for Extracting Multidimensional Data Based-on Comparative Dimension Reduction ................................. 28
Rahmat Widia Sembiring, Jasni Mohamad Zain, and Abdullah Embong

Knowledge Taxonomy for Developing Organizational Memory System (OMS) for Public Institutions of Higher Learning (IHL) in Malaysia ......................................................... 43
Suzana Basaruddin and Haryani Haron

A Framework for Optimizing Malware Classification by Using Genetic Algorithm ............................................................. 58
Mohd Najwadi Yusoff and Aman Jantan

Building a Corpus-Derived Gazetteer for Named Entity Recognition ................................................................. 73
Norsuhani Zamin and Alan Oxley

Fuzzy Goal Programming for Multi-level Multi-objective Problem: An Additive Model ...................................................... 81
Nureize Arbaiy and Junzo Watada

Software Agents for E-Commerce Data Workflow Management ........................................................................ 96
Faiz Al-Shrouf, Aiman Turani, and Khalil Al-Shqeerat

Mining Opinions in User-Generated Contents to Improve Course Evaluation ............................................................... 107
Alaa El-Halees

Rough Set Theory Approach for Classifying Multimedia Data ............................................................................. 116
M. Nordin A. Rahman, Yuzarimi M. Lazim, Farham Mohamed, Suhailan Safei, Sufian Mat Deris, and M. Kamir Yusof
Application of Rasch Model in Validating the Content of Measurement Instrument for Blog Quality ........................................... 125
   Zuhaira Muhammad Zain, Abdul Azim Abd Ghani, Rusli Abdullah, Rodziah Atan, and Razali Yaakob

Super Attribute Representative for Decision Attribute Selection .......... 137
   Rabiei Mamat, Tutut Herawan, and Mustafa Mat Deris

The Normal Parameter Value Reduction of Soft Sets and Its Algorithm ................................................................. 148
   Xiuqin Ma and Norrozila Sulaiman

Improving Language Identification of Web Page Using Optimum Profile ................................................................. 157
   Choon-Ching Ng and Ali Selamat

The Grounded Process of KMS Adoption: The Case Study of Knowledge Sharing and CoPs in Oil and Gas Industry in Malaysia ...... 167
   Sureena Matayong and Ahmad Kamil Bin Mahmood

File Integrity Monitor Scheduling Based on File Security Level Classification ................................................................. 177
   Zul Hilmi Abdullah, Nur Izura Udzir, Ramlan Mahmod, and Khairulmizam Samsudin

A Convex Hull-Based Fuzzy Regression to Information Granules Problem – An Efficient Solution to Real-Time Data Analysis .......... 190
   Azizul Azhar Ramli, Junzo Watada, and Witold Pedrycz

Genetic Algorithm Approach to Path Planning for Intelligent Camera Control for Scientific Visualization ........................................ 205
   Djamalladine Mahamat Pierre and Nordin Zakaria

Software Risk Assessment: A Review on Small and Medium Software Projects ................................................................. 214
   Abdullahi Mohamud Sharif and Shuib Basri

Building Knowledge Representation for Multiple Documents Using Semantic Skolem Indexing ........................................... 225
   Kasturi Dewi Varathan, Tengku Mohd. Tengku Sembok, Rabiah Abdul Kadir, and Nazlia Omar

Synchronous Replication: Novel Strategy of Software Persistence Layer Supporting Heterogeneous System .................................. 232
   A.H. Beg, Ahmad Noraziah, Ahmed N. Abd Alla, E.I. Sultan, and Noriyani Mohd Zin
Preserving Data Replication Consistency through ROWA-MSTS ........................................ 244

Halal Product Price Indicator Portal: Promoting Malaysia’s Local Halal SMEs .......................................................... 254
Alfi Khairiansyah Machfud, Jawdat Khatib, Ahmed Abdulaziz Haji-Ahmed, and Abdul Rahman Ahmad Dahlan

A Pattern for Structuring the Information System Architecture – Introducing an EA Framework for Organizing Tasks ........................................ 263
Shokoofoeh Ketabchi, Navid Karimi Sani, and Kecheng Liu

The Specifications of the Weakly Hard Real-Time Systems: A Review ................................................................. 274
Habibah Ismail and Dayang N.A. Jawawi

Extracting Named Entities from Prophetic Narration Texts (Hadith) ................................................................. 289
Fouzi Harrag, Eyas El-Qawasmeh, and Abdul Malik Salman Al-Salman

Engineering

Security as a Service for User Customized Data Protection ................................................................. 298
Kenichi Takahashi, Takanori Matsuzaki, Tsunenori Mine, Takao Kawamura, and Kazunori Sugahara

Software Security

Centralizing Network Digital Evidences ................................................................. 310
Mohammed Abbas, Elfadil Sabeil, and Azizah Abdul Manaf

Nasser Vali and Nasser Modiri

Computer Security Threats towards the E-Learning System Assets ................................................................. 335
Zainal Fikri Zamzuri, Mazani Manaf, Adnan Ahmad, and Yuzaimi Yunus

User Acceptance for Extended Function Point Analysis in Software Security Costing ................................................................. 346
Nur Atiqah Sia Abdullah, Rusli Abdullah, Mohd Hasan Selamat, and Azmi Jaafar
Analyzing Framework for Alternate Execution of Workflows for Different Types of Intrusion Threats ................................. 361
Sohail Safdar and Mohd Fadzil Hassan

Taxonomy of C Overflow Vulnerabilities Attack ......................... 376
Nurul Haszeli Ahmad, Syed Ahmad Aljunid, and Jamalul-lail Ab Manan

A Secure Storage Model to Preserve Evidence in Network Forensics ...... 391
Mohd Izham Ibrahim and Aman Jantan

Attack Intention Analysis Model for Network Forensics .................. 403
M. Rasmi and Aman Jantan

Formal Verification for Interaction Protocol in Agent-Based E-Learning System Using Model Checking Toolkit - MCMAS ................. 412
Norizal Abd Latif, Mohd Fadzil Hassan, and Mohd Hilmi Hasan

A New Stream Cipher Using Natural Numbers Based on Conventional Encryption Techniques: MINNSC ................................. 427
Rajendra Hegadi

Remote User Authentication Scheme with Hardware-Based Attestation ................................................................. 437
Fazli Bin Mat Nor, Kamarularifin Abd Jalil, and Jamalul-lail Ab Manan

Graphics and Multimedia

Optimal Camera Placement for 3D Environment ......................... 448
Siti Kamaliah Mohd Yusoff, Abas Md Said, and Idris Ismail

Databases

XRecursive: A Storage Method for XML Document Based on Relational Database .............................................................. 460
M.A. Ibrahim Fakahardien, Jasni Mohamed Zain, and Norrozila Sulaiman

Enhancement Algorithms for SQL-Based Chatbot ....................... 470
Abbas Saliimi Lokman and Jasni Mohamad Zain

An Alternative Measure for Mining Weighted Least Association Rule and Its Framework .................................................... 480
Zailani Abdullah, Tutut Herawan, and Mustafa Mat Deris

Mining Interesting Association Rules of Student Suffering Mathematics Anxiety ........................................................... 495
Tutut Herawan, Prima Vitasari, and Zailani Abdullah
Methodology for Measuring the Quality of Education Using Fuzzy Logic
Sergio Valdés-Pasarón, Bogart Yail Márquez, and Juan Manuel Ocegueda-Hernández

Rough Set Theory for Feature Ranking of Traditional Malay Musical Instruments Sounds Dataset
Norhalina Senan, Rosziati Ibrahim, Nazri Mohd Nawi, Iwan Tri Riyadi Yanto, and Tutut Herawan

Pi-Sigma Neural Network for Temperature Forecasting in Batu Pahat
Noor Aida Husaini, Rozaida Ghazali, Nazri Mohd Nawi, and Lokman Hakim Ismail

Revisiting Protocol for Privacy Preserving Sharing Distributed Data: A Review with Recent Results
Ahmed HajYasien

Algorithms

The Performance of Compound Enhancement Algorithm on Abnormality Detection Analysis of Intra-oral Dental Radiograph Images
Siti Arpah Ahmad, Mohd Nasir Taib, NoorElaiza Abd Khalid, Rohana Ahmad, and Haslina Taib

Performance Study of Two-Dimensional Orthogonal Systolic Array
Ahmad Husni Mohd Shapri, Norazeani Abdul Rahman, and Mohamad Halim Abd. Wahid

Similarity Approach on Fuzzy Soft Set Based Numerical Data Classification
Bana Handaga and Mustafa Mat Deris

An Empirical Study of Density and Distribution Functions for Ant Swarm Optimized Rough Reducts
Lustiana Pratiwi, Yun-Huoy Choo, and Azah Kamilah Muda

The UTLEA: Uniformization of Non-uniform Iteration Spaces in Three-Level Perfect Nested Loops Using an Evolutionary Algorithm
Shabnam Mahjoub and Shahriar Lotfi

A Discrete Event Simulation for Utility Accrual Scheduling in Uniprocessor Environment
Idawaty Ahmad, Shamala Subramaniam, Mohamad Othman, and Zuriati Zulkarnain
Engineering Design Analysis Using Evolutionary Grammars with Kano’s Model to Refine Product Design Strategies .................. 627
   Ho Cheong Lee

Applications of Interval-Valued Intuitionistic Fuzzy Soft Sets in a Decision Making Problem ........................................... 642
   Xiuqin Ma, Norrozila Sulaiman, and Mamta Rani

Elasticity Study: DBrain Project Grid-Cloud Integration .................. 652
   Dani Adhıpta, Mohd Fadzil Hassan, and Ahmad Kamil Mahmood

Embedded Backups for Link Failure Recovery in Shortest Path Trees ... 663
   Muhammad Aasim Qureshi and Mohd Fadzil Hassan

Managing Differentiated Services in Upstream EPON ...................... 672
   Nurul Asyikin Mohamed Radzi, Norashidah Md. Din, Mohammed Hayder Al-Mansoori, and Mohd. Shahmi Abdul Majid

Real-Time Volume Shadow Using Stencil Buffer .......................... 680
   Hoshang Kolivand, Mohd Shahrizal Sunar, Yousef Farhang, and Haniyeh Fattahi

Higest Response Ratio Next (HRRN) vs First Come First Served (FCFS) Scheduling Algorithm in Grid Environment ....................... 688
   Rohaya Latip and Zulkhairi Idris

Reduced Support Vector Machine Based on k-Mode Clustering for Classification Large Categorical Dataset ................................. 694
   Santi Wulan Purnami, Jasni Mohamad Zain, and Abdullah Embong

Signal Processings

Fractal Analysis of Surface Electromyography (EMG) Signal for Identify Hand Movements Using Critical Exponent Analysis ......... 703
   Angkoon Phinyomark, Montri Phothisonothai, Pornpama Suklaead, Pornchai Phukpattaranont, and Chusak Limsakul

Robust Eye Movement Recognition Using EOG Signal for Human-Computer Interface ............................................................ 714
   Siriwiadee Aungsakun, Angkoon Phinyomark, Pornchai Phukpattaranont, and Chusak Limsakul

Recognizing Patterns of Music Signals to Songs Classification Using Modified AIS-Based Classifier ........................................ 724
   Noor Azilah Draman, Sabrina Ahmad, and Azah Kamilah Muda

Author Index ........................................................................... 739
Table of Contents – Part III

Software Design/Testing

Practical Adoptions of T-Way Strategies for Interaction Testing............ 1
Kamal Z. Zamli, Rozmie R. Othman, Mohammed I. Younis, and
Mohd Hazli Mohamed Zabil

On the Relationship between Proof Writing and Programming:
Some Conclusions for Teaching Future Software Developers.............. 15
Michael Hartwig

Model-Based Web Components Testing: A Prioritization Approach ...... 25
Ahmed Al-Herz and Moataz Ahmed

Web Interactive Multimedia Technology: State of the Art ............... 41
Asma Md Ali and Joan Richardson

Health Architecture Based on SOA and Mobile Agents................... 54
Mohamed Elammari and Tarek F. Alteap

Metrics Based Variability Assessment of Code Assets ..................... 66
Fazal-e-Amin, Ahmad Kamil Bin Mahmood, and Alan Oxley

Test Data Generation for Event-B Models Using Genetic Algorithms ... 76
Ionut Dinca, Alin Stefanescu, Florentin Ipate, Raluca Lefticaru, and
Cristina Tudose

A Parallel Tree Based Strategy for T-Way Combinatorial Interaction
Testing ......................................................... 91
Mohammad F.J. Klaib, Sangeetha Muthuraman, and
Ahmed Noraziah

PS2Way: An Efficient Pairwise Search Approach for Test Data
Generation .......................................................... 99
Sabira Khatun, Khandakar Fazley Rabbi, Che Yahaya Yaakub,
M.F.J. Klaib, and Mohammad Masroor Ahmed

The Preferable Test Documentation Using IEEE 829 ...................... 109
Roslina Mohd Sidek, Ahmed Noraziah, and Mohd Helmy Abd Wahab

Automatic Analysis of Static Execution Time for Complex Loop
Contained External Input ........................................... 119
Yun-Kwan Kim, Doo-Hyun Kim, Tae-Wan Kim, and
Chun-Hyon Chang
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Reuse: MDA-Based Ontology Development to Support Data Access over Legacy Applications</td>
<td>130</td>
</tr>
<tr>
<td>Heru-Agus Santoso, Su-Cheng Haw, and Chien-Sing Lee</td>
<td></td>
</tr>
<tr>
<td>A Framework to Assure the Quality of Sanity Check Process</td>
<td>143</td>
</tr>
<tr>
<td>Rabia Sammi, Iram Masood, and Shunaila Jabeen</td>
<td></td>
</tr>
<tr>
<td>Scalability of Database Bulk Insertion with Multi-threading</td>
<td>151</td>
</tr>
<tr>
<td>Boon Wee Low, Boon Yaik Ooi, and Chee Siang Wong</td>
<td></td>
</tr>
<tr>
<td>Towards Unit Testing of User Interface Code for Android Mobile</td>
<td>163</td>
</tr>
<tr>
<td>Applications</td>
<td></td>
</tr>
<tr>
<td>Ben Sadeh, Kjetil Ørbekk, Magnus M. Eide, Njaal C.A. Gjerde, Trygve A. Tønnesland, and Sundar Gopalakrishnan</td>
<td></td>
</tr>
<tr>
<td>Security Modeling of SOA System Using Security Intent DSL</td>
<td>176</td>
</tr>
<tr>
<td>Muhammad Qaiser Saleem, Jafreezal Jaafar, and Mohd Fadzil Hassan</td>
<td></td>
</tr>
<tr>
<td>An Input-Driven Approach to Generate Class Diagram and Its Empirical Evaluation</td>
<td>191</td>
</tr>
<tr>
<td>Faridah Hani Mohamed Salleh</td>
<td></td>
</tr>
<tr>
<td>Understanding Motivators and De-motivators for Software Engineers – A Case of Malaysian Software Engineering Industry</td>
<td>205</td>
</tr>
<tr>
<td>Mobashar Rehman, Ahmad Kamil Bin Mahmood, Rohani Salleh, and Aamir Amin</td>
<td></td>
</tr>
<tr>
<td>UML Diagram for Design Patterns</td>
<td>215</td>
</tr>
<tr>
<td>Muhazam Mustapha and Nik Ghazali Nik Daud</td>
<td></td>
</tr>
<tr>
<td>Towards Natural Interaction with Wheelchair Using Nintendo Wiimote Controller</td>
<td>231</td>
</tr>
<tr>
<td>Mahmood Ashraf and Masitah Ghazali</td>
<td></td>
</tr>
<tr>
<td>Meta-model Validation of Integrated MARTE and Component-Based Methodology Component Model for Embedded Real-Time Software</td>
<td>246</td>
</tr>
<tr>
<td>Mohd Zulkifli M. Zaki, Mohd Adham Isa, and Dayang N.A. Jawawi</td>
<td></td>
</tr>
<tr>
<td>Abstract Formal Framework for Method Overriding</td>
<td>257</td>
</tr>
<tr>
<td>Siti Hafizah, Mohd Sapiyan Baba, and Abdullah Gani</td>
<td></td>
</tr>
<tr>
<td>Parametric Software Metric</td>
<td>266</td>
</tr>
<tr>
<td>Won Shin, Tae-Wan Kim, Doo-Hyun Kim, and Chun-Hyon Chang</td>
<td></td>
</tr>
<tr>
<td><strong>E- Technology</strong></td>
<td></td>
</tr>
<tr>
<td>Automatic Recognition of Document Structure from PDF Files</td>
<td>274</td>
</tr>
<tr>
<td>Rosmayati Mohemad, Abdul Razak Hamdan, Zulaiha Ali Othman, and Noor Maizura Mohamad Noor</td>
<td></td>
</tr>
</tbody>
</table>
Comparative Evaluation of Semantic Web Service Composition Approaches .................................................. 283
    Radziah Mohamad and Furkh Zeshan

Ontology Development for Programming Related Materials ................................................................. 291
    Siti Noradlina Mat Using, Rohiza Ahmad, and Shakirah Mohd. Taib

User-Centered Evaluation for IR: Ranking Annotated Document Algorithms .................................................. 306
    Syarifah Bahiyah Rahayu, Shahrul Azman Noah, and Andrianto Arfan Wardhana

Ad Hoc Networks

Efficient Wireless Communications Schemes for Machine to Machine Communications .................................. 313
    Ronny Yongho Kim

Efficient Data Transmission Scheme for Ubiquitous Healthcare Using Wireless Body Area Networks ........... 324
    Cecile Kateretse and Eui-Nam Huh

An Algorithm to Detect Attacks in Mobile Ad Hoc Network ................................................................. 336
    Radhika Saini and Manju Khari

Integrated Solution Scheme with One-Time Key Diameter Message Authentication Framework for Proxy Mobile IPv6 ................................................................. 342
    Md. Mahedi Hassan and Poo Kuan Hoong

A Collaborative Intrusion Detection System against DDoS Attack in Peer to Peer Network ......................... 353
    Leila Ranjbar and Siavash Khorsandi

Impact of Safety Beacons on the Performance of Vehicular Ad Hoc Networks ........................................... 368
    Bilal Munir Mughal, Asif Ali Wagan, and Halabi Hasbullah

Analysis of Routing Protocols in Vehicular Ad Hoc Network Applications .................................................. 384
    Mojtaba Asgari, Kasmiran Jumari, and Mahamod Ismail

Comparative Study on the Performance of TFRC over AODV and DSDV Routing Protocols .......................... 398
    Khuzairi Mohd Zaini, Adib M. Monzer Habbal, Fazli Azzali, and Mohamad Rizal Abdul Rejab

An Enhanced Route Discovery Mechanism for AODV Routing Protocol .................................................. 408
    Kamarularifin Abd. Jalil, Zaid Ahmad, and Jamalul-Lail Ab Manan
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Handover Technique for Efficient IPv6 Mobility Support in</td>
<td>419</td>
</tr>
<tr>
<td>Heterogeneous Networks  ...................................................................</td>
<td></td>
</tr>
<tr>
<td>Radhwan M. Abduallah, Nor Asilah Wati Abdul Hamid,</td>
<td></td>
</tr>
<tr>
<td>Shamala K. Subramaniam, and Azizol Abdullah</td>
<td></td>
</tr>
<tr>
<td>Using Dendritic Cell Algorithm to Detect the Resource Consumption</td>
<td>429</td>
</tr>
<tr>
<td>Attack over MANET .........................................................................</td>
<td></td>
</tr>
<tr>
<td>Maha Abdelhaq, Rosilah Hassan, and Raed Alsaqour</td>
<td></td>
</tr>
<tr>
<td>Social Networks</td>
<td></td>
</tr>
<tr>
<td>Modeling, Analysis, and Characterization of Dubai Financial Market</td>
<td>443</td>
</tr>
<tr>
<td>as a Social Network ......................................................................</td>
<td></td>
</tr>
<tr>
<td>Ahmed El Toukhy, Maytham Safar, and Khaled Mahdi</td>
<td></td>
</tr>
<tr>
<td>Secret-Eye: A Tool to Quantify User’s Emotion and Discussion Issues</td>
<td>455</td>
</tr>
<tr>
<td>through a Web-Based Forum ................................................................</td>
<td></td>
</tr>
<tr>
<td>Siti Z.Z. Abidin, Nastroh Omar, Muhammad H.M. Radzi, and</td>
<td></td>
</tr>
<tr>
<td>Mohammad B.C. Haron</td>
<td></td>
</tr>
<tr>
<td>Software Process Modeling</td>
<td></td>
</tr>
<tr>
<td>A Concurrent Coloured Petri Nets Model for Solving Binary Search</td>
<td>463</td>
</tr>
<tr>
<td>Problem on a Multicore Architecture</td>
<td></td>
</tr>
<tr>
<td>Alaa M. Al-Obaidi and Sai Peck Lee</td>
<td></td>
</tr>
<tr>
<td>An Approach for Source Code Classification Using Software Metrics</td>
<td>478</td>
</tr>
<tr>
<td>and Fuzzy Logic to Improve Code Quality with Refactoring</td>
<td></td>
</tr>
<tr>
<td>Techniques</td>
<td></td>
</tr>
<tr>
<td>Pornchai Lerthathairat and Nakornthip Prompoon</td>
<td></td>
</tr>
<tr>
<td>Balanced Hierarchical Method of Collision Detection in Virtual</td>
<td>493</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td>Hamzah Asyrani Sulaiman and Abdullah Bade</td>
<td></td>
</tr>
<tr>
<td>An Aspect Oriented Component Based Model Driven Development ..........</td>
<td>502</td>
</tr>
<tr>
<td>Rachit Mohan Garg and Deepak Dahiya</td>
<td></td>
</tr>
<tr>
<td>Application of 80/20 Rule in Software Engineering Rapid Application</td>
<td>518</td>
</tr>
<tr>
<td>Development (RAD) Model ..................................................................</td>
<td></td>
</tr>
<tr>
<td>Muhammad Rizwan and Muzaffar Iqbal</td>
<td></td>
</tr>
<tr>
<td>Development of a Framework for Applying ASYCUDA System with</td>
<td>533</td>
</tr>
<tr>
<td>N-Tier Application Architecture ..................................................</td>
<td></td>
</tr>
<tr>
<td>Ahmad Pahlavan Tafti, Safoura Janosepah, Nasser Modiri,</td>
<td></td>
</tr>
<tr>
<td>Abdulrahman Mohammadi Noudeh, and Hadi Alizadeh</td>
<td></td>
</tr>
</tbody>
</table>
An Experimental Design to Exercise Negotiation in Requirements Engineering

Sabrina Ahmad and Noor Azilah Muda

A Study of Tracing and Writing Performance of Novice Students in Introductory Programming

Affandy, Nanna Suryana Herman, Sazilah Binti Salam, and Edi Noersasongko

A Review of Prominent Work on Agile Processes Software Process Improvement and Process Tailoring Practices

Rehan Akbar, Mohd Fadzil Hassan, and Azrai Abdullah

An Evaluation Model for Software Reuse Processes

Anas Bassam AL-Badareen, Mohd Hasan Selamat, Marzanah A. Jabar, Jamilah Din, and Sherzod Turaev

Achieving Effective Communication during Requirements Elicitation - A Conceptual Framework

Fares Anwar, Rozilawati Razali, and Kamsuriah Ahmad

Investigating the Effect of Aspect-Oriented Refactoring on Software Maintainability

Hamdi A. Al-Jamimi, Mohammad Alshayeb, and Mahmoud O. Elish

On the Modelling of Adaptive Hypermedia Systems Using Agents for Courses with the Competency Approach

Jose Sergio Magdaleno-Palencia, Mario Garcia-Valdez, Manuel Castanon-Puga, and Luis Alfonso Gaxiola-Vega

Toward a Methodological Knowledge for Service-Oriented Development Based on OPEN Meta-Model

Mahdi Fahmideh, Fereidoon Shams, and Pooyan Jamshidi

Conceptual Framework for Formalizing Multi-Agent Systems

Tawfig M. Abdelaziz

Miscellaneous Topics in Software Engineering and Computer Systems

Mining Optimal Utility Incorporated Sequential Pattern from RFID Data Warehouse Using Genetic Algorithm

Barjesh Kochar and Rajender Singh Chhillar

SYEDWSIM: A Web Based Simulator for Grid Workload Analysis

Syed Nasir Mehmood Shah, Ahmad Kamil Bin Mahmood, and Alan Oxley
F-IDS: A Technique for Simplifying Evidence Collection in Network Forensics ................................................................. 693
Eviyanti Saari and Aman Jantan

Deterministic-Rule Programs on Specialization Systems: Clause-Model Semantics .......................................................... 702
Kiyoshi Akama, Ekawit Nantajeewarawat, and Hidekatsu Koike

A Novel Replica Replacement Strategy for Data Grid Environment .... 717
Mohammed Madi, Yuhanis Yusaf, Suhaidi Hassan, and Omar Almomani

Investigate Spectrum-Sliced WDM System for FTTH Network ......... 728
Nasim Ahmed, S.A. Aljunid, R.B. Ahmad, Hilal Adnan Fadil, and M.A. Rashid

Use Case-Based Effort Estimation Approaches: A Comparison Criteria .................................................................................. 735
Mohammed Wajhat Kamal, Moataz Ahmed, and Mohamed El-Attar

An Agent-Based Autonomous Controller for Traffic Management ...... 755
Sadia Afsar, Abdul Mateen, and Fahim Arif

Comparative Evaluation of Performance Assessment and Modeling Method For Software Architecture ................................. 764
Mohd Adham Isa and Dayang N.A. Jawawi

A New Approach Based on Honeybee to Improve Intrusion Detection System Using Neural Network and Bees Algorithm ............. 777
Ghassan Ahmed Ali and Aman Jantan

Multi-classifier Scheme with Low-Level Visual Feature for Adult Image Classification ......................................................... 793
Mohammadmehdi Bozorgi, Mohd Aizaini Maarof, and Lee Zhi Sam

Managing Communications Challenges in Requirement Elicitation ..... 803
Noraini Che Pa and Abdullah Mohd Zin

Learning Efficiency Improvement of Back Propagation Algorithm by Adaptively Changing Gain Parameter together with Momentum and Learning Rate ........................................................................... 812
Norhamreeza Abdul Hamid, Nazri Mohd Nawi, Rozaida Ghazali, and Mohd Najib Mohd Salleh

Author Index ............................................................................... 825