2015 International Conference on Soft Computing and Software Engineering (SCSE’15)

Procedia Computer Science Volume 62

Berkeley, California, USA
5 - 6 March 2015

Editors:

Mehdi Bahrami

ISBN: 978-1-5108-1357-1
Contents

Welcome Message
M. Bahrami ......................................................................................................................... 1

Keynote Speakers
A Big Data Dashboard for Urban Mobility
B. Prabhakar, .......................................................................................................................... 7
Combinatorial Methods in Software Testing
R. Kuhn .................................................................................................................................. 9
An Introduction to Multi-trapdoor Hash Functions and It’s Applications
M. Singhal ................................................................................................................................ 11
Soft Computing Methodology for Software Evaluation
J. Dujmovic ..................................................................................................................................... 13

Tutorials and Workshops
Using Essence Reflection Meetings in Team-based Project Courses
T. Sedano, C. Péraire ....................................................................................................................... 15
An Evaluation of Security and Privacy Threats for Cloud-based Applications
M. Bahrami .................................................................................................................................... 17
CLOURA: CLOUD Risk Assessor (with Stochastic & Non-Stochastic Simulations)
M. Sahinoglu .................................................................................................................................... 19
A Suigeneris Automated Software Testing Methodology
S.M. Handigund .............................................................................................................................. 21

Technical Papers Algorithms
ANN Based Robotic Arm Visual Servoing Nonlinear System
H. Al-Junaid .................................................................................................................................... 23
Analysis of a Monte Carlo Tree Search in Knight-Amazons
H. Kato, M. Takaya, A. Yamamura ................................................................................................. 31
Analysis of Demographic Characteristics Creating Coronary Artery Disease Susceptibility Using Random Forests Classifier
K. Akyol, E. Çalık, Ş. Bayır, B. Şen, A. Çavuşoğlu ........................................................................ 39
Real-Time Languages, Timed Alternating Automata, and Timed Temporal Logics: Relationships and Specifications
A. Fellah ......................................................................................................................................... 47
Towards Generating Essence Kernels Using Genetic Algorithms
T. Sedano, C. Péraire, J. Lohn ........................................................................................................ 55
The Impact of Search Algorithms in Automated Program Repair
F.Y. Assiri, J.M. Bieman ................................................................................................................ 65
High Speed Database Sequence Comparison
T. Bonny, B. Soudan .................................................................................................................... 73

Software Requirements
Requirement Management in Agile Software Environment
N. Baruah ........................................................................................................................................ 81

Fuzzy Logics
Ranking of Fuzzy Similar Faces Using Relevance Matrix and Aggregation Operators
A. Rahman, T. Ahmad, M.M. Sufyan Beg ..................................................................................... 84
An Analysis of Software Reliability Assessment with Neuro-Fuzzy Based Expert Systems
B. Kotaiah, M.V.S. Prasad, R.A. Khan ......................................................................................... 92
Fuzzified Expert System for Employability Assessment
R. Kumari, S. Kumar, V.K. Sharma .............................................................................................. 99
doi:10.1016/S1877-0509(15)02779-9
# Contents

Fuzzy Measures in Multi-Criteria Decision Making  
R.R. Yager, N. Alajlan ............................................ 107

Evaluation of Visualization of a Fuzzy-based Recommender System for Political Community-Building  
L. Terán ............................................................. 116

OWA Based Book Recommendation Technique  
S.S. Sohail, J. Siddiqui, R. Ali .................................. 126

A Web Based System for Cricket Talent Identification, Enhancement and Selection (C-TIES)  
G. Ahamad, S. Kazim Naqvi, M.M. Sufyan Beg, T. Ahmed ................. 134

Implementation of Fuzzy Decision Based Mobile Robot Navigation Using Stereo Vision  
K. Al-Mutib, E. Mattar, M. Alsulaiman ................................ 143

Network Software and Software-defined Networking (SDN)  
ASIC Implementation for Improved Character Recognition and Classification Using SNN Model  
S. Chaturvedi, A.A. Kurshid ........................................ 151

Modeling Firewalls for Behavior Analysis  
P.G. Clark, A. Agah ................................................. 159

Tagged-Sub Optimal Code (TSC) Compression for Improving Performance of Web Services  
I. Al Rassan, H. Alyahya ........................................... 167

Using First-Order Logic to Query Heterogeneous Internet Data Sources  
D. Cohen, K. Narayanaswamy ....................................... 170

Integration of Object Oriented Host Program with Network DBMS  
S.M. Handigund, S.G. Makanur, M. Sreenivasa Rao .......................... 178

Jitter Buffer Modelling and Analysis for TDM over PSN  
U.R. Seshasayee, M. Rathinam ....................................... 186

Impulsive Noise Cancellation of ECG Signal Based on SSRLS  
A. Mirza, S. Mehak Kabir, S. Ayub, S.A. Sheikh .......................... 196

Software Security  
A Secure Healthcare System: From Design to Implementation  
E.C. Cankaya, T. Kywe .............................................. 203

Developing a Novel Holistic Taxonomy of Security Requirements  
N. Rjaibi, L.B.A. Rabai .............................................. 213

A Review of the Advances in Cyber Security Benchmark Datasets for Evaluating Data-Driven Based Intrusion Detection Systems  
A.I. Abubakar, H. Chiroma, S.A. Muaz, L.B. Ila ......................... 221

Impact on SDN Powered Network Services under Adversarial Attacks  
Q. Niyaz, W. Sun, M. Alam ............................................ 228

Knowledge based Software Systems  
Towards a Knowledge Based Approach to Style Driven Architecture Design  
S. Moaven, J. Habibi, R. Alidoosti, A.P. Mosaed .......................... 236

Knowledge Representation through Graphs  
E. Portmann, P. Kaltenrieder, W. Pedrycz ................................ 245

Software Evaluation  
A Review of Evaluation Methods and Techniques for Simulation Packages  
Y. Alomair, I. Ahmad, A. Alghamdi .................................... 249

Software Testing  
Quality Assurance through Rigorous Software Specification and Testing: A Case Study  
L. Lin, J. He, Y. Zhang, F. Song ...................................... 257

ABCE: A Novel Framework for Improved Branch Coverage Analysis  
S. Godboley, A. Sahani, D.P. Mohapatra ................................ 266

Programming Languages Aspect-Oriented Programming  
An Ameliorated Methodology for the Abstraction of Object Oriented Features from Software Requirements Specification  
A.M. Shivaram, S.M. Handigund ...................................... 274

New Theory for Code-translation; Punctuator andQualifier as Two Token Categories and Supplementary Concepts of Programming  
B.I. Hutabarat ......................................................... 282

A Programming Environment for Visual Block-based Domain-Specific Languages  
A. Kurihara, A. Sasaki, K. Wakita, H. Hosobe ............................ 287
## Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second-Order Spline-Wavelet Robust Code under Non-Uniform Codeword Distribution</td>
<td>297</td>
</tr>
<tr>
<td>Predicting Number of Faults in Software System Using Genetic Programming</td>
<td>303</td>
</tr>
<tr>
<td>Automated Business Rules Transformation into a Persistence Layer</td>
<td>312</td>
</tr>
<tr>
<td><strong>Big Data and Cloud Computing</strong></td>
<td></td>
</tr>
<tr>
<td>CLOUD Computing: Cost-effective Risk Management with Additional Product Deployment</td>
<td>319</td>
</tr>
<tr>
<td>Global Collaboration Requirement Analysis System in Cloud Computing</td>
<td>326</td>
</tr>
<tr>
<td>Cost-efficient Risk Management with Reserve Repair Crew Planning in CLOUD Computing</td>
<td>332</td>
</tr>
<tr>
<td>A Cloud to Mobile Application for Consumer Behavior Modification</td>
<td>335</td>
</tr>
<tr>
<td>E-learning Systems Based on Cloud Computing: A Review</td>
<td>343</td>
</tr>
<tr>
<td><strong>Software Reliability</strong></td>
<td></td>
</tr>
<tr>
<td>A Parametric Empirical Bayes Model to Predict Software Reliability Growth</td>
<td>352</td>
</tr>
<tr>
<td><strong>Optimization</strong></td>
<td></td>
</tr>
<tr>
<td>Gaussian Mixture Distribution Analysis as Estimation of Probability Density Function and it’s the Periphery</td>
<td>360</td>
</tr>
<tr>
<td>A Hierarchical Method for Solving Soft Nonlinear Constraints</td>
<td>370</td>
</tr>
<tr>
<td>Impact of Developer Choices on Energy Consumption of Software on Servers</td>
<td>378</td>
</tr>
<tr>
<td>Towards Search Engine Optimization: Feedback Collation</td>
<td>378</td>
</tr>
<tr>
<td>Unequal Clustering by Improved Particle Swarm Optimization in Wireless Sensor Network</td>
<td>385</td>
</tr>
<tr>
<td>An Optimized Genetic Stowed Biometric Approach to Potent QOS in MANET</td>
<td>385</td>
</tr>
<tr>
<td>MRQI Optimization for BGP Convergence Time Reduction without Increasing the Number of Advertisement Messages</td>
<td>395</td>
</tr>
<tr>
<td>A Distinctive Genetic Approach for Test-suite Optimization</td>
<td>395</td>
</tr>
<tr>
<td>A Review of the Applications of Bio-inspired Flower Pollination Algorithm</td>
<td>403</td>
</tr>
<tr>
<td>Fitness Based Position Update in Spider Monkey Optimization Algorithm</td>
<td>403</td>
</tr>
<tr>
<td>A New Competitive Intelligence-based Strategy for Web Page Search</td>
<td>412</td>
</tr>
<tr>
<td><strong>Modelling and Simulation</strong></td>
<td></td>
</tr>
<tr>
<td>DTD2OWL 2: A New Approach for the Transformation of the DTD to OWL</td>
<td>457</td>
</tr>
<tr>
<td>2-Bit Branch Predictor Modeling Using Markov Model</td>
<td>467</td>
</tr>
<tr>
<td>An Ameliorated Methodology to Abstract Object Oriented Features from Programming System</td>
<td>470</td>
</tr>
<tr>
<td>High-Level Representation of Time in Diagrammatic Specification</td>
<td>478</td>
</tr>
<tr>
<td>Validation of Usability Driven Web Based Software Process Model Using Simulation</td>
<td>487</td>
</tr>
<tr>
<td>A Generic Model of Execution for Synthesizing Interpreted Domain-specific Models</td>
<td>495</td>
</tr>
</tbody>
</table>
### Contents

**A Theoretical Framework for the Maintainability Model of Aspect Oriented Systems**  
A. Sheshasayee, R. Jose .......................................................... 505

**Arabic Ontology Model for Financial Accounting**  
A. Hegazy, M. Sakre, E. Khater .................................................. 513

**Morphological Analysis in the Environment “TELA”**  
K. Bacha, M. Zrigui ................................................................. 521

**Predicting Unit Testing Effort Levels of Classes: An Exploratory Study Based on Multinomial Logistic Regression Modeling**  
M. Badri, F. Toure, L. Lamontagne ............................................. 529

**Mobile Applications**

**Domain Model Validation of Context-aware Mobile Patient Monitoring Systems**  
M.G. Al-Bashayreh ................................................................. 539

**Exploring a Context-based Network Access Control for Mobile Devices**  
Y. Mowafi, D. el Diehn I. Abou-Tair, A. Zmily, T. Al-Aqarbeh, M. Abilov, V. Dmitriyev  
Mobile Platform Detect and Alerts System for Driver Fatigue  

**Application of Soft Computing**

**Precepts and Evolvability of Complex Systems**  
U. Vora ................................................................. 565

**Strategic Accumulation and Organization of the Polish Contexts in Research Document Creation**  
R. Onuma, H. Nakayama, S. Abe, H. Kaminaga, Y. Miyadera, S. Nakamura .................................................. 575

**Evolution of Modern Management through Taylorism: An Adjustment of Scientific Management Comprising Behavioral Science**  
N. Uddin, F. Hossain ................................................................. 578

**Multi-View Human Action Recognition Using Wavelet Data Reduction and Multi-Class Classification**  
A. Aryanfar, R. Yaakob, A.A. Halin, Md Nasir Sulaiman, K.A. Kasimir, L. Mohammadpour .................................................. 585

**Simulation Studies for Analysis of Inherent Resilience Properties of an Amine Regeneration Column Used in a Gas Sweetening Unit**  
S. Guha ................................................................. 593

**A Study on the Limitations of Evolutionary Computation and other Bio-inspired Approaches for Integer Factorization**  
M. Mishra, V. Gupta, U. Chaturvedi, K.K. Shukla, R.V. Yampolskiy .................................................. 603

**Optimal Design of a Standing Wave Thermoacoustic Refrigerator Using GAMS**  
L.K. Tartibu, B. Sun, M.A.E. Kaunda .................................................. 611

**Revealing of Earth Quake Magnitude Using Seismic Signals and Wavelet Transforms**  
G.V.S. Raju, C. Kishor Kumar Reddy, L.V. Narasimha Prasad .................................................. 619

**Hybrid Analysis of Audience Gaze and Slide Construction to Obtain the Clues for Improving Presentations**  
T. Funayama, H. Nakayama, R. Onuma, H. Kaminaga, Y. Miyadera, S. Nakamura .................................................. 628

**Usability Evaluation of Tadarus: Student Perceptions**  
M. Alkhattabi ................................................................. 631

**Satellite Derived pH Estimation for Acidity in Precipitation Using Water Vapor and Nitrogen Dioxide Imagery**  
L.V. Narasimha Prasad, C. Kishor Kumar Reddy, S.R. Depuru .................................................. 637