PROCEEDINGS OF
THE 2012 INTERNATIONAL CONFERENCE ON
SOFTWARE ENGINEERING RESEARCH & PRACTICE

Editors
Hamid R. Arabnia
Hassan Reza, Jay Xiong

Associate Editors
Leonidas Deligiannidis
Vince Schmidt, Ashu M. G. Solo

WORLDCOMP'12
July 16-19, 2012
Las Vegas Nevada, USA
www.world-academy-of-science.org

©CSREA Press
Contents

SESSION: UNIFIED MODELING LANGUAGE (UML), OBJECT ORIENTED METHODS, AND CASE STUDIES

UML Model Based Design of the Claw Car Robot 3
Andre Layne, Adria Mason, Yujian Fu, Mezemir Wagaw

UML Based Design of LEGO Robot 10
Lorenzo Jones, Janise Fowler, Samuel James, Yujian Fu

Model-based Generation of Workunits, Computation Sequences, Series and Service Interfaces 17 for BOINC based Projects
Christian Benjamin Ries, Christian Schroder, Vic Grout

Automatic Driving System Using LEGO 24
Chuanxi Zhou, Yujian Fu, Mezemir Wagaw

ClipBits - A Case Study in Model-Driven Software Engineering 29
Thomas Lovette, Devon Simmonds, Michelle Wilcox, Yuli Bonner

Virtual Platforms Generation Tool for Embedded Systems Design 36
Sebastian Villa, Juan Camilo Villa, Juan Jaiber Yepes, Jose Edinson Aedo

An Object-Oriented Social Networking to Link People with Similar Interests and Activities 43
Ching-Cheng Lee, Prachi Garg

Comparison of Software Development Productivity based on Object-oriented Programming Languages 47
Cuauhtemoc Lopez-Martin, Arturo Chavoya, Maria-Elena Meda-Campana

SESSION: SOFTWARE ARCHITECTURE, DESIGN PATTERNS + PETRI NET

Enterprise Architecture and Organizational Transformation: The Human Side of Information Technology and the Theory of Structuration 53
Dominic M. Mezzanotte, Sr., Josh Dehlinger

SOAs Factors, Criteria and Metrics 60
Riad Belkhatir, Mourad Oussalah, Arnaud Viguier

Scalability Architecture for Processing using Microsoft .Net Remoting 67
Seth Nielsen, Yuke Wang
Bharati Sinha, Santanu K. Rath

Efficient Design Pattern Selection and Teaching by PBL Technique.
S. Sarika, T. Sasipraba

Application of Petri Network to Workflow Optimization
Lukasz Osuszek

Modelling Rail-road Crossing Control Using OPN
Arghya Ghosh, Ranjan Dasgupta

SESSION: BATTLESPACE REPRESENTATION FOR AIR, SPACE, AND CYBER
Battlespace Representation for Air, Space, and Cyber
James McCracken, Denise Aleva

Automated Streaming Imagery Filtering and Selection
Brian P. Jackson, A. Ardeshir Goshtasby

A Contagion Threat on a Social Network: A Graphical Approach
F. Ciardiello, J. Binner, V. Schmidt

SESSION: FORMAL METHODS, SPECIFICATION, MODELING, AND APPLICATIONS
Z Formal Framework for Syntax-Based Module Level Software Metrics
Raouf Alomainy, Wei Li

eSQUARE: A Formal-Methods-Enhanced SQUARE Tool
Hadil Abukwaik, Cui Zhang

Formal Modeling and Analysis of Autonomous Robotics Systems Using Z
Yujian Fu, Nithin Yama, Zhijiang Dong

Implementing a Sound Mapping from Normative Requirements to Event-B Design Blueprints Using MDA
Iman Poernomo, Timur Umarov

SESSION: WEB APPLICATIONS AND CASE STUDIES
An Approach for Testing Passively Web Service Compositions in Clouds
Sebastien Salva
Design of Safety Critical Survivable Systems Using Autonomic and Semantic Web Methodologies

Michael Lindsey, David Coe, Jeffrey Kulick, Letha Etzkorn, Wei Li, Yujian Fu

Everyday Cloud Computing with SaaS

Robert Roggio, Tetiana Bilyeyeva, James Comer

Beyond Traditional Disaster Recovery Goals - Augmenting the Recovery Consistency Characteristics

Octavian Paul Rotaru

A Smart Approach to Conference Registration and Payment Processing

Jon Vandersall, Kyle Schwarting, Roger Lee

Extensible Web-based Learning Architecture

Takao Shimomura, Kenji Ikeda

Goal-Based Reengineering of Web Business Applications

Hicham H. Hallal, May Haidar

Web Application Vulnerabilities and Detection

Kangan Ahuja, Monika Saini

Verifying the Behavioral Contracts among Components by means of Semantic Web Techniques

Francisco-Edgar Castillo-Barrera, Hector A. Duran-Limon, Carolina Medina-Ramiez, Jose-Emilio Labra-Gayo, S. Masoud Sadjadi

SESSION: EMBEDDED SYSTEMS, APPS, ANDROID, AND APPLICATIONS

Software Engineering a Family of Complex Systems Simulation Model Apps on Android Tablets

Victor Du Preez, Bradley Pearce, Ken A. Hawick, Timothy H. McMullen

A model-driven Development Approach to Design Software for Embedded Systems using the Android Platform

Luz Viviana Cobaleda, Juan Camilo Villa, Juan Jaiber Yepes, John Freddy Duitama, Jose Edinson Aedo

Recognizing Recurrent Development Behaviors Corresponding to Android OS Release Life-cycle

Pavel Senin
GiftScroll - An Online Gift Registry for the Android Mobile Phone
Devon Simmonds, Michael Nipper 235

Extending Java for Android Programming
Yoonsik Cheon 241

SESSION: COST ESTIMATION METHODS

A Lightweight Test-Driven Approach to Test Indie Software Products
Hassan Reza, Yong Lai 245

Establishing the Optimal Software Cost Equation Using Cost Affecting factors and Elitist Gene Expression Programming
Divya Kashyap, A.K. Misra 252

Using Metadata for Automated Testing of Complex Object Structure
Jaroslav Zacek, Frantisek Hunka 259

Empirical Estimation of COCOMO I and COCOMO II Using a Case Study
Muhammad M. Albakri, M. Rizwan Jameel Qureshi 265

Comparative Analysis of Software Reliability Estimation Models - State and Path Based
Arashdeep Kaur, Monika Saini 271

What is the Cost of One IFPUG Method Function Point? Case Study
Beata Czarnacka-Chrobot 278

Software Reuse Cost Factors
Hisham Haddad, Nancy Ross, Woranuch Kaensaksiri 284

SESSION: MODELING, SOFTWARE DEVELOPMENT, USER INTERFACE METHODS + VISUAL PROGRAMMING

A Two-Dimensional Overall Software Customization Classification and Visualization
Michela Weiss, Norbert Heidenbluth 293

A Graphical Approach to the Development of Deployment Agnostic Systems
Mark Dixon 300

Non-Simultaneous Round-Trip Engineering for 3D Applications
Matthias Lenk, Arnd Vitzthum, Bernhard Jung 305

Domain-specific Transformation of the REA Enterprise Ontology
Zdenek Melis, Jaroslav Zacek, Frantisek Hunka 312
An Image Comparing-based GUI Software Testing Automation System
Hyunjun Jung, Sukhoon Lee, Doo-Kwon Baik

A Usability Evaluation Process for Plastic User Interface Generated With an MDE Approach
Lassaad Ben Ammar, Adel Mahfoudhi, Mohamed Abid

SES-based Structure Modeling Method Using the Block Diagram
Suk-hoon Shin, Chan-ho Jung, Eun-bog Lee, Sung-do Chi, Seung-jin Han

SESSION: AGILE SOFTWARE METHODS
Low Fidelity User Interface Prototypes as Agile Refactoring Tools
Michael Wainer

Adopting Agile Methodologies to a One-Man Software Engineering Team
Steve Biccum, Nasseh Tabrizi

Estimating Agile Iterations by Extending Function Point Analysis
Udayan Banerjee, Kanakalata Narayanan, C. Mahadevan P

Domain Specific Priority Based Implementation of Mobile Services - An Agile Way
Daya Gupta, Rinky Dwivedi, Sinjan Kumar

SESSION: NOVEL APPLICATIONS AND CASE STUDIES + EDUCATION
Using Visualization Software to Understand Complex Healthcare Interactions in Heterogeneous System Communities
H. Keith Edwards, Duane Bender, Paul Brown, Justin Fyfe

Training Effective Developers
Milica Barjaktarovic

Infrastructure Needed for Distance Learning in Developing Countries Through Multimedia Technology Using Mobile devices
Sagarmay Deb Deb

A Multi-attribute Decision Making Approach for Resource Allocation in Software Projects
Abdel Ejnioui, Carlos E. Otero, Luis D. Otero

Measuring the Impact of Security and Reliable Messaging on the Transport Layer for Medical Messaging Applications
H. Keith Edwards, Justin Fyfe, Duane Bender, Suseelan Vigneswaran
Developing Nim Game for iPhone
Palani Dharanidharan, Kevin Daimi, Michael Canjar

Relational Database Schema Evolution Using Fragile Watermarking Approach
Ravichandra Sadam, Somayajulu Dvln

A Text Messaging Pay for Parking Service (iParked.ca)
Dwight Deugo, Nesa Matic

SESSION: SOFTWARE QUALITY ASSESSMENT + OPTIMIZATION
METHODS + REDUNDANCY REMOVAL + RELIABILITY ISSUES

Fuzzy Measure Extraction for Software Quality Assessment as a Multi-Criteria
Decision-Making Problem
Xiaojing Wang, Martine Ceberio, Shamsnaz Virani, Christian Del Hoyo, Luis Gutierrez

An Extension of The Unit Production Elimination Algorithm
Xin Chen, David Pager

Reliable Task Allocation in Distributed System
Vinod Kumar Yadav, Swagat Ranjan Sahoo, Dharmendra Kumar Yadav

On Overcoming Market-Driven Software Development Challenges: requirements refactoring
Bassey Isong, Obeten Ekabua

Workflow Map Optimization By Using Multiobjective Algorithms
Lukasz Osuszek

SESSION: SOFTWARE MAINTENANCE, REUSE, DEVELOPMENT CONCEPTS
+ COMPILER TECHNOLOGIES

Documenting Java Database Access with Type Annotations
Paul Bergstein

Mining RCS Data
Catherine Stringfellow, Swetha Myneni, Raaji Vedala-Tirumala, Sreya Reddy

On The Construction of a LaTeX To gDPS Compiler
Xin Chen

Software Cloning Detection Techniques : Comparison Criteria
Abdulrahman Baqais, Moataz Ahmed
A Multiplicity Approach for Equilibrium-Driven Complexity Control
K. O. Chow

SESSION: WORKSHOP ON NONLINEAR SOFTWARE ENGINEERING REVOLUTION BASED ON COMPLEXITY SCIENCE
NSE Extracts Software Models from Source Code - Software Modeling Revolution Based on Complexity Science
Liana Ye, Jay Xiong

NSE Dynamic Software Documentation - Software Documentation Revolution Based on Complexity Science
Liana Ye, Lin Li

SESSION: SOFTWARE ENGINEERING RESEARCH AND PRACTICE: NOVEL SYSTEMS AND METHODS
Early Usability Evaluation in Model-Driven Video Game Development
Adrian Fernandez, Emanuel Montero, Emilio Insfran, Silvia Abrahao, Jose Angel Carsi

Tool Support for Quality Aware Product Configuration in Software Product Lines
Guoheng Zhang, Huilin Ye, Yuqing Lin

A New Architecture for Logging and Auditing in Distributed Systems
Elnaz B. Noeparast, Reza Ravani

Requirements Metrics for Requirements Statements Stored in Database
Chao Din, Rine David

Proposal and Development of Markers-type Mouse System with Considering Practical and Entertainment
Kazuya Murata, Takayuki Fujimoto

Eradicating Complexity in Software Interface for Increased Productivity - Increasing Effectiveness of Enterprise Systems
Felix Bollou, Edmung Balogun, Inah Usang

Software Development Methodology Revolution Based on Complexity Science - An Introduction to NSE Software Development Method
Chi-Hung Kao, Jay Xiong

Software Engineering Process Revolution
Chi-Hung Kao, Jay Xiong
Software Testing Revolution Based on Complexity Science - An Introduction to NSE Software Testing Paradigm
Wan Yuan Huang, Jay Xiong

Software Testing Revolution Based on Complexity Science - An Introduction to NSE NSE-SQA
Wan Yuan Huang, Linda Li

Software Traceability Establishment Revolution Based on Complexity Science
Po-kang Chen, Jay Xiong

Software Visualization Revolution Based on Complexity Science - An Introduction to NSE Software Visualization Paradigm
Po-Kang Chen, Jay Xiong

Software Maintenance Engineering Revolution
Po-kang Chen, Jay Xiong

Should Linear, Partial, Local, and Qualitative Software Engineering Paradigm be Replaced by Nonlinear, Holistic, Global, and Quantitative Software Engineering Paradigm? Jay Xiong

General Comparison between the Old-Established Software Engineering Paradigm and NSE (Nonlinear Software Engineering Paradigm) Jay Xiong

Silver Bullet: Slaying Software Werewolves Efficiently Jay Xiong

A Software Engineering Tool for Pedagogy: Reporting Performance Test Results J Crunk, M. M. North, S. M. North

Using Neural Network for Security Analysis in Software Design Adetunji Adebiyi, Johnnes Arreymbi, Chris Imafidon

A Proposal of New Scheduling System on Smartphone with Interactive Eigo Ito, Takayuki Fujimoto