19th International Conference on Software Engineering and Data Engineering 2010

(SEDE-2010)

San Francisco, California, USA
16-18 June 2010

Editors:

I. Rahal       R. Zalila-Wenkstern

TECHNICAL PAPER INDEX

SOFTWARE ARCHITECTURE AND DESIGN

Reasoning about Safety during Software Architecture Design
Tacksoo Im, Soujanya Vullam, and John D. McGregor (Clemson University, USA) ........................................... 1

A Change Impact Analysis Process for Distributed Software Architecture Evolution
Laurent Deruelle, Mohamed Oussama Hassan, and Henri Basson (Université du Lille Nord de France, France) ........................................................................................................................................... 9

Locating Defects in Software Architectures Through Debugging
Kyungsoo Im and John D. McGregor (Clemson University, USA) ........................................................................... 15

An Optimum Selection of Enterprise Service Bus for DODAF Based Defense Systems
Abdullah S. Alghamdi (King Saud University, Saudi Arabia) .................................................................................. 21

SERVICES AND OPEN PLATFORMS

Toward the Definition of a Many-to-Many Service Discovery Approach
Anthony Hock-Koon and Mourad Oussalah (University of Nantes, France) .......................................................... 27

Metamodelling User Interfaces and Services for Composition Considerations
Audrey Occello, Cédric Joffroy, Anne-Marie Dery-Pinna, Philippe Renevier, and Michel Riveill (University of Nice Sophia-Antipolis, France) ........................................................................................................ 33

Managing API Evolution for Open Software Platforms
Hyun Cho (University of Alabama, USA), Eunyoung Kim (Samsung Electronics Co., Ltd, Korea), and Jeff Gray (University of Alabama, USA) ........................................................................................................ 39

ARIS Software: Envision Architecture Expansion Case Study
Christina N. Meyers (ARIS Software LLC, USA) ........................................................................................................ 45

SOFTWARE TESTING

Maximizing GUI Test Coverage Through Particle Swarm Optimization
Abdul Rauf, Naveed Kazim, Sajid Anwar, Shafiq-Ur Rehman, and Arshad Ali Shahid (National University of Computer & Emerging Sciences, Islamabad, Pakistan) ........................................................................ 51

On Software Test Estimate and Requirement Tracking
Jing-Chiou Liou (Kean University, USA) ..................................................................................................................... 57
APPLICATIONS IN SOFTWARE ENGINEERING
AND DATA ENGINEERING

An Object Oriented Programming Platform for Ontology Based KMS
Baisakhi Chakraborty (National Institute of Technology Durgapur, India), Ranjan Kumar Maji (Jadavpur University, India), and D. Ghosh (National Institute of Technology Durgapur, India) .................................................. 63

A New Approach on Priority Queue based Scheduling with Handoff Management for Mobile Networks
P. K. Guha Thakurta, Souvik Sonar, Biswajit Bhowmik, Swapan Bhattacharya (National Institute of Technology-Durgapur, India), and Subhansu Bandyopadhyay (University of Calcutta, India) ......................... 69

A Framework of Network Forensics System Based on IXP2850
Jin Zhang (Hainan University, China) and Roger Lee (Central Michigan University, USA) .................................................. 75

Towards Integrating Role Playing Game Constructs in Real-Time Strategy Games
Brad Towle, Monica Nicolescu, and Sergiu Dascalu (University of Nevada, Reno, USA) .................................................. 81

Favorite Goal in Agent Based Modeling and Simulation
Sharad Sharma (Bowie State University, USA) ....................................................................................... 89

Automating Web Data Model: Conceptual Design to Logical Representation
Abhijit Sanyal (IBM India Pvt. Ltd, India), Anirban Sarkar (National Institute of Technology - Durgapur, India), Sankhayan Choudhury (University of Calcutta, India), and Narayan Debnath (Winona State University, USA) .................................................. 94

CBR Applications in Service Organization
Baisakhi Chakraborty and D. Ghosh (National Institute of Technology, Durgapur, India) ......................... 100

Algorithmic Design and Implementation for Constructing Graphs of Circuits with Minimal Crossing Numbers
Matthew Wolfe, Bryan McCauley, and Joyati Debnath (Winona State University, USA) .................................................. 105

The iPhone Teaching Companion: A Smartphone Application for Education
Tsvetan A. Komarov and Sergiu Dascalu (University of Nevada-Reno, USA) .................................................. 111

Including Non-functional Requirements in the Invocation of Applications from the Workflow Engine using Web Services
Narayan Debnath (Winona State University, USA), Paola Martellotto, Marcela Daniele (Universidad Nacional Rio Cuarto, Argentina), Daniel Riesco and German Montejano (Universidad Nacional de San Luis, Argentina) ......................................................................................................................... 117

MODULARIZATION AND RE-USE IN SOFTWARE ARCHITECTURE

A Nonfunctional Requirement Tradeoff Analysis Approach for Reusable SPLE Artifacts
Lirong Dai (Seattle University, USA) .......................................................................................................................... 121

Knowledge Maps - Fundamentally Modular Approach to Software Architecture, Design, Development and Deployment
M. E. Fayad (San Jose State University, USA), H. A. Sanchez (University of California Santa Cruz, USA), and Shivanshu K. Singh (San Jose State University, USA) .......................................................................................................................... 127

Reusing Evolution Practices onto Object-Oriented Designs: an Experiment with Evolution Styles
Olivier Le Goaer, Mourad Oussalah, and Dalila Tamzalit (University of Nantes, France) ........................................... 134
SOFTWARE ENGINEERING APPLICATIONS AND TOOLS

Reliability Analysis of Climate Change Data Portals for Nevada
David J. Walker and Shahram Latifi (University of Nevada - Las Vegas, USA) ............................................. 140

Context-aware Framework for Rural Living Labs
Olfa Mabrouki (CityPassenger SA, France), Yacine Amirat, Abdelghani Chibani (University of Paris-Est, France), Monica V. Fernandez and Mariano N. de la Cruz (Grupo Tragsa, Spain) ................. 146

Designing Services and Systems for Safety of Elderly People at Home: An Ongoing Empirical Study
Jukka Ojasalo, Rob Moonen, Niko Suomalainen, and Heikki Seppälä (Laurea University of Applied Sciences, Finland) .................................................................................................................................................................................. 152

Helping Students Learn Expert Software Design Strategies
David R. Wright (North Carolina State University, USA) .......................................................................................... 159

The Arabic Tutor - An Intelligent web based Language Tutoring System for Teaching Arabic
Dina Salah and Amir Zeid (American University of Kuwait) ................................................................................. 165

SOFTWARE PROCESSES AND SOFTWARE PROJECT MANAGEMENT

A Replication Study of SPI Success Factors for Small to Medium Sized Web Companies
Muhammad Sulayman and Emilia Mendes (The University of Auckland, New Zealand) ................................. 170

Maintainability Prediction for Database-driven Software Applications - Preliminary Results from Interviews with Software Professionals
Mehwish Riaz, Emilia Mendes and Ewan Tempero (The University of Auckland, New Zealand) ................. 176

Planning Techniques for Re-Engineering the Legacy System with Components
Jeong Ah Kim (Kwandong University) ................................................................................................................... 182

Measuring the Size of Business Sector and Business Software
Alen Jakupovic (Polytechnic of Rijeka, Croatia), Mile Pavlic (University of Rijeka, Croatia), and Damir Simunovic (Croatian Radiotelevision, Croatia) ................................................................. 186

SOFTWARE REQUIREMENTS

Specifying Components with Compositional Patterns, LOTOS and Design By Contract
Abdelhafid Zitouni, Mahmoud Boufaida (Mentouri University of Constantine, Algeria), and Lionel Seinturier (University of Lille, France) ........................................................................................................... 190

Towards a Model for Dealing with Aspect Interactions at Requirement Phase
Amel Boubendir (University of Skikda, Algeria) and Allaoua Chaoui (University Mentouri Constantine, Algeria) ........................................................................................................................................ 196

Lessons from a Pilot Study for Developing a Tool-kit that Contingently Supports Teamwork
Virallikattur Subramanian Dhenesh (University of South Australia, Australia) ......................................................... 203
SOFTWARE IMPLEMENTATION AND WEB DEVELOPMENT

Applying Enhanced Graph Clustering to Software Dependency Analysis
Tolga Ovatman, Feza Buzluca (Issthanbul Technical University, Turkey), and Thomas Weigert
(Missouri University of Science and Technology, USA) ................................................................. 210

Using Delta-Federations for On-Demand Crisis Situation Response
Robert Baird and Rose Gamble (University of Tulsa, USA) .......................................................... 217

Achieving Self-Optimization via Utility Functions
Debzani Deb (Indiana University of Pennsylvania, USA) ............................................................... 224

Security Controls Applied to Web Service Architectures
Robert Baird and Rose Gamble (University of Tulsa, USA) .......................................................... 230

DATABASES AND DATA WAREHOUSES

BigCube: A Metamodel for Managing Multidimensional Data
Ganesh Viswanathan and Markus Schneider (University of Florida, USA) ..................................... 237

Top-Down Approach on Concurrent Access to the B-Link Tree
Edward T. Hammerand and Hung-Chi Su (Arkansas State University, USA) ............................... 243

Methods on Identifying Data Anomalies in a Normalized Database
Tennyson X. Chen, Martin D. Meyer, Nanthini Ganapathi, Sean Liu, and Jon Cirella
(RTI International, USA) ..................................................................................................................... 249

Comparison of SQL Injection Detection and Prevention Tools based on Attack Type and Deployment Requirements
Atefeh Tajpour, Maslin Masrom, Mohammad JorJor Zadeh Shooshtari, and Mossein Rouhani Zeidanloo
(University of Technology Malaysia, Malaysia) .................................................................................... 255

DATA MINING AND APPLICATIONS

Unsupervised Identity Application Fraud Detection using Rule-based Decision Tree
Amany M. Abdelhalim and Issa Traore (University of Victoria, Canada) ........................................ 261

Using Metrics to Quantify Similarity in Source Code: An Empirical Study Using VOCS
Jeremy Iverson, James Schnepf, and Imad Rahal (College of Saint Benedict’s / Saint John’s University, USA) ........................................................................................................................................... 269

A Web-based Interactive Data Visualization System for Outlier Subspace Analysis
Dong Liu, Qigang Gao (Dalhousie University, Canada), Hai Wang (Saint Mary’s University, Canada), and Ji Zhang (University of Southern Queensland, Australia) ................................................................. 275

Mining Redundant Industrial Alarm Occurrences with Association Rules Extraction and Complex Networks Modeling
Leandro Pfleger de Aguiar, Virgilio A. F. de Almeida and Wagner Maira, Jr. (University of Minas Gerais, Brazil) ................................................................. 281

BIOINFORMATICS

Improving Start Codon Prediction Accuracy Using Naive Bayesian Classification
Sean R. Landman and Imad Rahal (College of St. Benedict / St. John’s University, USA) ................. 289

A Novel Combinatorial Score for Feature Selection with P-Tree in DNA Microarray Data Analysis
Yan Wang, Tingda Lu, and William Perrizo (North Dakota State University, USA) .......................... 295

A Case Study in Clinical Data Management for Cancer Proteomics
Ketaki Shirke, John A. Springer, Enk S. Gough, Ali Roumani, Catherine P. Riley, and Charles Buck
(Purdue University, USA) .................................................................................................................... 301
DATA ENGINEERING APPLICATIONS

Metadata Services for Distributed Event Stream Processing Agents
Mahesh B. Chaudhari and Suzanne W. Dietrich (Arizona State University, USA) ........................................... 307

Ontology-based Intelligent Network-Forensics Investigation
Sherif Saad and Issa Traore (University of Victoria, Canada) ................................................................. 313

A Recycle-Based Strategy to Modernize Data-Intensive Enterprise Applications for Multi-Tenancy
Oliver Schiller, Alexander Moosbrugger, and Bernhard Mitschang (University of Stuttgart, Germany) ........... 320

Exploiting Schema Information for Efficient Streaming Queries
Dónall McCann, Paolo Cappellari, and Mark Roantree (Dublin City University, Ireland) ......................... 326

Spectral Information Guided Complexity Evaluation for Video Codec Design
Jigisha N. Patel, Suparva S. Patnaik, and Vaibhavi P. Lineswala (Sardar Vallabhbhai National Institute of Technology, India) ................................................................. 332

A Novel Approach based on Optical Flow for Moving Object Detection
Amisha J. Shah (SKPCET, India), Suprava Patnaik, and Jigisha N. Patel (SVNIT, India) ................................. 337

A Hierarchical Case-Based Computer-Assisted Process-Planning System
Chi-Chun Hsu, Huan-Yu Lin, Jun-Ming Su (National Chiao Tung University, Taiwan), Shian-Shyong Tseng (Asia University, Taiwan), Chung-Chao Ku, Jui-Pin Tsai (Industrial Technology Research Institute, Taiwan), and Fengming M. Chang (Asia University, Taiwan) ................................................................. 343

TECHNOLOGIES FOR BIOMEDICAL APPLICATIONS

Lab Norm: Automated Clinical Lab Data Normalization
Rob Wynden and Donna L. Hudson (University of California San Francisco, USA) ................................. 349

Predicting Human Hepatic Clearance Using Hypernet Neural Networks
Shahab Sheikh-Bahaei (UCSF, USA), Kamran A. Ali (University of California-Berkeley, USA), Sabina R. Bera (San Francisco State University, USA), and C. Anthony Hunt (University of California San Francisco, USA) ........................................................................................................ 355

A Comparison of Classification Methods for Predicting Osteoporosis
Karla Lindquist (University of California, San Francisco, USA), and Mark D. Danese (Outcomes Insights, Inc., USA) ........................................................................................................ 360

Hadoop and MapReduce for Storage and Processing of Physiological Data
Andrew V. Nguyen, Donna L. Hudson, and Maurice E. Cohen (University of California-San Francisco, USA) ........................................................................................................ 366

An Agent-based System Model to Support Cardiac Tissue Engineering: Preliminary Results
Laura Gaetano, Giacomo Di Benedetto, Umberto Morbiducci, Franco Montecucco (Politecnico di Torino, Italy), and Anthony Hunt (University of California San Francisco, USA) ................................. 370