28th International Conference on Software Engineering & Knowledge Engineering (SEKE 2016)

San Francisco, California, USA
1 – 3 July 2016

ISBN: 978-1-5108-4156-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2016) by KSI Research Inc.
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact KSI Research Inc.
at the address below.

KSI Research Inc.
156 Park Square Lane
Pittsburgh, PA 15238
USA

Phone: 412-606-5022

office@ksiresearch.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

Foreword iii

Conference Organization iv

KeyNote 1: Innovation In Every Part Of Our Business
Mr Craig Stephens ix

KeyNote 2: Linear Software Models: An Algebraic Theory of Software Composition
Prof. Iaakov Exman x

Component-based Software Production

Toward Recovering Component-based Software Product Line Architecture from Object-Oriented Product Variants 1
Hamzeh Eyal-Salman and Abdelhak Seriai

Improving the Applicability of Bayesian Networks through Production Rules 8
Raissa Da Silva, Mirko Perkusich, Renata Saraiva, Arthur Freire, Hyggo Almeida and Angelo Perkusich

Component-based process for modeling language evaluation (S) 14
Khaoula Sayeb, Oualid Khayati and Naoufel Kraeim

Big Data Analysis

Keyword Search over Graph-structured Data for Finding Effective and Non-redundant Answers 18
Chang-Sup Park

Informed and Timely Business Decisions – A Data-driven Approach 24
Veera Tadikonda and Daniela Rosca

TACE: A Toolkit for Analyzing Concept Evolution in Computing Curricula 31
Luo Tiejian, Zhang Libo, Yang Lin and Chen Xin

DBRDKE-I

Sentiment Analysis of Name Entity for Text 37
Xinzhi Wang, Hui Zhang, Jiayue Wang and Yang Zhou

Event Multiple Influence Calculation and Relationship of Multiple Influence Discovery (S) 42
Yunlan Xue, Lingyu Xu and Jie Yu

Secure Outsourcing Algorithm of Polynomials in Cloud Computing 46
Xianlin Zhou, Yong Ding, Zhao Wang, Xiumin Li, Jun Ye and Zheng Xu

Deep Data Anaylizing Application Based on Scale Space Theory in Big Data Environment 52
Ye Hu, Kun Gao and Zheng Xu

Open Source Software Production

Distribution and Continuity of Developers' Contributions in OSS Projects: A Case Study . 58
Zhongjie Wang, Dewayne Perry and Xiaofei Xu

A Two Phase Case Study on Implementation of Open Source Development Practices within a Company Setting 64
Alma Orucevic-Alagic and Martin Höst

A Novel Open Source Software Ecosystem: From a Graphic Point of View and Its Application (S) 71
Chenxi Song, Tao Wang, Gang Yin, Xunhui Zhang and Cheng Yang

Agile Software Development

An FCM-based Personalized Affective Model for Agile Software Development 75
Wenjing He, Jun Lin, Xinjia Yu, Zhiqi Shen and Chunyan Miao

A Method to Build Bayesian Networks based on Artifacts and Metrics to Assess Agile Projects 81
Renan Willamy, João Nunes, Mirko Perkusich, Arthur Freire, Renata Saraiva, Hyggo Almeida and Angelo Perkusich

CPDScorer: Modeling and Evaluating Developer Programming Ability across Software Communities 87
Weizhi Huang, Wenkai Mo, Beijun Shen, Yu Yang and Ning Li

Context and Trust Aware Workflow Oriented Access Framework 93
Tapalina Bhattasali, Nabendu Chaki, Rituparna Chaki and Khalid Saeed

Big Data, Query and Management

Integrated Data Management System for Data Center 99
Debasis Dash, Juthika Dash, Younghee Park and Jerry Gao

A Model-Driven Approach to Generate Relevant and Realistic Datasets (S) 105
Adel Ferdjoukh, Eric Bourreau, Annie Chateau and Clémentine Nebut

A Query Language of Data Provenance Based on Dependency View for Process Analysis (S) 110
Xuan Sun, Xin Gao, Huiying Du and Wei Ye

Collecting Usage Data for Software Development: Selection Framework for Technological Approaches 114
Sampo Suonsyrjä, Kari Systä, Tommi Mikkonen and Henri Terho

DBRDKE-II

Deep Data Anaylizing Method Based on Scale Space Theory (S) 120
Ye Hu, Guangqun Chen and Kun Gao

DFIPS: Toward Distributed Flexible Intrusion Prevention System in Software Defined Network 124
Xuesong Jia, Danni Ren, Yitao Yang, Huakang Li and Guozi Sun

Knowledge Flow-based Semantic Organization of Resources about Foreign Language Learning 128
Li Li

Learning and Education

Self-learning Change-prone Class Prediction 134
Meng Yan, Mengning Yang, Chao Liu and Xiaohong Zhang

Generating Summarized Preview for Education Resource based on Exploring and Comparing GUIs 141
Chao Ma, Xiangping Chen, Yongsheng Rao and Mouguang Lin

Learning to Discover Subsumptions between Software Engineering Concepts in Wikipedia 147
Xiang Dong, Kai Chen, Jiangang Zhu and Beijun Shen

How Instructional Feedback Has Been Employed in Instructional Units for Teaching Software Project Management Tools: A Systematic Literature Review 153
Rafael Gonçalves and Christiane Gresse von Wangenheim

Defect Prediction and Analysis I

A Ranking-Oriented Approach to Cross-Project Software Defect Prediction: An Empirical Study 159
Guoan You and Yutao Ma

Stage-oriented Analysis on Factors Impacting Bug Fixing Time 165
Hong Wu, Junjie Wang, Qing Wang, Lin Shi and Feng Yuan

Heterogeneous Defect Prediction via Exploiting Correlation Subspace 171
Ming Cheng, Guoqing Wu, Min Jiang, Hongyan Wan, Guoan You and Mengting Yuan

Long-Term Active Integrator Prediction in the Evaluation of Code Contributions 177
Jing Jiang, Fuli Feng, Xiaoli Lian and Li Zhang

AI and Knowledge Engineering

TDR System - A Multi-Level Slow Intelligence System for Personal Health Care 183
Shikuo Chang

Building a Domain Knowledge Base from Wikipedia: a Semi-supervised Approach 191
Kai Chen, Xiang Dong, Jiangang Zhu and Beijun Shen

A Knowledge Modeling Framework for Computational Materials Engineering (S) 197
Raghavendra Reddy Yeddula, Sushant Vale, Sreedhar Reddy, Chetan P Malhotra, Gautham B. P. and Pramod Zagade

DBRDKE-III

Building Ontology for Different Emotional Contexts and Multilingual Environment in Opinion Mining (S) 203
Wan Tao, Tao Liu and Wei Yu

Building the Multi-layer Theory of Association Semantic based on the Power-law Distribution of Linking Keywords 207
Guangli Zhu, Xiaojun Tang, Shunxiang Zhang and Zheng Xu

Developer Recommendation with Awareness of Accuracy and Cost 213
Jin Liu, Yiqiuzi Tian, Liang Hong, Xu Chen and Zhou Xu

Optimization

Managing forest transportation planning using ant colony optimization method 219
Pengpeng Lin, Ruxin Dai and Ran An

Multi-Objective Biogeography-Based Method to Optimize Virtual Machine Consolidation . 225
Kai Shi, Huiqun Yu, Fei Luo and Guisheng Fan

MyBatRecommender: Automated optimization of energy consumption for Android smartphones in software layer 231
Marcel Popolin de Araújo Cunha and Luciana Aparecida Martinez Zaina

Defect Prediction and Analysis II

A Multi-Source TrAdaBoost Approach for Cross-Company Defect Prediction 237
Xiao Yu, Jin Liu, Mandi Fu, Chuanxiang Ma and Guoping Nie

Exploring the Influence of Time Factor in Bug Report Prioritization 243
Zhengjie Xu, Tieke He, Weiqiang Zhang, Yabin Wang, Jia Liu and Zhenyu Chen

A Model for Predicting Bug Fixes in Open Source Operating Systems: an Empirical Study (S) 249
Alberto Sillitti and Paolo Ciancarini

Data Analysis and Systems

Exploring DevOps for Data Analytical System with Essential Demands Elicitation 255
Jiabin Zheng, Yan Liu and Jin Lin

Criminal Network Analysis with Interactive Strategies: A Proof of Concept Study using Mobile Call Logs 261
Peng Zhou, Yan Liu, Mengjia Zhao and Xin Lou

Combining Smartphone and Smartwatch Sensor Data in Activity Recognition Approaches: an Experimental Evaluation 267
Felipe Barbosa Araújo Ramos, Anne Lorayne, Antonio Alexandre Moura Costa, Reudismam Rolim de Sousa, Hyggo Almeida and Angelo Perkusich

Time Series Classification with Discrete Wavelet Transformed Data: Insights from an Empirical Study 273
Daoyuan Li, Tegawendé F. Bissyandé, Jacques Klein and Yves Le Traon

Transportation System Research & Development

An Improved MFD based Regional Traffic Volume Dynamic Control 279
Yiman Du, Jianping Wu, Yuhan Jia and Ming Xu

Traffic Safety Region Estimation Based on SFS-PCA-LSSVM: An Application to Highway Crash Risk Evaluation 285
Yanfang Yang and Yong Qin

Sensor-Based Detection Approach for Passenger Flow Safety in Chinese High-speed Railway Transport Hub 291
Zhengyu Xie and Yong Qin

City Freight Intelligent Scheduling Model Based on Genetic Algorithm (S) 297
Sai Shao, Ailing Huang and Haijun Liu

Clustering and Artificial Neural Network Ensembles Based Effort Estimation 301
Hamdy Ibrahim and Behrouz Far

Software System Development & Specification

An Algorithm for Forward Reduction in Sequence-Based Software Specification 309
Lan Lin and Yufeng Xue

MSECO-DEV: Application Development Process in Mobile Software Ecosystems 317
Awdren Fontão, Rodrigo Santos, Jackson Feijó Filho and Arilo Claudio Dias-Neto

Semantic Web and SOA

Layered Implementation View of a SOA Based Electronic Health Record 323
Josimar Lima, Joyce França, Jislane Menezes, Adicinéia Oliveira and Michel Soares

An Ontology-driven Adaptive System for the Patient Treatment Management (S) 329
Emna Mezghani, Marcos Da Silveira, Cédric Pruski, Ernesto Exposito and Khalil Drira

Quality Assurance I

Cross-Model Traceability for Coupled Transformation of Software and Performance Models 333
Nariman Mani, Dorina Petriu and Murray Woodside

Exploring the Dimensions of Electronic Government Service Quality (S) 341
Tasira Al Balushi and Saqib Ali

A Systematic Mapping Study on Legacy System Modernization (S) 345
Everton Agilar, Rodrigo Almeida and Edna Canedo

System Architecture

Extending Architecture Description Languages With Exchangeable Component Behavior Languages 351
Robert Heim, Bernhard Rumpe and Andreas Wortmann

The Software Architecture Mapping Framework for Managing Architectural Knowledge 357
Sebastien Adam and Alain Abran

RARep: a Reference Architecture Repository 363
Tales Prates Correia, Milena Guessi, Lucas Bueno Ruas Oliveira and Elisa Yumi Nakagawa

A Multi-Agent Architecture for Quantified Fruits: Design and Experience (S) 369
Jean-Pierre Briot, Nathalia Moraes Do Nascimento and Carlos José Pereira de Lucena

Software Testing I

Quality Assurance for Big Data Application – Issuses, Challenges, and Needs 375
Chuanqi Tao and Jerry Gao

Interactive Tool for Iterative Test Suite Construction (S) 382
Matthew Patrick

Machine Learning I

PRO-Fit: A personalized fitness assistant framework (S) 386
Saumil Dharia, Vijesh Jain, Jvalant Patel, Jainikkumar Vora, Shaurya Chawla and Magdalini Eirinaki

A Machine Learning Approach for Developing Test Oracles for Testing Scientific Software (S) 390
Junhua Ding and Dongmei Zhang

Cloud Computing & Services

A Systematic Mapping Study on the Multi-tenant Architecture of SaaS Systems 396
Victor H. S. C. Pinto, Helder J. F. Luz, Ricardo R. Oliveira, Paulo S. L. Souza and Simone R. S. Souza

Applying Verbal Decision Analysis to Task Allocation in Distributed Development of Software (S) 402
Marum Simão Filho, Placido Rogerio Pinheiro and Adriano Albuquerque

Software Testing II

Effectively Testing of Timed Composite Systems using Test Case Prioritization (S) 408
Huu Nghia Nguyen, Fatiha Zaidi and Ana Cavalli

Improving Accuracy of Patient Synthetic Data for Testing Medical Cyber-Physical Systems (S) 414
Leonardo Da Costa Santos, Lenardo Chaves E Silva, Ana Luisa Medeiros, Hyggo Oliveira de Almeida and Angelo Perkusich

Capture & Replay with Text-Based Reuse and Framework Agnosticism 420
Filipe Arruda, Augusto Sampaio and Flavia Barros

Machine Learning II

Efficiently Measuring an Accurate and Generalized Clone Detection Precision using Clone Clustering 426
Jeffrey Svajlenko and Chanchal K. Roy

NuSense: A Sensor-Based Framework for Ambient Awareness applied in Game Therapy Monitoring (S) 434
Túlio Costa, Breno Lacerda A. Paiva, Rinaldo V. Menezes, Lukas T. Ramos, Andrei G. Lopes and Frederico Moreira Bublitz

Cloud Computing & Services

Modeling and analyzing cost-aware fault tolerant strategy for cloud application (S) 439
Liqiong Chen, Guisheng Fan and Yunxiang Liu

From Design to Code: An Educational Approach 443
Candice Eckert, Brian Cham, Jing Sun and Gillian Dobbie

Data Mining I

SLTM: A Sentence Level Topic Model for Analysis of Online Reviews (S) 449
Yuhan Zhang and Haiping Xu

Using Frequent Closed Pattern Mining to Solve a Consensus Clustering Problem 454
Atheer Al-Najdi, Nicolas Pasquier and Frederic Precioso

Mining Feature-Opinion from Reviews Based on Dependency Parsing (S) 462
Rui Hao, Tieke He, Hang Qi and Jia Liu

Software Testing III

Experimentation in the Industry for Automation of Unit Testing in a Business Intelligence Environment (S) 466
Igor Peterson Oliveira Santos, Andre Nascimento, Juli Kelle Gois Costa, Methanias Colaço Júnior and Wenderson Campos Pereira

Automatically Finding Hidden Industrial Criteria used in Test Selection (S) 470
Cláudio Magalhães, Alexandre Mota and Eliot Maia

Practical Combinatorial Testing Approaches: A Case Study of a University Portal Application (S) 474
Mary Frances Moore and Sergiy Vilkomir

Software Testing IV

On Building Test Automation System for Mobile Applications Using GUI Ripping 480
Chuanqi Tao and Jerry Gao

Redroid: A Regression Test Selection Approach for Android Applications 486
Quan Do, Guowei Yang, Meiru Che, Darren Hui and Jefferson Ridgeway

Conformance Testing of Balana: An Open Source Implementation of the XACML3.0 Standard 492
Sung-Ju Fan Chiang, Daniel Chen and Dianxiang Xu

Data Mining II

QCC:A novel cluster algorithm based on Quasi-Cluster Centers 498
Huang Jinlong, Zhu Qingsheng, Yang Lijun and Cheng Dongdong

Information Mining Projects Management Process (S) 504
Sebastian Martins, Patricia Pesado and Ramon Garcia-Martinez

An investigation of students behavior in discussion forums using Educational Data Mining (S) 510
Crystiano José Richard Machado, Bruno Rafael B. Lima, Alexandre Maciel and Rodrigo Lins Rodrigues

Quality Assurance II

Empirical Evaluation of the ProcessPAIR Tool for Automated Performance Analysis 515
Mushtaq Raza, João Faria and Rafael Salazar

Embedded Emotion-based Classification of Stack Overflow Questions Towards the Question Quality Prediction (S) 521
Amit Kumar Mondal, Mohammad Masudur Rahman and Chanchal K. Roy

Multi-Objective Optimization for Software Testing Effort Estimation (S) 527
Solomon Mensah, Jacky Keung, Kwabena Ebo Bennin and Michael Franklin Bosu

Requirement Engineering I

Effectiveness of Human Error Taxonomy during Requirements Inspection: An Empirical Investigation 531
Vaibhav Anu, Gursimran Walia, Wenhua Hu, Jeffrey Carver and Gary Bradshaw

Requirements Engineering Related Usability Techniques Adopted in Agile Development Processes 537
Daniel A. Magües, John W. Castro and Silvia T. Acuña

Green Computing & Analysis

Towards Optimization of Energy Consumption of Drones with Software-Based Flight Analysis (S) 543
Ilenia Fronza, Luis Corral, Nabil El Ioini and Aristea Ibershimi

Choosing the Best Strategy for Energy Aware Building System: an SVM-based Approach (S) 547
Yuanyang Wang, Xiaohong Chen, Haiying Sun and Mingsong Chen

An Adaptable Approach for Indoor Location (S) 551
Mário Melo and Gibeon Aquino

Project Management & Content Management

Improving risk identification process in project management (S) 555
Allan G. Contessoto, Laís A. Sant' Ana, Rogéria C. G. Souza, Carlos R. Valêncio, Geraldo F. D. Zafalon, Anderson R. Amorim and Antonio M. N. Esteca

On Criteria to Choose a Content Management System: A Technology Acceptance Model Approach 559
Jislane Silva, Danilo Ramos and Michel Soares

Global Software development: An approach to design and evaluate the risk factors for global practitioners (S) 565
Chamundeswari Arumugam and Baskaran Kaliamourthy

Requirement Engineering II

Problem-Aware Traceability in Goal-Oriented Requirements Engineering (S) 569
Grace Park, Lawrence Chung, Jang-Eui Hong, José Luis Garrido and Manuel Noguera

Approach to Define a Non-Functional Requirements Elicitation Guide Using a Customer Language (S) 575
Andreia Silva, Placido Pinheiro, Adriano Albuquerque and Jonatas Barroso

A Characterization of Negative User Stories (S) 579
Pankaj Kamthan and Nazlie Shahmir

Web System Study & Analysis

Quantifying and Assessing the Merge of Cloned Web-Based System: An Exploratory Study 583
Jadson Santos and Uirá Kulesza

Automaticly Generating Web Page From A Mockup (S) 589
Ruozi Huang, Yonghao Long and Xiangping Chen

Empirical Study & Social Network Analysis

An Empirical Study to Evaluate the Feasibility of a UX and Usability Inspection Technique for Mobile Applications (S) 595
Ingrid Costa, Williamson Silva, Adriana Lopes, Luis Rivero, Bruno Gadelha, Elaine Oliveira and Tayana Conte

How Novice Software Engineers Apply User Interface Design Patterns: An Empirical Study (S) 600
Luis Jorge Enrique Rivero Cabrejos and Tayana Conte

Software Evolution

Software Evolution by Correctness Enhancement 605
Wided Ghardallou, Nafi Diallo and Ali Mili

Risk Management Analysis in Software Projects which Use the Scrum Framework (S) 611
Breno Gontijo Tavares, Carlos Eduardo Sanches Da Silva and Adler Diniz de Souza

DmS-Modeler: A Tool for Modeling Decision-making Systems for Self-adaptive Software Domain 617
Frank Affonso, Gustavo Leite and Elisa Nakagawa

Modeling & Analysis

Modeling and Analyzing Security Patterns Using High Level Petri Nets (S) 623
Xudong He and Yujian Fu

Evaluating the Representation of User Interface Elements in Feature Models: an Empirical Study (S) 628
Ildevana Poltronieri Rodrigues, Ana Paula Bacelo, Milene Selbach Silveira, Marcia de Borba Campos and Elder de Macedo Rodrigues

Towards a Systematic Approach to Graph Data Modeling: Scenario-based Design and Experiences 634
Mengjia Zhao, Yan Liu and Peng Zhou

Software Engineering Methodology

An Agile Methodology for Reengineering Object-Oriented Software 638
Anam Sahoo, David Kung and Sanika Gupta

A Content-Based Approach for Recommending UML Sequence Diagrams (S) 644
Thaciana G. O. Cerqueira, Franklin Ramalho and Leandro Balby Marinho

Software Clustering using Hybrid Multi-Objective Black Hole Algorithm (S) 650
Kawal Jeet and Renu Dhir

Poster

MABT - a multiagent-based toolkit for transforming existing systems into self-adaptive systems (P) 654
Lu Wang, Qingshan Li, Yishuai Lin and Hua Chu

An Efficient Algorithm to Identify Minimal Failure-Causing Schemas from Exhaustive Test Suite (P) 655
Yuanchao Qi, Qi Wang, Chiya Xu, Tieke He and Ziyuan Wang

A qualitative analysis of the adhrence between the Information Tecnology Solution Aquisition Guide, for Brazilian Federal Public Administration and, the CMMI models (P) 657
Luiz Sergio Placido Da Silva, Renata Moreira, Alexandre Marcos Lins de Vasconcelos, Mauricio Ronny Souza and Suzana Cândido de Barros Sampaio

Early Detection of Suicide Using Big-Data Analytics in Real Time (P) 659
Hardik Patel and Cheng-Yuan Hsieh

Authors' Index A-1

Progam Committee Reviewers' Index A-10

External Reviewers' Index A-14

Note:
(S) indicates a short paper.
(P) indicates a poster.