TABLE OF CONTENTS

KEYNOTE SPEECH ABSTRACTS

Using Abstraction to Verify Arbitrary Temporal Properties ......................................................... 1
Amir Pnueli

Beyond Agile: Smart ………………………………………………………………………………………………… 2
Ivar Jacobson

Service Refinement ………………………………………………………………………………………………… 3
Jifeng He

SESSION 1A: PROGRAM ANALYSIS AND UNDERSTANDING (I)

Early Filtering of Polluting Method Calls for Mining Temporal Specifications ................................. 4
Hao Zhong, Lu Zhang, Hong Mei

DRACULA: Detector of Data Races in Signals Handlers …………………………………………………….. 12
Takamitsu Tahara, Katsuhiko Gondow, Seiya Ohsuga

Detection of Diverse Design Pattern Variants ……………………………………………………………….. 20
Krzysztof Stencel, Patrycja Wegrzynowicz

An Empirical Study of Unused Design Decisions in Open Source Java Software ............................... 28
Ewan Tempero

SESSION 1B: SOFTWARE PROCESS IMPROVEMENT (I)

A Dynamic Model of Software Product Generative Process ………………………………………………… 36
Giulio Concas, Michele Marchesi, Sandro Pinna, Roberto Tonelli, Ivana Turnu

A Case Retrieval Method for Knowledge-Based Software Process Tailoring Using Structural Similarity ……………………………………………………………………………………………………….. 44
Dongwon Kang, In-Gwon Song, Seunghun Park, Doo-Hwan Bae, Hoon-Kyu Kim, Nobok Lee

Software Process Simulation Modeling: Facts, Trends and Directions …………………………………. 52
He Zhang, Barbara Kitchenham, Dietmar Pfahl

An Investigation on Performance of Software Enhancement Projects in China .............................. 60
Mei He, Ye Yang, Qing Wang, Mingshu Li

SESSION 1C: SOFTWARE MAINTENANCE AND EVOLUTION (I)

A Nonlinear Approach to Modeling of Software Aging in a Web Server ………………………………… 68
Yun-Fei Jia, Lei Zhao, Kai-Yuan Cai

Towards Unanticipated Runtime Adaptation of Java Applications ……………………………………… 76
Mario Pukall, Christian Kästner, Gunter Saake

Correctness of Request Executions in Online Updates of Concurrent Object Oriented Programs …….. 84
Yogesh Murarka, Umesh Bellur
Risks and Risk Management in Software Architecture Evolution: An Industrial Survey ................................................. 92
Odd Petter N. Slynstad, Reidar Conradi, M. Ali Babar, Viktor Clerc, Hans van Vliet

SESSION 2A: FORMAL METHODS (I)

A Technique to Check the Implementability of Behavioral Specifications with Frameworks ...................................................... 100
Teruyoshi Zenmyo, Takashi Kobayashi, Motoshi Saeki

Execution Semantics for rCOS ........................................................................................................................................... 108
Zheng Wang, Xiao Yu, Geguang Pu, Libo Feng, Huibiao Zhu, Jifeng He

A Heap Model for Java Bytecode to Support Separation Logic .................................................................................. 116
Chenguang Luo, Guanhua He, Shengchao Qin

Flexible Generation of Pervasive Web Services Using OSGi Declarative Services and OWL Ontologies ......................... 124
Klaus Marius Hansen, Weishan Zhang, João Fernandes

SESSION 2B: SOFTWARE TESTING (I)

Jata: A Language for Distributed Component Testing ......................................................................................................... 132
Ji Wu, Liu Yang, Xu Luo

Specification-Based Approach to Select Regression Test Suite to Validate Changed Software .................................................. 140
Ravi Prakash Gorthi, Anjaneyulu Pasala, Kailash KP Chanduka, Benny Leong

A Novel Optimum Data Duplication Approach for Soft Error Detection ........................................................................ 148
Jianjun Xu, Qingping Tan, Rui Shen

Providing the Guideline of Determining Quality Checklists Priorities Based on Evaluation Records of Software Products .......................................................... 156
Chongwon Lee, Byungjeong Lee, Chisu Wu

SESSION 2C: SOFTWARE PRODUCT-LINE ENGINEERING

SimPL — A Simple Software Production Line for End User Development ........................................................................ 164
Andreas Malaer, Matthias Lampe

Measuring Non-Functional Properties in Software Product Line for Product Derivation .................................................. 172
Norbert Siegmund, Marko Rosenmüller, Martin Kuhlemann, Christian Kästner, Gunter Saake

Scheduling Product Line Features for Effective Roadmapping .......................................................................................... 180
Juha Savolainen, Juha Kuusela

AORE (Aspect-Oriented Requirements Engineering) Methodology for Automotive Software Product Lines ...................... 188
Mikio Aoyama, Atsuko Yoshino

SESSION 3A: PROGRAM ANALYSIS AND UNDERSTANDING (II)

Documenting and Evaluating Scattered Concerns for Framework Usability: A Case Study ............................................. 196
Daqing Hou, Chandan Raj Rupakheti, H. James Hoover
Inferring Specifications of Object Oriented APIs from API Source Code ................................................................. 204
Hao Zhong, Lu Zhang, Hong Mei

A Comparison of the Reliability Growth of Open Source and In-House Software ......................................................... 212
Sharifah Mashita Syed-Mohamad, Tom McBride

SESSION 3B: SOFTWARE PROCESS IMPROVEMENT (II)

A Source-Code Based Extraction Way for Micro Processes Influencing Software Complexity ...................................................... 220
Noriko Hanakawa

Mining Individual Performance Indicators in Collaborative Development Using Software Repositories ........................................ 228
Shen Zhang, Yongji Wang, Junchao Xiao

Towards Analysing Information Management Requirements in New Zealand Genetic Services ........................................ 236
Yulong Gu, James Warren

SESSION 3C: VERIFICATION AND VALIDATION (I)

Modeling and Analysis of WS-BPEL Business Processes Based on ServiceNet .............................................................. 244
Haiqiang Dun, Wen Zhao, Yu Huang, Shikun Zhang, Lifu Wang

Emergent Properties in Reactive Systems ....................................................................................................................... 252
Marc Aiguier, Pascale Le Gall, M’Barka Mabrouki

Detection of a Set of States in Distributed Systems ..................................................................................................... 260
Hongtao Huang

SESSION 4A: REQUIREMENT ENGINEERING

A Measurement-Driven Process Model for Managing Inconsistent Software Requirements ............................................. 268
Kedian Mu, Zhi Jin, Didar Zowghi

Behavioral Specification of Real-Time Requirements .................................................................................................. 276
Seyed Morteza Babamir, Faezeh Sadat Babamir

Jackson’s JSP-Like Method for State Transition Design ............................................................................................... 284
Osamu Shigo

SESSION 4B: SOFTWARE ENGINEERING EDUCATION

Software Engineering Education Toolkit for Embedded Software Architecture Design Methodology Using Robotic Systems .......................................................... 292
Dongsun Kim, Suntae Kim, Seokhwan Kim, Sooyong Park

Investigating Pair Programming in a Software Engineering Course in an Asian Setting ............................................. 300
Raymund Sison
SESSION 4C: VERIFICATION AND VALIDATION (II)

Extending PSC for Monitoring the Timed Properties in Composite Services ................................................................. 307
  Pengcheng Zhang, Bixin Li, Zhiyong Su, Mingjie Sun

Formalization and Consistency Checking of Changes of Software System Configurations
Using Alloy ........................................................................................................................................................................ 315
  Hiroaki Tanizaki, Takuya Katayama

Modeling and Verifying Web Browser Interactions ........................................................................................................ 323
  Shengbo Chen, Huaikou Miao, Zhongsheng Qian

SESSION 5A: FORMAL METHODS (II)

Deadlock-Detection in Java-Library Using Static-Analysis ................................................................................................. 331
  Vivek K. Shanbhag

Iterative Model Fixing with Counterexamples ............................................................................................................... 339
  Tsutomu Kumazawa, Tetsuo Tamai

Model Checking Process with Goal Oriented Requirements Analysis ............................................................................ 347
  Hideto Ogawa, Fumihiro Kumeno, Shinichi Honiden

A Verification Framework for FBD Based Software in Nuclear Power Plants ................................................................. 355
  Junbeom Yoo, Sungdek Cha, Eunkyung Jee

SESSION 5B: SOFTWARE ARCHITECTURE AND SERVICE ORIENTED
ARCHITECTURE

Resource-Oriented Architecture for Business Processes ................................................................................................. 363
  Xiwei Xu, Liming Zhu, Yan Liu, Mark Staples

A Design Quality Model for Service-Oriented Architecture .............................................................................................. 371
  Bingu Shim, Siho Choue, Suntae Kim, Sooyong Park

SA@Work — A Field Study of Software Architecture and Software Quality at Work ..................................................... 379
  Kari Rye Schougaard, Klaus Marius Hansen, Henrik Baerbak Christensen

Service Identification Using Goal and Scenario in Service Oriented Architecture .......................................................... 387
  Suntae Kim, Minseong Kim, Sooyong Park

SESSION 5C: SOFTWARE MAINTENANCE AND EVOLUTION (II)

Using ES Based Automated Software Clustering Approach to Achieve Consistent Decompositions ................................................................. 395
  Bilal Khan, Shaleezza Sohail

Component-Based Software Update Process in Collaborative Software Development ..................................................... 403
  Tien N. Nguyen

Security-Aware Refactoring Alerting its Impact on Code Vulnerabilities ............................................................................ 411
  Katsuhisa Maruyama, Kensuke Tokoda

Detecting Occurrences of Refactoring with Heuristic Search .......................................................................................... 419
  Shinpei Hayashi, Yasuyuki Tsuda, Motoshi Saeki
SESSION 6A: SOFTWARE TESTING (II)

G2Way — A Backtracking Strategy for Pairwise Test Data Generation ..............................................................427
Mohammad F.J. Klaib, Kamal Z. Zamli, Nor Ashidi M. Isa, Mohammed I. Younis, Rusli Abdullah

Test Case Prioritization Based on Analysis of Program Structure ........................................................................435
Zengkai Ma, Jianjun Zhao

Modular Conformance Testing and Assume-Guarantee Verification for Evolving Component-Based Software .............................................................443
Pham Ngoc Hung, Takuya Katayama

Early Estimate the Size of Test Suites from Use Cases ..................................................................................451
Qu Yi, Zhou Bo, Zhu Xiaochun

SESSION 6B: SOFTWARE METRICS AND MEASUREMENT

Theoretical Maximum Prediction Accuracy for Analogy-Based Software Cost Estimation .................................457
Jacky W. Keung

The Use of a Meta-Model to Support Multi-Project Process Measurement ..........................................................465
Alberto Colombo, Ernesto Damiani, Fulvio Frati, Sergio Oltolina, Karl Reed, Gabriele Ruffatti

A Complexity Metric for Web Applications Based on the Entropy Theory ..........................................................473
Woosung Jung, Eunjoo Lee, Kapsu Kim, Chisu Wu

Automated Support for Software Cost Estimation Using Web-CoBRA ............................................................481
Jacky Keung, Ross Jeffery

SESSION 6C: ASPECT-ORIENTED AND DOMAIN-SPECIFIC SOFTWARE DEVELOPMENT

Aspect-Oriented Programming for Web Controller Layer ..............................................................................489
Keiji Hokamura, Naoyasu Ubayashi, Shin Nakajima, Akihito Iwai

Flexible Aspect-Oriented Design Model Checking ..........................................................................................497
Wuwei Shen, W. Eric Wong

Management of Composites in Software Engineering Environments ..............................................................505
Jacky Estublier, German Vega, Thomas Leveque

Domain Specific Engineering Environments ..................................................................................................513
Jacky Estublier, German Vega, Philippe Lalanda, Thomas Leveque

Author Index