Contents

Applications

Similarity Computation Exploiting the Semantic and Syntactic Inherent Structure Among Job Titles .................................................. 3
Sarthak Ahuja, Joydeep Mondal, Sudhanshu Shekhar Singh,
and David Glenn George

RISE: Resolution of Identity Through Similarity Establishment on Unstructured Job Descriptions ................................................... 19
Rakesh Rameshrao Pimplikar, Kalapriya Kannan, Abhik Mondal,
Joydeep Mondal, Sushant Saxena, Gyana Parija,
and Chandra Devulapalli

Social-Sensor Cloud Service for Scene Reconstruction ...................... 37
Tooba Aamir, Athman Bouguettaya, Hai Dong, Sajib Mistry,
and Abdelkarim Erradi

Quark: A Methodology to Transform People-Driven Processes to Chatbot Services ................................................................. 53
Anup K. Kalia, Pankaj R. Telang, Jin Xiao, and Maja Vukovic

Foundations

Cloud Certification Process Validation Using Formal Methods ............. 65
Maria Krotsiani, Christos Kloukinas, and George Spanoudakis

Validation of Service Blueprint Models by Means of Formal Simulation Techniques ................................................................. 80
Montserrat Estañol, Esperanza Marcos, Xavier Oriol,
Francisco J. Pérez, Ernest Teniente, and Juan M. Vara

Deadlock-Freeness Verification of Business Process Configuration Using SOG ................................................................. 96
Souha Boubaker, Kais Klai, Katia Schmitz, Mohamed Graiet,
and Walid Gaaloul

Formally Modeling, Executing, and Testing Service-Oriented Systems with UML and OCL ......................................................... 113
Loli Burgueño and Martin Gogolla
Mining and Analytics

App Update Patterns: How Developers Act on User Reviews in Mobile App Stores .................................................. 125
    Shance Wang, Zhongjie Wang, Xiaofei Xu, and Quan Z. Sheng

Predicting the Evolution of Service Value Features from User Reviews for Continuous Service Improvement ........................................ 142
    Xu Chi, Haifang Wang, Zhongjie Wang, Shiping Chen, and Xiaofei Xu

Confidence-Aware Reputation Bootstrapping in Composite Service Environments .................................................. 158
    Lie Qu, Athman Bouguettaya, and Azadeh Ghari Neiat

Compound Trace Clustering to Generate Accurate and Simple Sub-Process Models .................................................. 175
    Yaguang Sun, Bernhard Bauer, and Matthias Weidlich

An Approach to Modeling and Discovering Event Correlation for Service Collaboration ........................................ 191
    Meiling Zhu, Chen Liu, Jianwu Wang, Shen Su, and Yanbo Han

Energy Efficient Scheduling of Application Components via Brownout and Approximate Markov Decision Process ........................................ 206
    Minxian Xu and Rajkumar Buyya

Predicting the Available Bandwidth on Intra Cloud Network Links for Deadline Constrained Workflow Scheduling in Public Clouds ........ 221
    Rachael Shaw, Enda Howley, and Enda Barrett

Inferring Calling Relationship Based on External Observation for Microservice Architecture ........................................ 229
    Shinya Kitajima and Naoki Matsuoka

Quality of Service

A QoS-Aware Resource Allocation Controller for Function as a Service (FaaS) Platform .................................................. 241
    MohammadReza HoseinyFarahabady, Young Choon Lee, Albert Y. Zomaya, and Zahir Tari

Probabilistic Qualitative Preference Matching in Long-Term IaaS Composition ........................................ 256
    Sajib Mistry, Athman Bouguettaya, Hai Dong, and Abdelkarim Erradi
An Embedding Based Factorization Machine Approach for Web Service QoS Prediction .......................................................... 272
Yaoming Wu, Fenfang Xie, Liang Chen, Chuan Chen, and Zibin Zheng

A Deep Learning Approach for Long Term QoS-Compliant Service Composition .................................................. 287
Hamza Labbaci, Brahim Medjahed, and Youcef Aklouf

Run-time Service Operation and Management
An Artifact-Driven Approach to Monitor Business Processes Through Real-World Objects .................................................. 297
Giovanni Meroni, Claudio Di Ciccio, and Jan Mendling

BenchFoundry: A Benchmarking Framework for Cloud Storage Services .......................................................... 314
David Bermbach, Jörn Kuhlenkamp, Akon Dey, Arunmoezhi Ramachandran, Alan Fekete, and Stefan Tai

Automated Analysis of Cloud Offerings for Optimal Service Provisioning .......................................................... 331
José María García, Octavio Martín-Díaz, Pablo Fernández, Antonio Ruiz-Cortés, and Miguel Toro

Middleware for Dynamic Upgrade Activation and Compensations in Multi-tenant SaaS ............................................. 340
Dimitri Van Landuyt, Fatih Gey, Eddy Truyen, and Wouter Joosen

Service Adaptation
Risk-Based Proactive Process Adaptation .......................................................... 351
Andreas Metzger and Philipp Bohn

A Debt-Aware Learning Approach for Resource Adaptations in Cloud Elasticity Management ............................................. 367
Carlos Mera-Gómez, Francisco Ramírez, Rami Bahsoon, and Rajkumar Buyya

Large-Scale and Adaptive Service Composition Using Deep Reinforcement Learning .................................................. 383
Hongbing Wang, Mingzhu Gu, Qi Yu, Huanhuan Fei, Jiajie Li, and Yong Tao

Service Engineering
ECHI: An Adaptive Orchestration Platform for Hybrid Dataflows across Cloud and Edge ............................................. 395
Pushkara Ravindra, Aakash Khochare, Siva Prakash Reddy, Sarthak Sharma, Prateeksha Varshney, and Yogesh Simmhan
Ensuring and Assessing Architecture Conformance to Microservice Decomposition Patterns .................................................. 411
Uwe Zdun, Elena Navarro, and Frank Leymann

Polly: A Language-Based Approach for Custom Change Detection of Web Service Data .................................................. 430
Elyas Ben Hadj Yahia, Jean-Rémy Falleri, and Laurent Réveillère

Design and Evaluation of a Self-Service Delivery Framework .......... 445
Constantin Adam, Nikos Anerousis, Muhammed Fatih Bulut, Robert Filepp, Anup Kalia, Brian Peterson, John Rofrano, Maja Vukovic, and Jin Xiao

Automated Generation of REST API Specification from Plain HTML Documentation .................................................. 453
Hanyang Cao, Jean-Rémy Falleri, and Xavier Blanc

Efficient Keyword Search for Building Service-Based Systems Based on Dynamic Programming .................................. 462
Qiang He, Rui Zhou, Xuyun Zhang, Yanchun Wang, Dayong Ye, Feifei Chen, Shiping Chen, John Grundy, and Yun Yang

Supporting the Decision of Migrating to Microservices Through Multi-layer Fuzzy Cognitive Maps ...................... 471
Andreas Christoforou, Martin Garriga, Andreas S. Andreou, and Luciano Baresi

A Tree-Based Reliability Analysis for Fault-Tolerant Web Services Composition .................................................. 481
Yanjun Shu, Decheng Zuo, Hongwei Liu, Quan Z. Sheng, Wei Emma Zhang, and Jian Yang

Modernization of Information Systems at Red.es: An Approach Based on Gap Analysis and ADM ................................ 490
Marcos López-Sanz, Valeria de Castro, Esperanza Marcos, and Jorge Moratalla

Improving Web Services Design Quality Using Dimensionality Reduction Techniques .................................. 499
Hanzhang Wang and Marouane Kessentini

Service Recommendation

ARA-Assessor: Application-Aware Runtime Risk Assessment for Cloud-Based Business Continuity .................... 511
Min Fu, Shiping Chen, Jian Yang, Surya Nepal, and Liming Zhu
Personalized Quality Centric Service Recommendation .......................... 528
Yiwen Zhang, Xiaofei Ai, Qiang He, Xuyun Zhang, Wanchun Dou,
Feifei Chen, Liang Chen, and Yun Yang

Cataloger: Catalog Recommendation Service for IT Change Requests .... 545
Anup K. Kalia, Jin Xiao, Muhammed F. Bulut, Maja Vukovic,
and Nikos Anerousis

ATLAS: A World-Wide Travel Assistant Exploiting Service-Based
Adaptive Technologies .......................................................... 561
Antonio Bucchiarone, Martina De Sanctis, and Annapaola Marconi

Services in Organizations, Business and Society

A Variability Model for Store-Oriented Software Ecosystems:
An Enterprise Perspective ..................................................... 573
Bahar Jazayeri, Olaf Zimmermann, Gregor Engels,
and Dennis Kundisch

An Analysis of RESTful APIs Offerings in the Industry ...................... 589
Antonio Gamez-Diaz, Pablo Fernandez, and Antonio Ruiz-Cortes

Efficient Influential Individuals Discovery on Service-Oriented
Social Networks: A Community-Based Approach .......................... 605
Fanghua Ye, Jiahao Liu, Chuan Chen, Guohui Ling, Zibin Zheng,
and Yuren Zhou

Empirical Study on REST APIs Usage in Android Mobile Applications .... 614
Mohamed A. Oumaziz, Abdelkarim Belkhir, Tristan Vacher,
Eric Beaudry, Xavier Blanc, Jean-Rémy Falleri, and Naouel Moha

Services in the Cloud

Revenue-Driven Service Provisioning for Resource Sharing
in Mobile Cloud Computing .................................................. 625
Hongyue Wu, Shuiguang Deng, Wei Li, Jianwei Yin, Qiang Yang,
Zhaohui Wu, and Albert Y. Zomaya

Continuous Learning as a Service for Conversational Virtual Agents .... 641
Shivali Agarwal, Shubham Atreja, and Gargi Dasgupta

Costradamus: A Cost-Tracing System for Cloud-Based Software Services ... 657
Jörn Kuhlenkamp and Markus Klems

An Automatic Approach for Transforming IoT Applications
to RESTful Services on the Cloud ......................................... 673
Yu Zhao, Ying Zou, Joanna Ng, and Daniel Alencar da Costa
RobOps: Robust Control for Cloud-Based Services .......................... 690  
Cheng Chen, Jordi Arjona Aroca, and Diego Lugones

Serverless Execution of Scientific Workflows ................................. 706  
Qingye Jiang, Young Choon Lee, and Albert Y. Zomaya

A Market-Based Approach for Detecting Malware in the Cloud via Introspection ................................................................. 722  
Nada Alruhaily, Carlos Mera-Gómez, Tom Chothia, and Rami Bahsoon

Trustless Intermediation in Blockchain-Based Decentralized Service Marketplaces ................................................................. 731  
Markus Klems, Jacob Eberhardt, Stefan Tai, Steffen Härtlein, Simon Buchholz, and Ahmed Tidjani

Author Index .............................................................................. 741
Service-Oriented Computing
15th International Conference, ICSOC 2017, Malaga, Spain, November 13-16, 2017, Proceedings
2017, XXVI, 743 p. 235 illus., Softcover
ISBN: 978-3-319-69034-6