Table of Contents

Message from the Standing Committee Chair - Volume 1 .................................................. xxvi
Message from the Steering Committee Vice Chair - Volume 1 ........................................... xxviii
Foreword from the 2018 General Chairs - Volume 1 ...................................................... xxix
Message from the Program Chairs - Volume 1 ............................................................... xxxi
COMPSAC 2018 Organizers - Volume 1 ........................................................................... xxxiii
COMPSAC 2019 Committee - Volume 1 ........................................................................... li

COMPSAC Symposia

SETA: Software Engineering Technology and Applications

Message from SETA 2018 Symposium Chairs .................................................................. 1
  W.K. Chan (City University of Hong Kong, Hong Kong) and Hong Zhu
  (Oxford Brookes University, UK)

SETA 1: SOFTWARE

An Empirical Analysis on Web Service Anti-pattern Detection Using a Machine Learning Framework .......... 2
  Lov Kumar (BITS Pilani Hyderabad, India) and Ashish Sureka (Ashoka University)

EFSM-Oriented Minimal Traces Set Generation Approach for Web Applications .................. 12
  Weiwei Wang (Beijing University of Chemical Technology), Junxia Guo
  (Beijing University of Chemical Technology), Zheng Li (Beijing University of Chemical Technology), and Ruilian Zhao (Beijing University of Chemical Technology)

DevOps Improvements for Reduced Cycle Times with Integrated Test Optimizations for Continuous Integration .................................................................................................................. 22
  Dusica Marijan (Simula), Marius Liaaen (Cisco Systems), and Sagar Sen
  (Simula)
SETA 2: FUNCTIONALITY

A Multi-layered Desires Based Framework to Detect Users' Evolving Non-functional Requirements ........................................ 28
Peng Sun (Iowa State University, Ames, USA), Jingwei Yang (James Madison University, Harrisonburg, USA), Hua Ming (Oakland University, Rochester, USA), and Carl K. Chang (Iowa State University, Ames, USA)

A Framework for Updating Functionalities Based on the MAPE Loop Mechanism ............................................................... 38
Shinya Tsuchida (Osaka University, Japan), Hiroyuki Nakagawa (Osaka University, Japan), Emiliano Tramontana (University of Catania, Italy), Andrea Fornaia (University of Catania, Italy), and Tatsuhiro Tsuchiya (Osaka University, Japan)

Using Code Evolution Information to Improve the Quality of Labels in Code Smell Datasets .............................................. 48
Yijun Wang (Sun Yat-sen University), Songyuan Hu (Sun Yat-sen University), Linfeng Yin (Sun Yat-sen University), and Xiaocong Zhou (Sun Yat-sen University)

SETA 3: SOFTWARE

Combining Constraint Solving with Different MOEAs for Configuring Large Software Product Lines: A Case Study ................................................................. 54
Huiqun Yu (East China University of Science and Technology), Kai Shi (East China University of Science and Technology), Jianmei Guo (Alibaba Group), Guisheng Fan (East China University of Science and Technology), Xingguang Yang (East China University of Science and Technology), and Liqiong Chen (Shanghai Institute of Technology)

Cross-Project Change-Proneness Prediction ................................................................. 64
Chao Liu (Chongqing University), Dan Yang (Chongqing University), Xin Xia (Monash University), Meng Yan (Zhejiang University), and Xiaohong Zhang (Chongqing University)

Visualizing a Tangled Change for Supporting Its Decomposition and Commit Construction .............................................. 74
Sarocha Sothornprapakorn (Tokyo Institute of Technology), Shinpei Hayashi (Tokyo Institute of Technology), and Motoshi Saeki (Tokyo Institute of Technology)

SETA 4: MOBILE

An Assertion Framework for Mobile Robotic Programming with Spatial Reasoning ................................................................. 80
Hao Sun (Nanjing University, P.R.China), Xiaoxing Ma (Nanjing University, P.R.China), Tiansi Dong (University of Bonn, Germany), Armin B. Cremers (University of Bonn, Germany), and Chun Cao (Nanjing University, P.R.China)

Exploration Scheduling for Replay Events in GUI Testing on Android Apps ................................................................. 90
Chia-Hui Lin (Yuan Ze University, Taiwan), Cheng-Zen Yang (Yuan Ze University, Taiwan), Peng Lu (Yuan Ze University, Taiwan), Tzu-Heng Lin (Yuan Ze University, Taiwan), and Zhi-Jun You (Yuan Ze University, Taiwan)
DroidCC: A Scalable Clone Detection Approach for Android Applications to Detect Similarity at Source Code Level ................................................................. 100
Junaid Akram (Tsinghua University), Zhendong Shi (Tsinghua University), Majid Mumtaz (Tsinghua University), and Ping Luo (Tsinghua University)

SETA 5: CONCURRENCY

DistGear: A Lightweight Event-Driven Framework for Developing Distributed Applications ...................... 106
Junming Ma (Peking University), Bo An (Peking University), Xiangqun Chen (Peking University), and Donggang Cao (Peking University)

A Lightweight Program Dependence Based Approach to Concurrent Mutation Analysis ...................... 116
Chang-ai Sun (University of Science and Technology Beijing), Jingting Jia (University of Science and Technology Beijing), Huai Liu (Victoria University), and Xiangyu Zhang (Purdue University)

GBRAD: A General Framework to Evaluate Design Strategies for Hybrid Race Detection ...................... 126
Jialin Yang (City University of Hong Kong), W.K. Chan (City University of Hong Kong), Y.T. Yu (City University of Hong Kong), and Jacky Keung (City University of Hong Kong)

SETA 6: CLOUD

SPESC: A Specification Language for Smart Contracts ................................................................. 132
Xiao He (University of Science and Technology Beijing, China), Bohan Qin (University of Science and Technology Beijing, China), Yan Zhu (University of Science and Technology Beijing, China), Xing Chen (Fuzhou University, China), and Yi Liu (National Computer Network Emergency Response Technical Team/Coordination Center of China)

An Insight Into the Impact of Dockerfile Evolutionary Trajectories on Quality and Latency ...................... 138
Yang Zhang (National University of Defense Technology, China), Gang Yin (National University of Defense Technology, China), Tao Wang (National University of Defense Technology, China), Yue Yu (National University of Defense Technology, China), and Huaimin Wang (National University of Defense Technology, China)

Improving Cluster Resource Efficiency with Oversubscription ......................................................... 144
Jie Chen (Nanjing University), Chun Cao (Nanjing University), Ying Zhang (Nanjing University), Xiaoxing Ma (Nanjing University), Haiwei Zhou (iQiyi), and Chengwei Yang (iQiyi)

SETA 7: CODE COMMENTS

Automatic Detection of Outdated Comments During Code Changes ................................................. 154
Zhiyong Liu (Sun Yat-sen University, China), Huanchao Chen (Sun Yat-sen University, China), Xiangping Chen (Institute of Advanced Technology, Sun Yat-sen University, China), Xiaonan Luo (Guilin University of Electronic Technology, China), and Fan Zhou (Sun Yat-sen University, China)
Automatically Detecting the Scopes of Source Code Comments ................................................................. 164
Huanchao Chen (Sun Yat-sen University, China), Zhiyong Liu (Sun Yat-sen University, China), Xiangping Chen (Sun Yat-sen University, China), Fan Zhou (Sun Yat-sen University, China), and Xiaonan Luo (Guilin University of Electronic Technology, China)

SETA 8: REPAIR

Search-Based Efficient Automated Program Repair Using Mutation and Fault Localization ............................. 174
Shuyao Sun (Beijing University of Chemical Technology, China), Junxia Guo (Beijing University of Chemical Technology, China), Ruilian Zhao (Beijing University of Chemical Technology, China), and Zheng Li (Beijing University of Chemical Technology, China)

Identifying Supplementary Bug-fix Commits .................................................................................................. 184
Tao Ji (National University of Defense Technology, China), Jinkun Pan (National University of Defense Technology, China), Liqian Chen (National University of Defense Technology, China), and Xiaoguang Mao (National University of Defense Technology, China)

SETA 9: VERIFICATION

A Generalized Approach to Verification Condition Generation ........................................................................ 194
Cláudio Belo Lourenço (HASLab/INESC TEC & Universidade do Minho, Portugal), Maria João Frade (HASLab/INESC TEC & Universidade do Minho, Portugal), Shin Nakajima (National Institute of Informatics, Japan), and Jorge Sousa Pinto (HASLab/INESC TEC & Universidade do Minho, Portugal)

Runtime Verification of Robots Collision Avoidance Case Study .................................................................. 204
Chenxia Luo (Capital Normal University, Beijing, China), Rui Wang (Capital Normal University, Beijing, China), Yu Jiang (Tsinghua University, Beijing, China), Kang Yang (Capital Normal University, Beijing, China), Yong Guan (Capital Normal University, Beijing, China), Xiaojuan Li (Capital Normal University, Beijing, China), and Zhiping Shi (Capital Normal University, Beijing, China)

Formalization and Verification of Mobile Systems Calculus Using the Rewriting Engine Maude .................. 213
Wanling Xie (East China Normal University, China), Huibiao Zhu (East China Normal University, China), Min Zhang (East China Normal University, China), Gang Lu (East China Normal University, China), and Yucheng Fang (East China Normal University, China)

SETA 10: BUGS

Predicting the Breakability of Blocking Bug Pairs ......................................................................................... 219
Hui Ding (Nanjing University, China), Wanwangying Ma (Nanjing University, China), Lin Chen (Nanjing University, China), Yuming Zhou (Nanjing University, China), and Baowen Xu (Nanjing University, China)

Precise Extraction of Malicious Behaviors .................................................................................................. 229
Khanh Huu The Dam (LIPN, CNRS and University Paris 13) and Tayssir Touili (CNRS, LIPN and University Paris 13)
SETA 11: PRIORITIZATION

ReTestDroid: Towards Safer Regression Test Selection for Android Application  ........................................... 235
Bo Jiang (Beihang University), Yu Wu (Beihang University), Yongfei Zhang (Beihang University), Zhenyu Zhang (Institute of Software, Chinese Academy of Sciences), and W.K. Chan (City University of Hong Kong)

How Do Software Metrics Affect Test Case Prioritization? ................................................................. 245
Masataka Ozawa (Hiroshima University), Tadashi Dohi (Hiroshima University), and Hiroyuki Okamura (Hiroshima University)

Test Case Prioritization Based on Method Call Sequences ................................................................. 251
Jianlei Chi (Xi'an Jiaotong University, Xi'an, China), Yu Qu (Xi'an Jiaotong University, Xi'an, China), Qinghua Zheng (Western Michigan University, USA), Zijiang Yang (Western Michigan University, USA), Wuxia Jin (Xi'an Jiaotong University, Xi'an, China), and Ting Liu (Xi'an Jiaotong University, Xi'an, China)

SETA 12: MODELING

Model Checking of Embedded Systems Using RTCTL While Generating Timed Kripke Structure .............. 257
Yajun Wu (Kanazawa University, Japan) and Satoshi Yamane (Kanazawa University, Japan)

Model Checking Coordination of CPS Using Timed Automata ........................................................... 258
Kaiqiang Jiang (East China Normal University), Chunlin Guan (East China Normal University), Jiahui Wang (East China Normal University), and Dehui Du (East China Normal University)

Towards Modeling Cyber-Physical Systems with SysML/MARTE/pCCSL ........................................... 264
Ping Huang (East China Normal University), Kaiqiang Jiang (East China Normal University), Chunlin Guan (East China Normal University), and Dehui Du (East China Normal University)

Modeling and Verifying MooseFS in CSP ................................................................................................ 270
Yucheng Fang (East China Normal University, China), Huibiao Zhu (East China Normal University, China), Gang Lu (East China Normal University, China), Lili Xiao (East China Normal University, China), and Wanling Xie (East China Normal University, China)

SETA 13: SOFTWARE ANALYSIS

PERDICE: Towards Discovering Software Inefficiencies Leading to Cache Misses and Branch Mispredictions ......................................................... 276
Ting Chen (University of Electronic Science and Technology of China), Wanyu Huang (University of Electronic Science and Technology of China), Muhui Jiang (The Hong Kong Polytechnic University), Xiapu Luo (The Hong Kong Polytechnic University), Lei Xue (The Hong Kong Polytechnic University), Ying Wang (University of Electronic Science and Technology of China), and Xiaosong Zhang (University of Electronic Science and Technology of China)
Structural Function Based Code Clone Detection Using a New Hybrid Technique ........................................... 286
Yanming Yang (Dalian University of Technology, China), Zhilei Ren
(Dalian University of Technology, China), Xin Chen (Dalian University
of Technology, China), and He Jiang (Dalian University of Technology,
China)

A Structural Analysis Method of OSS Development Community Evolution Based on A Semantic Graph Model ..... 292
Seiya Kato (Nanzan University), Yota Inagaki (Nanzan University), and
Mikio Aoyama (Nanzan University)

SETA 14: PROGRAM ANALYSIS

Effective Discrete Memetic Algorithms for Covering Array Generation ...................................................... 298
Xu Guo (Inner Mongolia University), Xiaoyu Song (Portland State
University), and Jian-tao Zhou (Inner Mongolia University)

Loop Invariant Generation for Non-monotone Loop Structures ................................................................. 304
Chunyan Hou (Tianjin University of Technology), Jinsong Wang (Tianjin
University of Technology), Chen Chen (Nankai University), and Kai Shi
(Tianjin University of Technology)

On the Selection of Strength for Fixed-Strength Interaction Coverage Based Prioritization ....................... 310
Rubing Huang (Jiangsu University, China), Weiwen Zong (Jiangsu
University, China), Tsong Yueh Chen (Swinburne University of
Technology, Australia), Dave Towey (University of Nottingham, Ningbo
China), Jinfu Chen (Jiangsu University, China), Yunan Zhou (Jiangsu
University, China), and Weifeng Sun (Jiangsu University, China)

HCSC: Human Computing & Social Computing

Message from the HCSC 2018 Workshop Organizers ................................................................. 316
Moushumi Sharmin (Western Washington University, USA), Katsunori Oyama
(Nihon University, Japan), and Claudio Giovanni Demartini (Politecnico
di Torino, Italy)

HCSC 1

Coarsening Networks Based on Local Link Similarity for Community Detection ....................................... 317
Yuzhu Wu (East China Normal University, Shanghai, China), Qianwen
Zhang (East China Normal University, Shanghai, China), and Jinkui Xie
(East China Normal University, Shanghai, China)

What Graphs do International Investors See in the ASEAN Capital Markets? ......................................... 327
Uthai Tanlamai (Uthai Tanlamai)

Decision Making Support of UAV Path Planning for Efficient Sensing in Radiation Dose Mapping ........... 333
Tokishi Morita (Nihon University), Katsunori Oyama (Nihon University),
Taiju Mikoshi (Nihon University), and Toshihiro Nishizono (Nihon
University)
HCSC 2

A Japanese Software Keyboard for Tablets that Reduces User Fatigue .................................................. 339
Teppei Yajima (Hosei University, Japan) and Hiroshi Hosobe (Hosei University, Japan)

An Aurora Image Classification Method based on Compressive Sensing and Distributed WKNN ................. 347
Yichun Li (East China Normal University) and Ningkang Jiang (East China Normal University)

AUTONOMOUS CAR PANEL

Localized Traffic Sign Detection with Multi-scale Deconvolution Networks .............................................. 355
Songwen Pei (University of Shanghai for Science and Technology, China), Fuwu Tang (University of Shanghai for Science and Technology, China), Yanfei Ji (University of Shanghai for Science and Technology, China), Jing Fan (University of Shanghai for Science and Technology, China), and Zhong Ning (Fudan University, China)

Teaching Autonomous Driving Using a Modular and Integrated Approach .............................................. 361
Jie Tang (South China University of Technology), Liu Shaoshan (PerceptIn Inc, USA), Songwen Pei (University of Shanghai for Science and Technology, China), Stéphane Zuckerman (Université de Cergy-Pontoise, France), Liu Chen (Clarkson University, USA), Weisong Shi (Wayne State University, USA), and Jean-Luc Gaudiot (University of California, Irvine, USA)

Machine Learning Assisted High-Definition Map Creation ................................................................. 367
Jialin Jiao (Uber Technologies, Inc.)

Iterative EM Planning: A Flexible Motion Planning Platform for Autonomous Driving on Urban Roads ........
Liyun Li (JD.com Silicon Valley Research Center)

DSAT: Data Sciences, Analytics, and Technologies

Message from the 2018 DSAT Technical Program Chairs ................................................................. 380
Kathy Grise (IEEE, USA) and Maria Lee (Shih Chien University, Taiwan)

DSAT 1

Knowledge Map Construction Using Text Mining and Artificial Bee Colony Algorithm ............................. 382
Tsai Chieh-Yuan (Yuan Ze University, Taiwan) and Ji Wei-Zhong (Yuan Ze University, Taiwan)

Mining Rules from Real-Valued Time Series: A Relative Information-Gain-Based Approach .................... 388
Yuanda He (Peking University, China), Xu Chu (Peking University, China), Guangju Peng (Peking University, China), Yasha Wang (Peking University, China), Zhu Jin (Peking University, China), and Xiaorong Wang (China Electric Power Research Institute, China)
World Grid Square Data Reference Framework and its Potential Applications ............................................ 398
Aki-Hiro Sato (Kyoto University & Japan Science and Technology Agency), Shoki Nishimura (National Statistics Center), Tsuyoshi Namiki (Statistics Bureau of Japan, Ministry of Internal Affairs and Communications), Naoki Makita (Office of Director-General for Policy Planning on Statistical Standards, Ministry of Internal Affairs and Communications), and Hiroe Tsubaki (National Statistics Center & Institute for Statistical Mathematics)

DSAT 2

A Local Cores-Based Hierarchical Clustering Algorithm for Data Sets with Complex Structures .................. 410
Dongdong Cheng (Chongqing University, China), Qingsheng Zhu (Chongqing University, China), and Quanwang Wu (Chongqing University, China)

Web Items Recommendation Based on Multi-View Clustering .................................................................... 420
Hong Yu (Dalian University of Technology, China), Tiantian Zhang (Dalian University of Technology, China), Jiaxin Chen (Dalian University of Technology, China), Chen Guo (Dalian University of Technology, China), and Yahong Lian (Dalian University of Technology, China)

Characterizing Common and Domain-Specific Package Bugs: A Case Study on Ubuntu .............................. 426
Xiaoxue Ren (Zhejiang University), Qiao Huang (Zhejiang University), Xin Xia (Monash University), Zhenchang Xing (Australian National University), Lingfeng Bao (Zhejiang University), and David Lo (Singapore Management University)

DSAT 3

Deciphering Big Data Research Themes ........................................................................................................ 432
Tsung Teng Chen (Graduate Institute of Information Management, National Taipei University, New Taipei City, Taiwan) and Maria R. Lee (Department of Information Technology and Management, Shih Chien University, Taipei, Taiwan)

Towards Lambda-Based Near Real-Time OLAP over Big Data .................................................................... 438
Alfredo Cuzzocrea (University of Trieste and ICAR-CNR) and Rim Moussa (University of Tunis)

Characterizing Incidents in Cloud-Based IoT Data Analytics .................................................................... 442
Hong-Linh Truong (TU Wien) and Manfred Halper (TU Wien)

Efficient Discovery of Traveling Companion from Evolving Trajectory Data Stream .................................. 448
Sutheera Puntheeranurak (King Mongkut's Institute of Technology Ladkrabang), Thi Thi Shein (King Mongkut's Institute of Technology Ladkrabang), and Makoto Imamura (Tokai University)
DSAT 4

A Software Popularity Recommendation Method Based on Evaluation Model .......................... 454
Yan Wang (Inner Mongolia University, China), Pei-Xiang Bai (Inner Mongolia University, China), De-Yu Yang (Inner Mongolia University, China), Jian-Tao Zhou (Inner Mongolia University, China), and Xiaoyu Song (Department of ECE Portland State University Portland, USA)

Analysis and Prediction of Endorsement-Based Skill Assessment in LinkedIn .......................... 461
Yan Wu (Boise State University), Nitish Dhakal (Boise State University), Dianxiang Xu (Boise State University), and Jin-Hee Cho (US Army Research Laboratory)

An Improved Promoter Recognition Model Using Convolutional Neural Network .......................... 471
Ying Qian (East China Normal University, China), Yu Zhang (East China Normal University, China), Bingyu Guo (East China Normal University, China), Shasha Ye (East China Normal University, China), Yazhu Wu (East China Normal University, China), and Jiongmin Zhang (East China Normal University, China)

IT Professional 20th Anniversary Panel ............................................................................. 477
San Murugesan (BRITE Professional Services, Australia)

DSAT 5

A Deep Learning Approach Based on Stacked Denoising Autoencoders for Protein Function Prediction ........ 480
Lester James Miranda (Waseda University, Japan) and Jinglu Hu (Waseda University, Japan)

Faster Deep Q-Learning Using Neural Episodic Control .......................................................... 486
Daichi Nishio (Kanazawa University, Japan) and Satoshi Yamane (Kanazawa University, Japan)

Automated Dental Image Analysis by Deep Learning on Small Dataset ..................................... 492
Jie Yang (Tsinghua University), Yuchen Xie (Tsinghua University), Lin Liu (Tsinghua University), Bin Xia (Peking University Stomatological Hospital), Zhanqiang Cao (Peking University Stomatological Hospital), and Chuanbin Guo (Peking University Stomatological Hospital)

A Service-Oriented Approach to Modeling and Reusing Event Correlations .......................... 498
Yanbo Han (North China University of Technology), Meiling Zhu (North China University of Technology), and Chen Liu (North China University of Technology)

DSAT 6

Elucidating Which Pairwise Mutations Affect Protein Stability: An Exhaustive Big Data Approach ........ 508
Nicholas Majeske (Western Washington University) and Filip Jagodzinski (Western Washington University)

DLCEncDec : A Fully Character-Level Encoder-Decoder Model for Neural Responding Conversation .......... 516
Sixing Wu (Peking University, Beijing, China), Ying Li (Peking University, Beijing, China), Xinyuan Zhang (Peking University, Beijing, China), and Zhonghai Wu (Peking University, Beijing, China)
Optimising Toward Completed Videos in an Online Video Advertising Exchange ........................................ 528
Douglas McIlwraith (Unruly Group Limited), Andrea Catalucci (Unruly Group Limited), Sam Boyd (Unruly Group Limited), Raouf Aghrout (Unruly Group Limited), and Yi-Ke Guo (Data Science Institute, Imperial College London)

EATA: Emerging Advances in Technology & Applications

Message from EATA Symposium Chairs ........................................................................................................ 534
Ali Hurson (Missouri University of Science & Technology, USA) and Hiroyuki Sato (University of Tokyo, Japan)

EATA 1: FUTURE COMPUTING TECHNOLOGIES

TBAC: Transaction-Based Access Control on Blockchain for Resource Sharing with Cryptographically Decentralized Authorization ................................................................................................. 535
Yan Zhu (University of Science and Technology Beijing), Yao Qin (University of Science and Technology Beijing), Guohua Gan (University of Science and Technology Beijing), Yang Shuai (University of Science and Technology Beijing), and William Cheng-Chung Chu (TungHai University)

Object Naming Service Supporting Heterogeneous Object Code Identification for IoT System ................. 545
Duo Ding (Software School of Fudan University, China), Minbo Li (Software School of Fudan University, China), and Zhu Zhu (Research and Development Center of Baidu China Co., Ltd., China)

Energy Efficient Scheduling for Heterogeneous Fog Computing Architectures ........................................... 555
Hsiang-Yi Wu (National Tsing Hua University) and Che-Rung Lee (National Tsing Hua University)

EATA 2: VEHICLES AND TRANSPORTATIONS

Lane Change Detection Algorithm on Real World Driving for Arbitrary Road Infrastructures .................. 561
Jennie Lioris (ENPC), Annie Bracquemond (ENPC), Gildas Thiolon (ENPC), and Laurent Bonic (ENPC)

Mapping of Sensor and Route Coordinates for Smart Cities .................................................................... 570
Yasir Saleem (Institute Mines-Telecom, Telecom SudParis, France) and Noel Crespi (Institute Mines-Telecom, Telecom SudParis, France)

A Discrete Differential Evolution Algorithm for Carpooling .................................................................... 577
Fu-Shiung Hsieh (Chaoyang University of Technology) and Fu-Min Zhan (Chaoyang University of Technology)
EATA 3: EMERGING APPLICATIONS

Formal Analysis of k-Resiliency for Collaborative UAVs
A H M Jakaria (Tennessee Technological University) and Mohammad Ashiqur Rahman (Tennessee Technological University)

Image Processing Strategies for Automatic Detection of Common Gastroenterological Diseases
Rafael Neujahr Copstein (Virtual Reality Group, School of Technology - PUCRS, Brazil), Vicenzo Abichequer (Virtual Reality Group, School of Technology - PUCRS, Brazil), Matheus Cruz Andrade (Virtual Reality Group, School of Technology - PUCRS, Brazil), Lucas Almeida Machado (Virtual Reality Group, School of Technology - PUCRS, Brazil), Evandro Rodrigues (Virtual Reality Group, School of Technology - PUCRS, Brazil), Leonardo Pavanatto Soares (Virtual Reality Group, School of Technology - PUCRS, Brazil), and Marcio Sarroglia Pinho (Virtual Reality Group, School of Technology - PUCRS, Brazil)

SEPT: Security, Privacy & Trust in Computing

Message from the SEPT Symposium Program Chairs
Dianxiang Xu (Boise State University, USA) and Eun-Sun Cho (Chungnam National University, Korea)

SEPT 1

Towards Light-Weight Deep Learning Based Malware Detection
Zeliang Kan (Beijing University of Posts and Telecommunications, China), Haoyu Wang (Beijing University of Posts and Telecommunications, China), Guoai Xu (Beijing University of Posts and Telecommunications, China), Yao Guo (Peking University), and Xiangqun Chen (Peking University)

ACP: An Efficient User Location Privacy Preserving Protocol for Opportunistic Mobile Social Networks
Rui Huang (University of Ottawa, Canada), Yichao Lin (University of Ottawa, Canada), Bidi Ying (Zhejiang Gongshang University, China), and Amiya Nayak (University of Ottawa, Canada)

The Impact of Lightweight Disassembler on Malware Detection: An Empirical Study
Donghong Zhang (Institute of Software, Chinese Academy of Sciences), Zhenyu Zhang (Institute of Software, Chinese Academy of Sciences), Bo Jiang (Beihang University, China), and T.H. Tse (The University of Hong Kong, Hong Kong)

A Pull-Type Security Patch Management of an Intrusion Tolerant System Under a Periodic Vulnerability Checking Strategy
Junjun Zheng (Ritsumeikan University), Hiroyuki Okamura (Hiroshima University), and Tadashi Dohi (Hiroshima University)
SEPT 2

Proof of Contribution: A Modification of Proof of Work to Increase Mining Efficiency ............................................. 636
Tengfei Xue (Beijing University of Posts and Telecommunications), YuYu Yuan (Beijing University of Posts and Telecommunications), Zahir Ahmed (Beijing University of Posts and Telecommunications), Krishna Moniz (Beijing University of Posts and Telecommunications), Ganyuan Cao (Arizona State University, Tempe, USA), and Cong Wang (Beijing University of Posts and Telecommunications)

A Novel Secret Sharing Approach for Privacy-Preserving Authenticated Disease Risk Queries in Genomic Databases .................................................................................................................. 645
Maitraye Das (Northwestern University, Evanston, IL, USA), Nusrat Jahan Mozumder (Bangladesh University of Engineering and Technology, Dhaka, Bangladesh), Sharmin Afrose (Bangladesh University of Engineering and Technology, Dhaka, Bangladesh), Khandakar Ashraf Akbar (Bangladesh University of Engineering and Technology, Dhaka, Bangladesh), and Tanzima Hashem (Bangladesh University of Engineering and Technology, Dhaka, Bangladesh)

Improving Fitness Function for Language Fuzzing with PCFG Model ................................................................. 655
Xiaoshan Sun (Chinese Academy of Sciences, China), Yu Fu (Chinese Academy of Sciences, China), Yun Dong (Beijing Capitek Co., Ltd, China), Zhihao Liu (Chinese Academy of Sciences, China), and Yang Zhang (Chinese Academy of Sciences, China)

Answering Multiple Aggregate Queries Under a Specific Privacy Condition .......................................................... 661
Jordi Aranda (BBVA Data & Analytics), Jordi Nin Guerrero (BBVA Data & Analytics), and Javier Herranz (Department of Mathematics Universitat Politècnica de Catalunya)

CAP: Computer Architecture & Platforms

Message from the CAP Organizing Committee ........................................................................................................ 667
Cristina Seceleanu (Mälardalen University, Sweden) and Keiji Kimura (Waseda University, Japan)

CAP 1

Adaptive Splitting-Based Block I/O Scheduling in Disk Storage ................................................................. 668
Hui Li (Southwest University of China), Shanxiong Chen (Southwest University of China), Guoqiang Xiao (Southwest University of China), Xiaoning Pengy (Huaihua University of China), Jianwei Liao (Southwest University of China), and Jianwei Liao (Huaihua University of China)

A Market-Oriented Heuristic Algorithm for Scheduling Parallel Applications in Big Data Service Platform .................................................................................................................. 677
Qingshi Shao (Shandong University, China), Shijun Liu (Shandong University, China), Li Pan (Shandong University, China), Chenglei Yang (Shandong University, China), and Tingting Niu (Jinan Vocational College of Nursing, China)
The Column-Partition and Row-Partition Turn Model ................................................................. 687
Yuan Cai (Tsinghua University, China), Wei Luo (State Grid Hunan Electric Power Company Information and Communication Company, China), and Dong Xiang (Tsinghua University, China)

Research on Asynchronous Inter-VM Communication Mechanism Based on Embedded Hypervisor .......... 695
Rui Wang (Beihang University, China), Yuebin Bai (Beihang University, China), Kun Cheng (Beihang University, China), Zhongzhao Wang (Beihang University, China), Guangqiang Luan (Beihang University, China), Hailong Yang (Beihang University, China), and Weitao Wang (Beihang University, China)

CAP 2
Measurement-Based Evaluation of Data-Parallelism for OpenCV Feature-Detection Algorithms .................. 701
Jakob Danielsson (Mälardalen University, Sweden), Marcus Jägemar (Ericsson AB, Sweden), Moris Behnam (Mälardalen University, Sweden), Mikael Sjödin (Mälardalen University, Sweden), and Tiberiu Seceleanu (Mälardalen University, Sweden)

SMT-Based Timing Analysis and Verification of Real-Time Task ..................................................... 711
Hai-feng Xing (Inner Mongolia University, China), Jian-tao Zhou (Inner Mongolia University, China), Xiaoyu Song (Portland State University, USA), and Rui-dong Qi (Inner Mongolia University, China)

Towards Fault-Tolerant Task Backup and Recovery in the seL4 Microkernel ...................................... 721
Guangqiang Luan (Beihang University, China), Yuebin Bai (Beihang University, China), Libin Xu (Beihang University, China), Chao Yu (Beihang University, China), Chunyang Wang (Beihang University, China), Junfang Zeng (Beihang University, China), Qingbin Chen (Beihang University, China), and Weitao Wang (Beihang University, China)

ITIP: IT in Practice

Message from the ITiP Symposium Chairs ......................................................................................... 727
San Murugesan (BRITE Professional Services, Australia) and Fulvio Corno (Politecnico di Torino, Italy)

ITIP 1
Load Prediction for Data Centers Based on Database Service .............................................................. 728
Rui Cao (Nankai University, China), Zhaoyang Yu (Nankai University, China), Trent Marbach (Nankai University, China), Jing Li (Nankai University, China), Gang Wang (Nankai University, China), and Xiaoguang Liu (Nankai University, China)

Randomness Classes in Bugs Framework (BF): True-Random Number Bugs (TRN) and Pseudo-Random Number Bugs (PRN) ................................................................. 738
Irena Bojanova (NIST, USA), Yaacov Yesha (NIST and UMBC USA), and Paul E. Black (NIST, USA)
ITIP 2

An IoT Platform for Civil Infrastructure Monitoring ................................................................. 746
Seongwoon Jeong (Stanford University) and Kincho Law (Stanford University)

The Smart-X Model for Smart Cities .......................................................................................... 755
Nishtha Kesswani (Central University of Rajasthan, India) and Sanjay Kumar (Central University of Rajasthan, India)

ITIP 3

Long Short-Term Memory Neural Networks for Artificial Dialogue Generation ......................... 761
Sid Ahmed Selouani (Université de Moncton, Canada) and Mohamed Sidi Yacoub (Université de Moncton, Canada)

Sentiment Classification System of Twitter Data for US Airline Service Analysis ......................... 769
Ankita Rane (BITS Pilani, Dubai Campus UAE) and Anand Kumar (BITS Pilani, Dubai Campus UAE)

WorkflowDSL: Scalable Workflow Execution with Provenance for Data Analysis Applications ........... 774
Tharidu Fernando (Royal Institute of Technology (KTH), Sweden), Nikita Gureev (Royal Institute of Technology (KTH), Sweden), Mihhail Matskin (Royal Institute of Technology (KTH), Sweden), Michael Zwick (Software Competence Center Hagenberg (SCCH), Austria), and Thomas Natschläger (Software Competence Center Hagenberg (SCCH), Austria)

Fast Abstracts

Message from the Fast Abstract Co-chairs ..................................................................................... 780
Hossain Shahriar (Kennesaw State University, USA), Hiroki Takakura (National Institute of Informatics, Japan), Michiharu Takemoto (NTT, Japan), and Dave Towey (University of Nottingham Ningbo China, China)

FAST ABSTRACT 1

Systematic Literature Review Regarding Communication Support in Project-Based Learning of Software Development ......................................................................................................................... 781
Yutsuki Miyashita (Tokyo Gakugei University, Japan), Takafumi Tanaka (Tokyo University of Agriculture and Technology, Japan), and Atsuo Hazeyama (Tokyo Gakugei University, Japan)

Painless Tennis Ball Tracking System ............................................................................................. 783
Wook-Sung Yoo (Marshall University), Zach Jones (Marshall University), Henok Atsbaha (Marshall University), and David Wingfield (Marshall University)

Remote Monitoring and Control Web Service for Internet of Heating ............................................. 785
Bo Cheng (Beijing University of Posts and Telecommunications), Shuai Zhao (Beijing University of Posts and Telecommunications), and Junliang Chen (Beijing University of Posts and Telecommunications)
Possibilistic Reasoning About Actions in Agent Systems ................................................................. 787
Tuan-Fang Fan (National Penghu University of Science and Technology, Taiwan) and Churn-Jung Liau (Academia Sinica, Taiwan)

An Enhanced Temperature Aware Routing Protocol in Wireless Body Area Networks ....................... 789
Beom-Su Kim (Chungnam National University), Ki-Il Kim (Chungnam National University), and Babar Shah (Zayed University)

On Selecting Collaborative Modeling Tools ......................................................................................... 791
Usa Sammapun (Kasetsart University, Thailand) and Panuchart Bunyakiati
(University of the Thai Chamber of Commerce, Thailand)

Machine Translation Considering Context Information Using Encoder-Decoder Model .......................... 793
Satoshi Yamane (Kanazawa University) and Tetsuto Takano (Kanazawa University)

FAST ABSTRACT 2

Spatio-Temporal Data Retention System with MEC for Local Production and Consumption ............... 795
Daiki Nobayashi (Kyushu Institute of Technology, Japan), Kazuya Tsukamoto (Kyushu Institute of Technology, Japan), Takeshi Ikenaga (Kyushu Institute of Technology, Japan), and Mario Gerla (University of California, Los Angeles, USA)

Designing a Computer Detective Game for Science Education .......................................................... 797
Fu-Hsing Tsai (National Chiayi University)

Model Check of Real-time Property of Embedded Assembly Program Using CEGAR ............................ 799
Hiromu Kamide (Kanazawa University), Kosuke Uemura (Kanazawa University), and Satoshi Yamane (Kanazawa University)

Comprehensive Data Tree by Actor Messaging for Incremental Hierarchical Clustering ....................... 801
Taiki Shimizu (Kanazawa University, Japan) and Kohei Sakurai (Kanazawa University, Japan)

Applying Code Vectors for Presenting Software Features in Machine Learning ................................... 803
Hyun-il Lim (Kyungnam University)

A Framework for Real Time Emotion Recognition Based on Human ANS Using Pervasive Device ........ 805
Feri Setiawan (Hankuk University of Foreign Studies, South Korea), Sunder Ali Khawaja (Hankuk University of Foreign Studies, South Korea), Aria Ghora Prabono (Hankuk University of Foreign Studies, South Korea), Bernardo Nugroho Yahya (Hankuk University of Foreign Studies, South Korea), and Seok-Lyong Lee (Hankuk University of Foreign Studies, South Korea)

A New Approach for the Verification of BPMN Models Using Refinement Patterns ............................ 807
Salma Ayari (Technologies of Information and Communication and Electrical Engineering - Tunisia), Yosra Ben Dali Hlaoui (Technologies of Information and Communication and Electrical Engineering, Tunisia), and Leila Jemni Ben Ayed (Technologies of Information and Communication and Electrical Engineering, Tunisia)
FAST ABSTRACT 3

On Exploiting Temporal Periodicity for Message Delivery in Mobile Opportunistic Networks ............................................. 809
Yu-Feng Hsu (National Central University, Taiwan), Chih-Lin Hu
(National Central University, Taiwan), and Hsin-Ju Hsiao (National
Central University, Taiwan)

Cyclic Performance Fluctuation of TCP BBR .................................................. 811
Kouto Miyazawa (Kogakuin University), Kanon Sasaki (Kogakuin
University), Naoki Oda (Kogakuin University), and Saneyasu Yamaguchi
(Kogakuin University)

Towards Efficient Network Resource Management in SDN-Based Heterogeneous Vehicular Networks .......... 813
Adnan Mahmood (WIT, Ireland), Bernard Butler (WIT, Ireland), and
Brendan Jennings (WIT, Ireland)

Clustering TLS Sessions Based on Protocol Fields Analysis ..................................... 815
Hiroaki Yamauchi (Kogakuin University), Akihiro Nakao (the University
of Tokyo), Masato Oguchi (Ochanomizu University), Shu Yamamoto (the
University of Tokyo), and Saneyasu Yamaguchi (Kogakuin University)

On Graph Representation with Smallest Numerical Encoding ........................................ 817
Victor Parque (Waseda University) and Tomoyuki Miyashita (Waseda
University)

Numerical Representation of Modular Graphs ..................................................... 819
Victor Parque (Waseda University) and Tomoyuki Miyashita (Waseda University)

Mitigating SDN Flow Table Overflow .......................................................... 821
Hanwu Luo (East Inner Mongolia Electric Power Co. Ltd., China),
Wenzhen Li (East Inner Mongolia Electric Power Co. Ltd., China), Ying
Qian (East China Normal University, China), and Liang Dou (East China
Normal University, China)

FAST ABSTRACT 4

An Integrated Memory and SSD Caching I/O Subsystem ......................................... 823
Hsung-Pin Chang (National Chung Hsing University, Taiwan, R.O.C.),
Yu-Cain He (National Chung Hsing University, Taiwan, R.O.C.), and
Da-Wei Chang (National Cheng Kung University, Taiwan, R.O.C.)

Benchmark Requirements for Assessing Software Security Vulnerability Testing Tools ......................... 825
Reza M. Parizi (Kennesaw State University), Kai Qian (Kennesaw State
University), Hossein Shahriar (Kennesaw State University), Fan Wu
(Tuskegee University), and Lixin Tao (Pace University)

Effects of Variable Part Auto Configuration and Management for Software Product Line ....................... 827
Taeho Kim (LG Electronics), Sungwon Kang (Korea Advanced Institute of
Science and Technology), and Jihyun Lee (Chonbuk National University,
Korea)

Secure Mobile IPC Software Development with Vulnerability Detectors in Android Studio ..................... 829
Xianyong Meng (Kennesaw State University), Kai Qian (Kennesaw State
University), Dan Lo (Kennesaw State University), Hossein Shahriar
(Kennesaw State University), Md Arabin Islam Talukder (SmartMux Ltd.),
and Prabir Bhattacharya (Morgan State University)
A Comparison of EEG and NIRS Biomarkers for Assessment of Depression Risk .................................................. 831
Labiblais Rahman (Nihon University) and Katsunori Oyama (Nihon University)

Android Malware Detector Exploiting Convolutional Neural Network and Adaptive Classifier Selection .............. 833
Yangxu Jin (Xi’an Jiaotong University Xi’an, China), Ting Liu (Xi’an Jiaotong University Xi’an, China), Ancheng He (Xi’an Jiaotong University Xi’an, China), Yu Qu (Xi’an Jiaotong University Xi’an, China), and Jianlei Chi (Xi’an Jiaotong University Xi’an, China)

Web Application Firewall: Network Security Models and Configuration ............................................................ 835
Victor Clincy (Kennesaw State University) and Hossain Shahriar (Kennesaw State University)

Empirical Analysis of Coding Standard Violation Focusing on Its Coverage and Importance .............................. 837
Aji Ery Burhandenny (Ehime University, Japan), Hirohisa Aman (Ehime University, Japan), and Minoru Kawahara (Ehime University, Japan)

MOWU: Mobile, Wearable & Ubiquitous Computing

Message from the MOWU Organizing Committee ................................................................. 839
Vladimir Getov (University of Westminster, UK) and Hong Va Leong (The Hong Kong Polytechnic University, Hong Kong)

MOWU 1

Delivery Route Optimization Through Occupancy Prediction from Electricity Usage ........................................... 842
Shimpei Ohsugi (The University of Tokyo) and Noboru Koshizuka (The University of Tokyo)

CARMUS: Towards a General Framework for Continuous Activity Recognition with Missing Values on Smartphones ................................................................. 850
Tianheng Wu (Nanjing University, Nanjing, China), Liang Wang (Nanjing University, Nanjing, China), Zhiwen Zheng (Nanjing University, Nanjing, China), Simeng Wu (Nanjing University, Nanjing, China), Jun Ma (Nanjing University, Nanjing, China), Xiaping Tao (Nanjing University, Nanjing, China), and Jian Lu (Nanjing University, Nanjing, China)

A Study and Estimation a Lost Person Behavior in Crowded Areas Using Accelerometer Data from Smartphones ................................................................. 860
Mohammed Balfas (Marquette University Milwaukee, USA), Sheikh Iqbal Ahamed (Marquette University Milwaukee, USA), Chandana Tamma (Marquette University Milwaukee, USA), Muhammad Arif (Umm Al-Qura University, Makkah, Saudi Arabia), Ahmed J. Kattan (Umm Al-Qura University, Makkah, Saudi Arabia), and William Chu (Tunghai University, Taiwan)
MOWU 2

Building a Tailored Text Messaging System for Smoking Cessation in Native American Populations .................. 866
Drew Williams (Marquette University, USA), Golam Mushih Tanimul Ahsan (Marquette University, USA), Ivor Addo (University of Wisconsin-Oshkosh, USA), Sheikh Iqbal Ahamed (Marquette University, USA), Daniel Petereit (Rapid City Regional Hospital, USA), Linda Burhansstipanov (Native American Cancer Initiatives, USA), Linda Krebs (University of Colorado Anschutz Medical Campus, USA), and Mark Dignan (University of Kentucky, USA)

A Culturally Tailored Intervention System for Cancer Survivors to Motivate Physical Activity ......................... 875
Golam Mushih Tanimul Ahsan (Marquette University, USA), Jannatul Ferdouse Tumpa (Marquette University, USA), Riddhiman Adib (Marquette University, USA), Sheikh Iqbal Ahamed (Marquette University, USA), Daniel Petereit (Rapid City Regional Hospital, USA), Linda Burhansstipanov (Native American Cancer Initiatives, USA), Linda U. Krebs (University of Colorado Anschutz Medical Campus, USA), and Mark Dignan (University of Kentucky, USA)

mmCNN: A Novel Method for Large Convolutional Neural Network on Memory-Limited Devices ....................... 881
Shijie Li (nudt), Yong Dou (nudt), Jinwei Xu (nudt), Qiang Wang (nudt), and Xin Niu (nudt)

NCIW: Networks, Communications, Internet & Web Technologies

Message from the NCIW Program Co-chairs ................................................................. 887
Behrooz A. Shirazi (Washington State University, USA) and Nariyoshi Yamai (Tokyo University of Agriculture & Technology, Japan)

NCIW 1

Winner Determination in Combinatorial Double Auctions Based on Differential Evolution Algorithms ........... 888
Fu-Shiang Hsieh (Chaoyang University of Technology) and Yi-Hong Guo (Chaoyang University of Technology)

A Low-cost, High-Efficiency SDN Framework to Diminish Redundant ARP and IGMP Traffics in Large-Scale LANs .......................................................... 894
You-Chiun Wang (National Sun Yat-sen University) and Han Hu (National Sun Yat-sen University)

A Flow-Grained End-to-End Delay Analysis for RC Traffic in TTEthernet ............................................. 904
Ling Guo (University of Science and Technology of China, China), Bo Wan (University of Science and Technology of China, China), Changlong Li (University of Science and Technology of China, China), Kaiqi Zhou (University of Science and Technology of China, China), and Xi Li (University of Science and Technology of China, China)
NCIW 2

An Efficient Retrograde Storage for Self-Destructing Messages on Frequently Colliding Hash Table .................. 914
Yan Zhu (Univ. of Science & Technology Beijing, China), Shuai Yang (Univ. of Science & Technology Beijing, China), Guohua Gan (Univ. of Science & Technology Beijing, China), and Xiao He (Univ. of Science & Technology Beijing, China)

A Solution for Minimum Link Flow Problem with Sparse Modeling ................................................................. 920
Ryotaro Matsuo (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

DTN-Knca: A High Throughput Routing Based on Contact Pattern Detection in DTNs ............................................. 926
Weitao Wang (Beihang University), Yuebin Bai (Beihang University), Peng Feng (Beihang University), Yuhao Gu (Beihang University), Shuai Liu (Beihang University), Wenhao Jiang (Beihang University), and Jun Huang (Peking University)

A Multihop Broadcast Mechanism for Emergency Messages Dissemination in VANETs ........................................... 929
Sizheng Li (Wuhan University, Wuhan, China) and Chuanhe Huang (Wuhan University, Wuhan, China)

Student Research Symposium

Message from The Student Research Symposium Co-Chairs .......................................................... 938
Toyokazu Akiyama (Kyoto Sangyo University, Japan) and Maria Lee (Shih Chien University, Taiwan)

SRS 1

Analysis of the Relationship Between Server Location and RTT ................................................................. 939
Hyunsu Mun (Chungnam National University), Jeasung Na (Chungnam National University), Hanul Park (Chungnam National University), Seungtae Kim (Chungnam National University), Youngseok Lee (Chungnam National University), and John Springer (Purdue University)

A Study on Emulating Automotive IP Networks Using Network Virtualization .................................................... 943
Ryuichiro Maegawa (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), Yasuhiro Yamasaki (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

A Secure Sharing System for Cloud Desktop Applications Migrating with Optimized User Experience .......... 947
Yoshinori Kamori (Hiroshima City University, Japan), Kenta Hayashi (Hiroshima City University, Japan), Kaori Maeda (Hiroshima City University, Japan), Tohru Kondo (Hiroshima University, Japan), and Reiji Aibara (Hiroshima University, Japan)

A Tuning Method of a Monitoring System for Network Forensics in Cloud Environment .................................. 951
Shintaro Ishihara (Kyoto Sangyo University) and Toyokazu Akiyama (Kyoto Sangyo University)

A Study on Comparative Analysis of End-to-End Routing and Opportunistic Routing ....................................... 955
Chuta Minamiguchi (Kwansei Gakuin University), Natsumi Kawabata (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)
SRS 2

Building a CFG to Include Exceptions ................................................................. 959
Seong-Kyun Mok (Chungnam National University) and Eun-Sun Cho (Chungnam National University)

Alternating Primary Subflow in MPTCP by External Program without Kernel Modification .............. 962
Reido Horigome (Tokyo University of Agriculture and Technology),
Nariyoshi Yamai (Tokyo University of Agriculture and Technology),
Naoya Kitagawa (Tokyo University of Agriculture and Technology), and
Satoshi Ohzohata (The University of Electro-Communications, Japan)

A Study on Robustness of Complex Networks Against Random Node Removals .......................... 966
Kazuyuki Yamashita (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

A Study on the Impact of Delayed Packet Forwarding in Content-Centric Networking ...................... 970
Yuichi Yasuda (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

A Study on Sparse-Modeling Based Approach for Betweenness Centrality Estimation ...................... 973
Ryotaro Matsuo (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

Toward Firmware-Type Analysis Using Machine Learning Techniques ........................................ 977
Seoksu Lee (Chungnam National University) and Eun-Sun Cho (Chungnam National University)

CELT: Computer Education & Learning Technologies

Message from the CELT 2018 Symposium Co-Chairs ......................................................... 979
Tiziana Margaria (University of Limerick and Lero, Ireland) and Henry Chan (The Hong Kong Polytechnic University, Hong Kong)

CELT 1

Improving the Effectiveness of SQL Learning Practice: A Data-Driven Approach ......................... 980
Luca Cagliero (Politecnico di Torino, Italy), Luigi De Russis (Politecnico di Torino, Italy), Laura Farinetti (Politecnico di Torino, Italy), and Teodor Montanaro (Istituto Superiore Mario Boella, Italy)

Computational Thinking: Learning by Doing with the Cinco Adventure Game Tool ....................... 990
Frederik Gossen (Lero - The Irish Software Research Centre and Department of Computer Science and Information Systems, University of Limerick, Ireland), Dennis Kühn (Lero - The Irish Software Research Centre and Department of Computer Science and Information Systems, University of Limerick, Ireland), Tiziana Margaria (Lero - The Irish Software Research Centre and Department of Computer Science and Information Systems, University of Limerick, Ireland), and Anna-Lena Lamprecht (Department of Information and Computing Sciences, Utrecht University, Netherlands)
Towards Adaptive Systems for Automatic Formative Assessment in Virtual Learning Communities
Marina Marchisio (University of Turin, Torino, Italy), Luigi Di Caro (University of Turin, Torino, Italy), Michele Fioravera (University of Turin, Torino, Italy), and Sergio Rabellino (University of Turin, Torino, Italy)

CELT 2

Improving Blended Learning Outcomes Through Academic Social Media
Han Wan (Beihang University), Kangxu Liu (Beihang University), Qiaoye Yu (Beihang University), Jun Ding (Beihang University), and Xiaopeng Gao (Beihang University)

A Model of Formative Automatic Assessment and Interactive Feedback for STEM
Marina Marchisio (University of Turin, Torino, Italy), Alice Barana (University of Turin, Torino, Italy), Michele Fioravera (University of Turin, Torino, Italy), Sergio Rabellino (University of Turin, Torino, Italy), and Alberto Conte (University of Turin, Torino, Italy)

Web-Based Learning Object Search Engine Solution Together with Data Visualization: The Case of MERLOT II
W.K.T.M. Gunarathne (National Central University, Taiwan), Chalothon Chootong (National Central University, Taiwan), Worapot Sommool (National Central University, Taiwan), Ankhtuya Ochirbat (National University of Mongolia Ulaanbaatar, Mongolia), Yi-Cheng Chen (National Central University, Taiwan), Sorel Reisman (Managing Director, MERLOT.ORG California State University), and Timothy K. Shih (National Central University, Taiwan)

Technology-Enhanced Self-Regulated Learning: Assessment Support Through an Evaluation Centre
Iris Braun (Technische Universität Dresden), Tenshi Hara (Technische Universität Dresden), Felix Kapp (Technische Universität Dresden), Lucas Braeschke (Technische Universität Dresden), and Alexander Schill (Technische Universität Dresden)

Author Index - Volume 1
2018 42nd IEEE International Conference on Computer Software & Applications
COMPSAC 2018

Table of Contents

Message from the Standing Committee Chair - Volume 2 .................................................. xxiv
Message from the Steering Committee Vice Chair - Volume 2 ............................................ xxvi
Foreword from the 2018 General Chairs - Volume 2 .......................................................... xxvii
Message from the Program Chairs - Volume 2 .................................................................. xxix
Message from the Workshops Chairs - Volume 2 ............................................................... xxxi
COMPSAC 2018 Organizers - Volume 2 ............................................................................ xxxv
COMPSAC 2019 Committee - Volume 2 ............................................................................ liii

COMPSAC 2018 Workshops

SCA: Smart Computing & Applications

Message from the SCA 2018 Workshop Organizers ............................................................... 1
William Cheng-Chung Chu (Tunghai University, Taiwan) and Chih-Hung Chang (Providence University, Taiwan)

SCA 1

Smart Applications in Heat and Power Systems ................................................................. 2
Eugene Voloshin (Institute for Automation and Control Processes FEB RAS, Vladivostok, Russia), Valeri Chipulis (Institute for Automation and Control Processes FEB RAS, Vladivostok, Russia), and Roman Kuznetsov (1. Laboratory of Technical Diagnostics Institute for Automation and Control Processes FEB RAS, Vladivostok, Russia 2. Department of Information Technologies and Systems, Vladivostok State University Economics and Service, Vladivostok, Russia)

A Design of IoT-Based Searching System for Displaying Victim’s Presence Area .......... 8
M. Rosyidi (Nara Institute of Science and Technology, Japan), Ratih H. Puspita (Nara Institute of Science and Technology, Japan), Shigeru Kashihara (Nara Institute of Science and Technology, Japan), Doudou Fall (Nara Institute of Science and Technology, Japan), and Kazushi Ikeda (Nara Institute of Science and Technology, Japan)

A Feature Envy Detection Method Based on Dataflow Analysis .................................... 14
Woei-Kae Chen (National Taipei University of Technology, Taiwan), Chien-Hung Liu (National Taipei University of Technology, Taiwan), and Bo-Hong Li (National Taipei University of Technology, Taiwan)
SCA 2

How Agile Impacts a Software Corporation: An Empirical Study .......................................................... 20
Hwai-Jung Hsu (Feng Chia University) and Yves Lin (Titansoft Pte. Ltd.)

Time-Aware Recommendation Based on User Preference Driven ......................................................... 26
Thitiporn Neammanee (Chulalongkorn University) and Saranya Maneeroj (Chulalongkorn University)

Smart Block: A Visual Programming Environment for SmartThings .................................................... 32
Nayeon Bak (Sookmyung Women's University, Korea), Byeong-Mo Chang (Sookmyung Women's University, Korea), and Kwanghoon Choi (Chonnam National University, Korea)

Improving the Smartness of Cloud Management via Machine Learning Based Workload Prediction ............. 38
Yongjia Yu (Changzhou College of Information Technology), Vasu Jindal (UTD), Farokh Bastani (UTD), Fang Li (UTD), and I-Ling Yen (UTD)

SCA 3

A New Way of Being Smart? Creative Computing and Its Applications in Tourism ...................................... 45
Lu Zhang (Beijing Union University), Hongji Yang (Leicester University), Chi Zhang (Beijing Union University), and Nao Li (Beijing Union University)

A Wisdom Search Engine ......................................................................................................................... 51
Hongji Yang (Leicester University), Lin Zou (Bath Spa University), Qinyun Liu (Bath Spa University), and Sicong Ma (Bath Spa University)

Successive POI Recommendation with Category Transition and Temporal Influence ................................... 57
I-Cheng Lin (National Chiao Tung University, Taiwan), Yi-Shu Lu (National Chiao Tung University, Taiwan), Wen-Yueh Shih (National Chiao Tung University, Taiwan), and Jiun-Long Huang (National Chiao Tung University, Taiwan)

SCA 4A

Indoor Augmented Reality Using Deep Learning for Industry 4.0 Smart Factories ...................................... 63
Hanas Subakti (National Central University, Taiwan) and Jehn-Ruey Jiang (National Central University, Taiwan)

NFS: An Algorithm for Avoiding Restarts to Improve the Efficiency of Crawling Android Applications .......... 69
Chien-Hung Liu (National Taipei University of Technology), Woei-Kae Chen (National Taipei University of Technology), and Shu-Hang Ho (National Taipei University of Technology)

Test Command Auto-Wait Mechanisms for Record and Playback-Style Web Application Testing .................. 75
Shin-Jie Lee (National Cheng Kung University), Yu-Xian Chen (National Cheng Kung University), Shang-Pin Ma (National Taiwan Ocean University), and Wen-Tin Lee (National Kaohsiung Normal University)
Using Service Dependency Graph to Analyze and Test Microservices ............................... 81
Shang-Pin Ma (National Taiwan Ocean University), Chen-Yuan Fan
(National Taiwan Ocean University), Yen Chuang (National Taiwan Ocean
University), Wen-Tin Lee (National Kaohsiung Normal University),
Shin-Jie Lee (National Cheng Kung University), and Nien-Lin Hsueh
(Feng Chia University)

SCA 4B

The Implementation of a Data-Accessing Platform Built from Big Data Warehouse of Electric Loads .......... 87
Sheng-Cang Chou (Tunghai University), Chao-Tung Yang (Tunghai
University), Fuu-Cheng Jiang (Tunghai University), and Chih-Hung Chang
(Providence University)

The Integration of Shared Storages with the CephFS and Rados Gateway for Big Data Accessing ............... 93
Jia-Yow Weng (Tunghai University), Chao-Tung Yang (Tunghai University,
Taiwan), and Chih-Hung Chang (Providence University, Taiwan)

The Learning Effectiveness Analysis of JAVA Programming with Automatic Grading System .................. 99
Chorng-Shiu Koong (National Taichung University of Education,
Taichung, Taiwan), Hsin-Ying Tsai (National Taichung University of
Education, Taichung, Taiwan), Yi-Yang Hsu (National Taichung
University of Education, Taichung, Taiwan), and Yeh-Cheng Chen
(Department of Computer Science, University of California)

AIML: Advances in AI and Machine Learning

Message from the AMIL 2018 Workshop Organizers .............................................................. 105
San Murugesan (BRITE Professional Services) and Takahira Yamaguchi
(Keio University, Japan)

AIML 1

Review of Small Data Learning Methods ............................................................. 106
Xiali Li (Minzu University of China), Songting Deng (Minzu University
of China), Song Wang (Minzu University of China), Zhengyu Lv (Minzu
University of China), and Licheng Wu (Minzu University of China)

A Deep Learning Approach for Estimating Inventory Rebalancing Demand in Bicycle Sharing Systems .... 110
Petar Mrazovic (KTH Royal Institute of Technology, Sweden), Josep Luis
Larriba-Pey (UPC Polytechnic University of Catalonia, Spain), and
Mihhail Matskin (KTH Royal Institute of Technology, Sweden)

On Learning Fuel Consumption Prediction in Vehicle Clusters ............................................. 116
Victor Parque (Waseda University) and Tomoyuki Miyashita (Waseda
University)

An Approach to Proposing New Business Models Basing on Association Rule Learning, BP Neural Network
and Creative Computing ......................................................................................... 122
Qinyun Liu (Bath Spa University), Lin Zou (Bath Spa University), Hua
Zhou (Southwest Forestry University), and Hongji Yang (University of
Leicester)
Mining Sequential Patterns to Explore Users’ Learning Behavior in a Visual Programming App .......................... 126
Wen-Chung Shih (Asia University)

Predicting Decisions of the Philippine Supreme Court Using Natural Language Processing and Machine Learning ............................................................................................................................................. 130
Michael Benedict L. Virtucio (Advanced Science and Technology Institute, Philippines), Jeffrey A. Aborot (Advanced Science and Technology Institute, Philippines), John Kevin C. Abonita (Advanced Science and Technology Institute, Philippines), Roxanne S. Aviñante (Advanced Science and Technology Institute, Philippines), Rother Jay B. Copino (Advanced Science and Technology Institute, Philippines), Michelle P. Neverida (Advanced Science and Technology Institute, Philippines), Vanesa O. Osiana (Advanced Science and Technology Institute, Philippines), Elmer C. Peramo (Advanced Science and Technology Institute, Philippines), Joanna G. Syjuco (Advanced Science and Technology Institute, Philippines), and Glenn Brian A. Tan (Advanced Science and Technology Institute, Philippines)

Prediction Method of Blasting Vibration by Optimized GEP Based on Spark ................................................................. 136
Yunlan Wang (Northwestern Polytechnical University, Xi’an, Shaanxi, China), Bin Zhang (Northwestern Polytechnical University, Xi’an, Shaanxi, China), Tianhai Zhao (Northwestern Polytechnical University, Xi’an, Shaanxi, China), Zhengxiong Hou (Northwestern Polytechnical University, Xi’an, Shaanxi, China), Xiangyu Wu (Northwestern Polytechnical University, Xi’an, Shaanxi, China), and Hussain Khanzada Mu’azzamil (Northwestern Polytechnical University, Xi’an, Shaanxi, China)

Empirical Evaluation of Idle-Time Analysis Driven Improved Decision Making by Always-On Agents .......... 141
Sravyasri Garapati (International Institute of Information Technology Hyderabad, India) and Kamalakar Karlapalem (International Institute of Information Technology Hyderabad, India)

Practice of Multi-robot Teahouse Based on PRINTEPS and Evaluation of Service Quality ............................ 147
Takeshi Morita (Keio University), Naho Kashiwagi (Keio University), Ayanori Yoroza (Keio University), Michael Walch (University of Vienna), Hideo Suzuki (Keio University), Dimitris Karagiannis (University of Vienna), and Takahira Yamaguchi (Keio University)

Shun Moriya (Tokyo University of Technology, Japan) and Chihiro Shibata (Tokyo University of Technology, Japan)
Understanding Mindsets Across Markets, Internationally: A Public-Private Innovation Project for Developing a Tourist Data Analytic Platform

Kristoffer Jon Albers (Technical University of Denmark), Mikkel N. Schmidt (Technical University of Denmark), Morten Mørup (Technical University of Denmark), Marisciel Litong-Palima (Copenhagen Business School), Rasmus Bonnevie (Technical University of Denmark), and Fumiko Kano Glückstad (Copenhagen Business School)

Modified Memetic Self-Adaptive Firefly Algorithm for 2D Fractal Image Reconstruction

Akemi Gálvez (Toho University, Japan & University of Cantabria, Spain) and Andrés Iglesias (Toho University, Japan & University of Cantabria, Spain)

AIML 4

Approximation of Time-Consuming Simulation Based on Generative Adversarial Network

Ryohei Orihara (Toshiba, Japan), Ryota Narasaki (Toshiba Memory, Japan), Yuma Yoshinaga (Toshiba Memory, Japan), Yasuhiro Morioka (Toshiba Memory, Japan), and Yoshiyuki Kokojima (Toshiba, Japan)

Model-Space Regularization and Fully Interpretable Algorithms for Postural Control Quantification

Alice Nicolaë (CMLA, ENS Paris Saclay, France) and Julien Audiffren (Exascale Infolab, Fribourg University, Switzerland)

Generation of Character Illustrations from Stick Figures Using a Modification of Generative Adversarial Network

Yuuya Fukumoto (Tokyo University of Technology, Japan), Daiki Shimizu (Tokyo University of Technology), and Chihiro Shibata (Tokyo University of Technology)

NDFMF: An Author Name Disambiguation Algorithm Based on the Fusion of Multiple Features

Xiaolong Xu (Nanjing University of Posts and Telecommunications), Yongping Li (Nanjing University of Posts and Telecommunications), Mark Liptrott (Edge Hill University), and Nik Bessis (Edge Hill University)

ADMNET: Architecture, Design, Deployment & Management of Networks & Applications

Message from the ADMNET 2018 Workshop Organizers

Takashi Yamanoue (Fukuyama University, Japan), Hiroki Kashiwazaki (Osaka University, Japan), Yong Jin (Tokyo Institute of Technology, Japan), and Ruediger Gad (Terma GmbH, Germany)

ADMNET 1: PERFORMANCE EVALUATION & IMPROVEMENT

Development and Evaluation of the MEC Platform Supporting the Edge Instance Mobility

Tohru Kondo (Hiroshima University), Keita Isawaki (Hiroshima City University), and Kaori Maeda (Hiroshima City University)
ADMNET 2: PERFORMANCE EVALUATION & IMPROVEMENT

Towards Effective Generation of Synthetic Memory References Via Markovian Models ........................................... 199
Alfredo Cuzzocrea (University of Trieste and ICAR-CNR), Enzo Mumolo
(University of Trieste), Marwan Hassani (Eindhoven University of
Technology), and Giorgio Mario Grasso (University of Messina)

Throughput Improvement of MPTCP by Selective Bicasting with Cross-Layer Control in Wireless
Environment ......................................................................................................................................................... 204
Masami Fukuyama (Tokyo University of Agriculture and Technology),
Nariyoshi Yamai (Tokyo University of Agriculture and Technology),
Satoshi Ohzahata (The University of Electro-Communications), and Naoya
Kitagawa (Tokyo University of Agriculture and Technology)

System Resource Management to Control the Risk of Data-Loss in a Cloud-Based Disaster Recovery ........... 210
Yuichi Taguchi (Hitachi, Ltd., Japan) and Tsutomu Yoshinaga
(University of Electro-Communications, Japan)

A Load-Balanced Approach to Time Efficient Resource Scheduling in SDN-Enabled Data Center .............. 216
Sun Huaiying (East China University of Science and Technology,
Shanghai, China), Yu Huiqun (East China University of Science and
Technology, Shanghai, China), Fan Guisheng (East China University of
Science and Technology, Shanghai, China), and Chen Liqiong (Shanghai
Institute of Technology, Shanghai, China)

ADMNET 3: SECURITY & MANAGEMENT

On the Confirmation Method of the User’s Record of the GakuNinMoodle ......................................................... 222
Nobukuni Hamamoto (Library and Information Technology Center, Gunma
University, Japan), Shigetoshi Yokoyama (Library and Information
Technology Center, Gunma University, Japan), and Hiroshi Ueda
(Academic Center for Computing and Media Studies, Kyoto University,
Japan)

Large-Scale Certificate Management on Multi-Tenant Web Servers .............................................................. 228
Ryosuke Matsumoto (GMO Pepabo, Inc.), Kenji Rikitake (GMO Pepabo, Inc.
/ KRPEO), and Kentaro Kuribayashi (GMO Pepabo, Inc.)

Atsuo Hazeyama (Tokyo Gakugei University, JAPAN), Shun’ichi Tanaka
(Tokyo Gakugei University, JAPAN), Takafumi Tanaka (Tokyo University
of Agriculture and Technology, JAPAN), Hiroaki Hashiura (Nippon
Institute of Technology), Seiji Munetoh (IBM Japan Ltd., JAPAN), Takao
Okubo (Institute of Information Security), Haruhiko Kaiya (Kanagawa
University), Hironori Washizaki (Waseda University, JAPAN), and
Nobukazu Yoshioka (National Institute of Informatics, JAPAN)

CDS: Consumer Devices & Systems

Message from the CDS 2018 Workshop Organizers ......................................................................................... 240
Ryozo Kiyohara (Kanagawa Institute of Technology, Japan), Yasuo Okabe
(Kyoto University, Japan), and Atsushi Tagami (KDDI Research, Inc.,
Japan)
CDS 1

Community Energy Management System To Encourage Power Saving Competition ................................. 241
Takahiro Fujiwara (Doshisha University), Toshihiko Tanaka (Doshisha University), Kai Takashima (Doshisha University), and Shigeo Kaneda (Doshisha University)

Development of Bicycle Simulator with Tilt Angle Control Tilt Angle .......................................................... 247
Tetsuji Yamaguchi (Doshisha University), Akira Yamada (Doshisha University), Takeshi Fujitaka (Kyoto Shisaku Corporation), Ryoichi Takahashi (Doshisha University), Tetsuya Shimada (Doshisha University), Yuki Ishida (Doshisha University), Koichiro Ueda (Doshisha University), and Shigeo Kaneda (Doshisha University)

Interaction with Platform Games Using Smartwatches and Continuous Gesture Recognition: A Case Study .... 253
Thamer Horbylon Nascimento (Goiano Federal Institute, Brazil), Fabrizzio Alphonsus Alves de Melo Nunes Soares (Federal University of Goiás, Brazil), Hugo Alexandre Dantas do Nascimento (Federal University of Goiás, Brazil), Rogerio Lopes Salvini (Federal University of Goiás, Brazil), Mateus Machado Luna (Federal University of Goiás, Brazil), Cristhiane Gonçalves (Federal University of Goiás, Brazil), and Eduardo Faria de Souza (Federal University of Goiás, Brazil)

Information Harvesting Method by an Energy Harvesting Device with Multiple Microcontrollers .................. 259
Tadanobu Tsunoda (Fujitsu Laboratories Ltd.) and Kazuaki Nimura (Fujitsu Laboratories Ltd.)

CDS 2

Adapted Decision Support Service Based on the Prediction of Offline Consumers' Real-Time Intention and Devices Interactions ................................................................. 266
Fanjuan Shi (Axys Consultants SAS, France) and Chirine Ghedira Guegan (University of Lyon, France)

Text Entry on Smartwatches: A Systematic Review of Literature ................................................................. 272
Mateus Machado Luna (Instituto de Informática, Universidade Federal de Goiás), Fabrizzio Alphonsus Alves de Melo Nunes Soares (Instituto de Informática, Universidade Federal de Goiás), Hugo Alexandre Dantas do Nascimento (Instituto de Informática, Universidade Federal de Goiás), Joyce Siqueira (Instituto de Informática, Universidade Federal de Goiás), Eduardo Faria de Souza (Instituto de Informática, Universidade Federal de Goiás), Thamer Horbylon Nascimento (Instituto de Informática, Universidade Federal de Goiás), and Ronaldo Martins da Costa (Instituto de Informática, Universidade Federal de Goiás)

The Use of System Development Methodologies in the Development of Mobile Applications: Are they Worthy of Use? ........................................................................................................ 278
Wilfred C. Okonkwo (North West University) and Magda Huisman (North West University)
Situation Based Energy Management Framework on Mobile Devices ................................................................. 284

Chen-Yeou Yu (Iowa State University), Richard O. Oyeleke (Iowa State University), and Carl K. Chang (Iowa State University)

CDS 3

Application on Intersection Classification Algorithm Based on Clustering Analysis ........................................... 290

Dong Chen (Shanghai Institute of Technology, China) and Hao Wang (Shanghai Institute of Technology, China)

Using Interactive E-Books in Elementary School Origami Activities: Analysis of Learning Effect, Learning Motivation, and Cognitive Load ................................................................. 296

Wen-Jung Chu (National Taichung University of Education, Taiwan) and Hong-Ren Chen (National Taichung University of Education, Taiwan)

Process Modeling, Behavior Analytics and Group Performance Assessment of e-Learning Logs Via Fuzzy Miner Algorithm ................................................................. 304

Wichian Premchaiswadi (Siam University), Parham Porouhan (Siam University), and Nucharee Premchaiswadi (Dhurakij Pundit University)

Who are Interested in Open Education? An Analysis of the Participants in the First MOOC of the IEEE Education Society ................................................................................. 310

Rosa Cabedo (Technical University of Madrid, Spain), Edmundo Tovar (Technical University of Madrid, Spain), Sergio Martín (National Distance Education University, Spain), Martín Llamas (University of Vigo, Spain), Manuel Caeiro (University of Vigo, Spain), Oscar Martínez (Miguel Hernández University, Spain), Rebecca Strachan (Northumbria University, United Kingdom), Manuel Castro (National Distance Education University, Spain), and Sorel Reisman (California State University, USA)

ESAS: E-Health Systems & Web Technologies

Message from the ESAS 2018 Workshop Organizers .................................................................................. 315

Atilla Elci (Aksaray University, Turkey) and Duygu Celik Ertugrul (Eastern Mediterranean University, Turkey)

ESAS 1: E-HEALTH AND STAYING SMARTER

Situ-Centric Reinforcement Learning for Recommendation of Tasks in Activities of Daily Living In Smart Homes ...................................................................... 317

Richard O. Oyeleke (Iowa State University, USA), Chen-Yeou Yu (Iowa State University, USA), and Carl K. Chang (Iowa State University, USA)

Development of a Performance Visualization Model of Basic Life Support Training with Feedback Devices for Mobile Application ................................................................. 323

Navadon Khunlertgit (Chiang Mai University)
ESAS 2: APPLICATIONS FOR E-HEALTH AND STAYING SMARTER

Ontology-Based Obesity Tracking System for Children and Adolescents .................................................. 329
Özgür Taçyıldız (Eastern Mediterranean University, Turkey), Duygu Çelik Ertural (Eastern Mediterranean University, Turkey), Yltan Bitirim (Eastern Mediterranean University, Turkey), Nee Akcan (Near East University, Turkey), and Atilla Elçi (Aksaray University, Turkey)

Are mHealth Apps Secure? A Case Study ................................................................. 335
Chiara Braghin (Università degli Studi di Milano), Stelvio Cimato (Università degli Studi di Milano), and Alessio Della Libera (Università degli Studi di Milano)

ESAS 3: MONITORING FOR E-HEALTH AND STAYING SMARTER

An Android Application for Geolocation Based Health Monitoring, Consultancy and Alarm System .......... 341
Emre Oner Tartan (Baskent University, Turkey) and Cebrail Ciflikli (Erciyes University, Turkey)

Knowledge Based e-Health Surveillance System for Predicting Hospital Acquired Infections ................. 345
Amin Y. Noaman (King Abdulaziz University, Jeddah, Saudi Arabia), Nabeela Al-Abdullah (King Abdulaziz University, Jeddah, Saudi Arabia), Arwa Jamjoom (King Abdulaziz University, Jeddah, Saudi Arabia), Abdul Hamid M. Ragab (King Abdulaziz University, Jeddah, Saudi Arabia), Farrukh Nadeem (King Abdulaziz University, Jeddah, Saudi Arabia), and Anser G. Ali (King Abdulaziz University, Jeddah, Saudi Arabia)

CFSE: Computer Forensics in Software Engineering

Message from the CFSE 2018 Workshop Organizers ................................................................. 352
Ryoichi Sasaki (Tokyo Denki University, Japan), Tetsutaro Uehara (Ritsumeikan University, Japan), and Jigang Liu (Metropolitan State University, USA)

CFSE 1

Video Forensics for Detecting Shot Manipulation Using the Information of Deblocking Filtering ............... 353
Chen-Kuang Hsieh (National Central University, Taiwan), Ching-Chun Chiu (National Central University, Taiwan), and Po-Chyi Su (National Central University, Taiwan)

Design Scheme of Copyright Management System Based on Digital Watermarking and Blockchain ........ 359
Zhaoxiong Meng (Kanagawa University, Japan), Tetsuya Morizumi (Kanagawa University, Japan), Sumiko Miyata (Shibaura Institute of Technology, Japan), and Hirotsugu Kinoshita (Kanagawa University, Japan)

Copy-move Forgery Detection Using GLCM-Based Rotation-Invariant Feature: A Preliminary Research ....... 365
Songpon Teerakanok (Ritsumeikan University, Japan) and Tetsutaro Uehara (Ritsumeikan University, Japan)
CFSE 2

The Expansion of Source Code Abbreviations Using a Language Model ............................................ 370
Abdulrahman Alatawi (Saudi Electronic University), Weifeng Xu (Bowie State University), and Jie Yan (Bowie State University)

Modeling and Verifying OpenFlow Scheduled Bundle Mechanism Using CSP ............................................ 376
Huwen Wang (East China Normal University), Huibiao Zhu (East China Normal University), Lili Xiao (East China Normal University), Wanling Xie (East China Normal University), and Gang Lu (East China Normal University)

CFSE 3

A high-Capacity Watermarking Algorithm Using two Bins Histogram Modification ............................................ 382
Zhen Yue (Information Security Center, Beijing University of Posts and Telecommunications, Beijing, China), Zichen Li (School of Information Engineering, Beijing Institute of Graphic Communication, Beijing, China), Peifei Song (School of Information Engineering, Beijing Institute of Graphic Communication, Beijing, China), Shumei Zhang (School of Information Engineering, Beijing Institute of Graphic Communication, Beijing, China), and Yixian Yang (Information Security Center, Beijing University of Posts and Telecommunications, Beijing, China)

TRAC: A Therapeutic Regimen-Oriented Access Control Model in Healthcare ............................................ 388
Hongcan Gao (Nankai University), Yanfeng Wu (Nankai University), Sihan Xu (Nankai University), Chenkai Guo (Nankai University), Xiaolei Hou (Nankai University), and Jing Xu (Nankai University)

Enhancing Inter-Node Process Migration for Load Balancing on Linux-Based NUMA Multicore Systems ...... 394
Mei-Ling Chiang (National Chi Nan University, Puli, Nantou, Taiwan, R.O.C.), Shu-Wei Tu (National Chi Nan University, Puli, Nantou, Taiwan, R.O.C.), Wei-Lun Su (National Chi Nan University, Puli, Nantou, Taiwan, R.O.C.), and Chen-Wei Lin (National Chi Nan University, Puli, Nantou, Taiwan, R.O.C.)

MEDICOMP: Medical Computing

Message from the MediComp 2018 Workshop Organizers ................................................................. 400
Ji-Jiang Yang (Tsinghua University, China), Sheikh Iqbal Ahamed (Marquette University, USA), and Jianqiang Li (Beijing University of Technology, China)

MEDICOMP 1

Emotion Recognition Based on Photoplethysmogram and Electroencephalogram ............................................ 402
Zhongkai Tong (Yanshan University, China), XianXiang Chen (Institute of Electronics Chinese Academy of SciencesChina), Zhengling He (Chinese Academy of SciencesChina), Kai Tong (Yanshan University, China), Zhen Fang (Institute of Electronics Chinese Academy of SciencesChina), and Xianlong Wang (University of Science and Technology BeijingChina)
Gastric Pathology Image Recognition Based on Deep Residual Networks ................................. 408
Bo Liu (Beijing University of Technology), Kelu Yao (Beijing University of Technology), Mengmeng Huang (Beijing University of Technology), Jiahui Zhang (Beijing University of Technology), Yong Li (Beijing University of Technology), and Rong Li (Beijing University of Technology)

Vessel Recognition of Retinal Fundus Images Based on Fully Convolutional Network ................ 413
Jianqiang Li (Beijing University of Technology, China), Qidong Hu (Beijing University of Technology, China), Azhar Imran (Beijing University of Technology, China), Li Zhang (Beijing Tongren Eye Center, Beijing Tongren Hospital, Capital Medical University, China), Ji-jiang Yang (Tsinghua University, China), and Qing Wang (Tsinghua University, China)

MEDICOMP 2

A Childhood Disease Database Based on Word Segmentation Technology: Research and Practice .......... 419
Shu Wang (Shanghai Children’s Hospital), Shishi Ma (School of Public Health, Shanghai Jiaotong University), Min Chen (Shanghai Children’s Hospital), Mingyue Wei (Shanghai Children’s Hospital), and Guangjun Yu (Shanghai Children’s Hospital)

STA: Software Test Automation

STA 1: TOOLS & ADVANCED TECHNIQUES

Property-Based Testing of Browser Rendering Engines with a Consensus Oracle ................................ 424
Joel Martin (University of Texas at Arlington) and David Levine (University of Texas at Arlington)

A Projection-Based Approach for Memory Leak Detection ................................................................. 430
Xiaohui Sun (Nankai University, China), Sihan Xu (Nankai University, China), Chenkai Guo (Nankai University, China), Jing Xu (Nankai University, China), Naipeng Dong (National University of Singapore, Singapore), Xiujuan Ji (Nankai University, China), and Sen Zhang (Nankai University, China)

STA 2: FAULT PREDICTION, INJECTION & COVERAGE

Generating Realistic Logically Unreasonable Faulty Data for Fault Injection ...................................... 436
Ju Qian (Nanjing University of Aeronautics and Astronautics, China), Fusheng Lin (Nanjing University of Aeronautics and Astronautics, China), Changjian Li (Nanjing University of Aeronautics and Astronautics, China), Zhiyi Zhang (Nanjing University of Aeronautics and Astronautics, China), and Zhe Chen (Nanjing University of Aeronautics and Astronautics, China)
High-Frequency Keywords to Predict Defects for Android Applications ........................................... 442
Yaqing Fan (Nankai University, Tianjin, China), Xinya Cao (Nankai University, Tianjin, China), Jing Xu (Nankai University, Tianjin, China), Sihan Xu (Nankai University, Tianjin, China), and Hongji Yang (Bath Spa University, Bath, England)

STA 3: MONITORING & PRIORITIZATION

Synthetic Runtime Monitoring of Microservices Software Architecture ........................................... 448
Chadarat Phipathananunth (University of the Thai Chamber of Commerce, Thailand) and Panuchart Bunyakiati (University of the Thai Chamber of Commerce, Thailand)

Test Case Prioritization for GUI Regression Testing Based on Centrality Measures ................................... 454
Yijie Ren (Beihang University, China), Bei-Bei Yin (Beihang University, China), and Bin Wang (Beihang University, China)

STPSA: Security, Trust, and Privacy for Software Applications

Message from the STPSA 2018 Workshop Organizers ................................................................. 460
Sheikh Iqbal Ahamed (Marquette University, USA) and Mohammad Zulkernine (Queen's University, Canada)

STPSA 1

Identifying Security Spots for Data Integrity .................................................................................. 462
Pushkar Ogale (Stephen F. Austin State University, USA), Michael Shin (Texas Tech University, USA), and Sasanka Abeysinghe (Texas Tech University, USA)

A Privacy Safeguard Framework for a WebRTC/WoT-Based Healthcare Architecture ...................... 468
Saad El Jaouhari (IMT Atlantique, IRISA, France) and Ahmed Bouabdallah (IMT Atlantique, IRISA, France)

Static Analysis of HIPPA Security Requirements in Electronic Health Record Applications .................. 474
Maryam Farhadi (Kennesaw State University), Hisham Haddad (Kennesaw State University), and Hossain Shahriar (Kennesaw State University)

STPSA 2

Resource and Role Hierarchy Based Access Control for Resourceful Systems ...................................... 480
Nidhiben Solanki (University of Texas at Dallas), Yongtao Huang (University of Texas at Dallas), I-Ling Yen (University of Texas at Dallas), Farokh Bastani (University of Texas at Dallas), and Yuqun Zhang (Southern University of Science & Technology)

An Unknown Malware Detection Using Execution Registry Access .................................................. 487
Kento Kono (Kyushu University, Japan), Sanouphab Phomkeona (Kyushu University, Japan), and Koji Okamura (Kyushu University, Japan)
A Security Assessment of HCE-NFC Enabled E-Wallet Banking Android Apps ........................................ 492
Ratinder Kaur (Faculty of Computer Science, University of New Brunswick, Fredericton, Canada), Yan Li (Faculty of Computer Science, University of New Brunswick, Fredericton, Canada), Junaid Iqbal (Faculty of Computer Science, University of New Brunswick, Fredericton, Canada), Hugo Gonzalez (Faculty of Computer Science, University of New Brunswick, Fredericton, Canada), and Natalia Stakhanova (Faculty of Computer Science, University of New Brunswick, Fredericton, Canada)

STPSA 3

Chained of Things: A Secure and Dependable Design of Autonomous Vehicle Services ................................ 498
Md Golam Moula Mehedi Hasan (Tennessee Tech University, USA), Amarjit Datta (Tennessee Tech University, USA), Mohammad Ashiqur Rahman (Tennessee Tech University, USA), and Hossain Shahriar (Kennesaw State University, USA)

Removing Software Vulnerabilities During Design ................................................................. 504
George Yee (Aptusinnova Inc., Canada; Carleton University, Canada)

A Best-Effort Damage Mitigation Model for Cyber-Attacks on Smart Grids .................................... 510
Mohammad Ashrafuzzaman (University of Idaho, Moscow, Idaho, USA), Hasan Jamil (University of Idaho, Moscow, Idaho, USA), Yacine Chakhchoukh (University of Idaho, Moscow, Idaho, USA), and Frederick Sheldon (University of Idaho, Moscow, Idaho, USA)

BIOT: Big Data Management for the Internet of Things

Message from the BIOT 2018 Workshop Organizers ........................................................................ 516
Hideya Ochiai (The University of Tokyo, Japan), Kurt Geihs (University of Kassel, Germany), and Susumu Takeuchi (NTT, Japan)

BIOT 1: IoT PLATFORM AND USE CASES

Exploratory Study for Data Visualization in Internet of Things ....................................................... 517
Mohamad Yuzrie Khalid (Swinburne University of Technology Sarawak Campus), Patrick Hang Hui Then (Swinburne University of Technology Sarawak Campus), and Valliappan Raman (Swinburne University of Technology Sarawak Campus)

Real-Time Data-Intensive Telematics Functionalities at the Extreme Edge of the Network: Experience with the PrEstoCloud Project .......................................................... 522
Salman Taherizadeh (Artificial Intelligence Laboratory, Joze Stefan Institute, Ljubljana, Slovenia and CVS Mobile d.d., Ljubljana, Slovenia), Blaz Novak (Artificial Intelligence Laboratory, Joze Stefan Institute, Ljubljana, Slovenia), Marija Komatar (CVS Mobile d.d., Ljubljana, Slovenia), and Marko Grobelnik (Artificial Intelligence Laboratory, Joze Stefan Institute, Ljubljana, Slovenia)

Secure IoT Agent Platform with m-Cloud Distributed Statistical Computation Mechanism .................. 528
Shinji Shimojo (Osaka University) and Ikuo Nakagawa (Intec Inc.)
An Accurate Model for Hurricane Trajectory Prediction ................................................................. 534  
Taylor S. Cox (University of Manitoba, Canada), Calvin S.H. Hoi  
(University of Manitoba, Canada), Carson K. Leung (University of  
Manitoba, Canada), and Caden R. Marofke (University of Manitoba,  
Canada)

BIOT 2: IoT DATA UTILIZATION

Introducing Hierarchical Clustering with Real Time Stream Reasoning into Semantic-Enabled IoT .............. 540  
Jingyu Sun (NTT Corporation), Masato Kamiya (NTT Corporation), and  
Susumu Takeuchi (NTT Corporation)

A New Combined CNN-RNN Model for Sector Stock Price Analysis .............................................. 546  
Ruixun Zhang (MIT Laboratory for Financial Engineering), Zhaozheng  
Yuan (College of Computer and Control Engineering, Nankai University),  
and Xiuli Shao (College of Computer and Control Engineering, Nankai  
University)

Assisting Replace Method with Method Object: Selecting Fields and Preserving Data Access ..................... 552  
Andrea Fornaia (University of Catania, Italy) and Emiliano Tramontana  
(University of Catania, Italy)

SDIM: Secure Digital Identity Management

Message from the SDIM 2018 Workshop Organizers ........................................................................ 558  
Bian Yang (Norwegian University of Science and Technology, Norway),  
Julien Bringer (Smart Valor, Switzerland), and Hideaki Goto (Tohoku  
University, Japan)

SDIM 1

Secure and Long-Lived Wireless Sensor Network for Data Center Monitoring ..................................... 559  
Toyokazu Akiyama (Kyoto Sangyo University), Morito Matsuoka (Osaka  
University), Kazuhiro Matsuda (Osaka University), Yumi Sakemi (Fujitsu  
Laboratories Ltd.), and Hisashi Kojima (Fujitsu Laboratories Ltd.)

Towards an Operable Evaluation System for Evidence of Identity .................................................... 565  
Øyvind Anders Arnzen Toftegaard (Norwegian University of Science and  
Technology (NTNU)) and Bian Yang (Norwegian University of Science and  
Technology (NTNU))

SDIM 2

Texture Based Vein Biometrics for Human Identification: A Comparative Study .............................. 571  
Khayrul Bashar (Ochanomizu University, Tokyo, Japan) and Manzur  
Murshed (Federation University Australia, Melbourne, Australia)
Storage Protocol for Securing Blockchain Transparency ................................................................. 577
   Ryosuke Abe (Graduate School of Media and Governance, Keio University, Japan), Hiroki Watanabe (NTT Service Evolution Labs., NTT Corp., Japan), Shigenori Ohashi (NTT Service Evolution Labs., NTT Corp., Japan), Shigeru Fujimura (NTT Service Evolution Labs., NTT Corp., Japan), and Atsushi Nakadaira (NTT Service Evolution Labs., NTT Corp., Japan)

Sora Identity: Secure, Digital Identity on the Blockchain ..................................................................... 582
   Makoto Takemiya (Soramitsu) and Bohdan Vanieiev (Soramitsu Labs)

EACIS: Emotion & Affective Computing Interfaces & Systems

Message from the EACIS 2018 Workshop Organizers ........................................................................ 588
   Midori Sugaya (Shibaura Institute of Technology, Japan) and Yoshito Tobe (Aoyama Gakuin University, Japan)

EACIS 1

Human Emotional State Analysis During Driving Simulation Experiment Using Bio-Emotion Estimation Method .................................................................................................................. 589
   Midori Sugaya (Shibaura Institute of Technology), Issei Watanabe (Shibaura Institute of Technology), Reiji Yoshida (Shibaura Institute of Technology), and Feng Chen (Shibaura Institute of Technology)

Differences of Passenger Unease Emotional Areas, An Experimental Case Study ................................. 595
   Nahoko Takada (Hitachi, Ltd., Japan) and Shinji Nakagawa (Hitachi, Ltd., Japan)

Preliminary Reaction Analysis of Audience with Bio-Emotion Estimation Method ................................. 601
   Midori Sugaya (Shibaura Institute of Technology), Takuya Hiramatsu (Shibaura Institute of Technology), Reiji Yoshida (Shibaura Institute of Technology), and Feng Chen (Shibaura Institute of Technology)

EACIS 2

Influence of Hedonic State Visualization on Self and Surroundings ......................................................... 606
   Guillaume Lopez (Aoyama Gakuin University), Hiroko Tobase (Aoyama Gakuin University), and Naoya Isoyama (Kobe University)

An Experiment of Human Feeling for Hospitality Robot Measured with Biological Information ............... 611
   Midori Sugaya (Shibaura Institute of Technology), Yuki Nishida (Shibaura Institute of Technology), Reiji Yoshida (Shibaura Institute of Technology), and Yuya Takahashi (Shibaura Institute of Technology)
INFOFLOW: Flow Oriented Approaches in Internet of Things and Cyber-Physical Systems

INFOFLOW 1: BUILDING INFOFLOW ENVIRONMENT

Access Control Model for IoT Environment Including Automated Configuration .............................. 616
Kenta Yokogi (Tokyo University of Agriculture and Technology, Japan),
Naoya Kitagawa (Tokyo University of Agriculture and Technology, Japan),
and Nariyoshi Yamai (Tokyo University of Agriculture and Technology, Japan)

Near Cloud: Low-cost Low-Power Cloud Implementation for Rural Area Connectivity and Data Processing .... 622
Jose Paolo Talusan (Nara Institute of Science and Technology, Japan),
Yugo Nakamura (Nara Institute of Science and Technology, Japan),
Terahiro Mizumoto (Nara Institute of Science and Technology, Japan),
and Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

INFOFLOW 2: DATA PROCESSING ON INFOFLOW PLATFORM

A Social Sensor Visualization System for a Platform to Generate and Share Social Sensor Data ..................... 628
Zennosuke Aiko (Osaka University, Japan), Keisuke Nakashima (Osaka University, Japan),
Tomoki Yoshihisa (Osaka University, Japan), and Takahiro Hara (Osaka University, Japan)

Proposal of Automatic GPU Offloading Technology on Open IoT Environment ........................................... 634
Yoji Yamato (NTT Corporation), Tatsuya Demizu (NTT Corporation),
Hirofumi Noguchi (NTT Corporation), and Misao Kataoka (NTT Corporation)

Low-cost Pedestrian Counter Using Wi-Fi APs for Smart Building Applications ............................................ 640
Satomi Kura (Docomo Technology, inc.), Hirozumi Yamaguchi (Osaka University),
y and Yoh Shiraiishi (Future University Hakodate)

Dynamic Public Key Certificates for IoT and WSN Scenarios ................................................................. 646
Hung-Yu Chien (National ChiNan University)

NETSAP: Network Technologies for Security, Administration & Protection

Message from the NETSAP 2018 Workshop Organizers ................................................................. 652
Masaki Hashimoto (Institute of Information Security, Japan), Yoshiaki Hori (Saga University, Japan),
y and Yutaka Miyake (KDDI Research, Inc., Japan)

NETSAP 1

A Malware Beacon of Botnet by Local Periodic Communication Behavior .............................................. 653
Yi-Ren Yeh (National Kaohsiung Normal University), Ming-Kung Sun (Acer Incorporated),
y and C.-Y. Huang (Acer Incorporated)
Detecting Emerging Large-Scale Vulnerability Scanning Activities by Correlating Low-Interaction Honeypots with Darknet ................................................................. 658
  Ryoh Akiyoshi (Kyoto University, Japan), Daisuke Kotani (Kyoto University), and Yasuo Okabe (Kyoto University)

Lightweight Classification of IoT Malware Based on Image Recognition ......................................................... 664
  Jiawei Su (Kyushu University), Vargas Danilo Vasconcellos (Kyushu University), Sanjiva Prasad (Indian Institute of Technology Delhi India), Sgandurra Daniele (Royal Holloway University of London), Yaokai Feng (Kyushu University), and Kouichi Sakurai (Kyushu University)

NETSAP 2
Towards a Packet Traffic Genome Project as a Method for Realtime Sub-Flow Traffic Analysis .................. 670
  Marat Zhanikeev (Tokyo University of Science)

PDL: An Efficient Prediction-Based False Data Injection Attack Detection and Location in Smart Grid .......... 676
  Wanjiao Shi (Nanjing University of Posts and Telecommunications, China), Yufeng Wang (Nanjing University of Posts and Telecommunications, China), Qin Jin (Waseda University, Japan), and Jianhua Ma (Hosei University)

Formal Verification and Improvement of the PKMv3 Protocol Using CSP .................................................... 682
  Jinpeng Jiang (East China Normal University), Hongyan Mao (East China Normal University), Rumeng Shao (East China Normal University), and Yuanmin Xu (Leiden University)

SAPSE: Security Aspects in Processes and Services Engineering

Message from the SAPSE 2018 Workshop Organizers ..................................................................................... 688
  Stelvio Cimato (Università degli studi di Milano, Italy)

SAPSE 1
A New Paradigm to Address Threats for Virtualized Services ................................................................. 689
  Stefan Covaci (Technical University Berlin), Matteo Repetto (S3ITI Lab, CNIT), and Fulvio Risso (Politecnico di Torino)

Detecting Web Spams Using Evidence Theory ................................................................................................. 695
  Moitrayee Chatterjee (Texas Tech University) and Akbar Siami Namin (Texas Tech University)

LloPY: A Legal Compliant Ontology to Preserve Privacy for the Internet of Things .................................. 701
  Faiza Loukil (University of Lyon, University Jean Moulin Lyon 3, CNRS, LIRIS, FRANCE), Chirine Ghedira-Guegan (University of Lyon, University Jean Moulin Lyon 3, iaelyon school of Management, CNRS, LIRIS, FRANCE), Kouhould Boukadi (University of Sfax, Mir@cl Laboratory, Sfax, TUNISIA), and Aicha Nabila Benharkat (University of Lyon, INSALyon, CNRS, LIRIS, FRANCE)
Evaluation of the Effectiveness of Risk Assessment and Security Fatigue Visualization Model for Internal E-Crime ................................................................. 707
Takashi Hatashima (NTT Secure Platform Laboratories, Japan), Keita Nagai (Chiba Institute of Technology, Japan), Asami Kishi (Chiba Institute of Technology, Japan), Hikaru Uekusa (Chiba Institute of Technology, Japan), Shigeaki Tanimoto (Chiba Institute of Technology, Japan), Atsushi Kanai (Hosei University), Hitoshi Fuji (NTT Secure Platform Laboratories, Japan), and Kazuhiko Ohkubo (NTT Secure Platform Laboratories, Japan)

SAPSE 2

Understanding the Origins of Weak Cryptographic Algorithms Used for Signing Android Apps ......................... 713
Kanae Yoshida (Toho University), Hironori Imai (Toho University), Nana Serizawa (Waseda University), Tatsuya Mori (Waseda University), and Akira Kanaoka (Toho University)

Itzel Vazquez Sandoval (SnT, University of Luxembourg, Luxembourg) and Gabriele Lenzini (SnT, University of Luxembourg, Luxembourg)

BIG DATA WORKSHOP

An Efficient Approach to Forecasting Monthly Calls for Repair from Gas Consumers ........................................ 725
Huiqun Yu (East China University of Science and Technology), Cunbin Deng (East China University of Science and Technology), Guisheng Fan (East China University of Science and Technology), Liqiong Chen (Shanghai Institute of Technology), and Huaiying Sun (East China University of Science and Technology)

A Cooperated Data Management Platform for Coronary Heart Disease Early Identification and Risk Warning Research .................................................................
Peili Yang (East China Normal University Shanghai, China), Hui Zhao (East China Normal University Shanghai, China), Xuezhen Yin (East China Normal University Shanghai, China), Jian Ye (East China Normal University Shanghai, China), Lingfeng Yang (East China Normal University Shanghai, China), and Jimin Liang (Xidian University Xi’an, China)

QUORS: Quality Oriented Reuse of Software

Message from the QUORS 2018 Workshop Organizers ................................................................. 737
Xiaodong Liu (Edinburgh Napier University, UK) and Hongji Yang (University of Leicester, UK)

SUCCEEd: Support Mechanism for Creating and Executing Workflows for Decoupled SAS in IoT .................. 738
Belmondo Rodrigues Araújo Junior (Federal University of Ceará), Rossana Maria de Castro Andrade (Federal University of Ceará), Marcio Espíndola Freire Maia (Federal University of Ceará), and Tales Paiva Nogueira (Federal University of Ceará)
Towards Modelling and Reasoning About Uncertain Data of Sensor Measurements for Decision Support in Smart Spaces ................................................................. Oluwaseun Bamgboye (Edinburgh Napier University, Edinburgh, United Kingdom), Xiaodong Liu (Edinburgh Napier University, Edinburgh, United Kingdom), and Peter Cruickshank (Edinburgh Napier University, Edinburgh, United Kingdom)

Utilising Abstraction Techniques and Gaming Theory for Developing Intangible Cultural Heritage ...................... Sicong Ma (Bath Spa University), Hongji Yang (Leicester University), and Meiyu Shi (Beijing Union University)

Evaluate How Cyclomatic Complexity Changes in the Context of Software Evolution .......................... Huihui Liu (Southeast University), Xufang Gong (Southeast University), Li Liao (Southeast University), and Bixin Li (Southeast University)

IWFIT: Future Internet Technologies

Message from the IWFIT 2018 Workshop Organizers ................................................................. Hirovuki Ohsaki (Kwansei Gakuin University, Japan), Yasuo Okabe (Kyoto University, Japan), and Koji Okamura (Kyushu University, Japan)

An Adaptive Bandwidth Reservation Method for a Content-Centric Network ................................... Tomoharu Endo (The University of Electro-Communications, Japan), Atsuko Yokotani (The University of Electro-Communications, Japan), Satoshi Ohzahata (The University of Electro-Communications, Japan), Ryo Yamamoto (The University of Electro-Communications, Japan), and Toshihiko Kato (The University of Electro-Communications, Japan)

A Mixed Integer Programming Solution for Network Optimization Under Tunneling-Based Traffic Engineering Schemes ........................................................................ Tsubasa Munemitsu (Kyoto University), Daisuke Kotani (Academic Center for Computing and Media Studies, Kyoto University), and Yasuo Okabe (Academic Center for Computing and Media Studies, Kyoto University)

Bio-Inspired Model for Data Distribution in Fog and Mist Computing ........................................ Danilo Vasconcelos (Federal Institute of Ceara/ Federal University of Ceara), Valdenir Severino (Federal University of Ceara), Jose Neuman (Federal University of Ceara), Rossana Andrade (Federal University of Ceara), and Marcio Maia (Federal University of Ceara)

A Probabilistic Interest Packet Aggregation for Content-Centric Networking .................................... Yuichi Yasuda (Kwansei Gakuin University), Ryo Nakamura (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)

SIS-SS: Smart IoT Sensors and Social Systems for eHealth & Well Being Applications

Message from the SIS-SS 2018 Workshop Organizers ................................................................. Luca Vollero (Università Campus Bio-Medico di Roma, Italy) and Salvatore D’Antonio (Università di Napoli Parthenope, Italy)
A Comparison Study on Dynamic Duty Cycle and Dynamic Channel Polling Approaches for Wireless Sensor Networks

Shama Siddiqui (DHA Suffa University), Anwar Ahmed Khan (Institute of Business Administration), and Sayeed Ghani (Institute of Business Administration)

New RSSI-Based LoRa Localization Algorithms for Very Noisy Outdoor Environment

Ka-Ho Lam (Department of Electronic and Information Engineering, The Hong Kong Polytechnic University), Chi-Chung Cheung (Department of Electronic and Information Engineering), and Wah-Ching Lee (Department of Electronic and Information Engineering, The Hong Kong Polytechnic University)

A Smart Sensor Architecture for eHealth Applications

Ermanno Cordelli (Computational Systems and Bioinformatics Lab, Università Campus Bio-Medico di Roma), Giorgio Pennazza (Electronics for Sensor Systems Lab, Università Campus Bio-Medico di Roma), Marco Sabatini (Università Campus Bio-Medico di Roma), Marco Santonico (Electronics for Sensor Systems Lab, Università Campus Bio-Medico di Roma), and Luca Vollero (Electronics for Sensor Systems Lab, Università Campus Bio-Medico di Roma)

IEESD: Industrial Experience in Embedded Design

Message from the IEESD 2018 Workshop Organizers

Detlef Streitferdt (Ilmenau University of Technology, Germany), Tiberiu Seceleanu (ABB Corporate Research, Sweden ABB Corporate Research, Germany), and Philipp Nenninger (University of Applied Sciences Karlsruhe, Germany)

Increasing Efficiency in Data Flow Oriented Model Driven Software Development for Softcore Processors

Michael Kirchhoff (TU-Ilmenau), Jörn Weisensee (TU-Ilmenau), Detlef Streitferdt (TU-Ilmenau), Wolfgang Fengler (TU-Ilmenau), and Elena Rozova (TU-Ilmenau)

State Estimation Using Neural Networks in Industrial Processes

Philipp Nenninger (University of Applied Sciences Karlsruhe, Germany) and Nils Bieler (University of Applied Sciences Karlsruhe, Germany)

Traceability in Systems Engineering: An Avionics Case Study

Nasser Mustafa (University of Nottingham Ningbo China, Carleton University), Yvan Labiche (Carleton University), and Dave Towey (University of Nottingham Ningbo China)

Author Index - Volume 2