

2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC 2019)

**Milwaukee, Wisconsin, USA
15-19 July 2019**

**Volume 1
Pages 1-969**



**IEEE Catalog Number: CFP19061-POD
ISBN: 978-1-7281-2608-1**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP19061-POD
ISBN (Print-On-Demand):	978-1-7281-2608-1
ISBN (Online):	978-1-7281-2607-4
ISSN:	0730-3157

Additional Copies of This Publication Are Available From:

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

CURRAN ASSOCIATES INC.
proceedings
.com

2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC) **COMPSAC 2019**

Table of Contents

Message from the Standing Committee Chair .xxiv.....	
Message from the Standing Committee Vice Chair .xxvi.....	
Message from the 2019 General Chairs .xxvii.....	
Message from the Program Chairs .xxviii.....	
Message from COMPSAC 2019 Fast Abstract Track .xxix.....	
COMPSAC 2019 Organizers .xxx.....	

COMPSAC 2019 Symposia

SETA: Software Engineering Technologies & Applications

SETA 1

Statically-Directed Assertion Recommendation for C Programs .1.....	
<i>Cong Wang (Tsinghua University), Le Kang (Chinese Academy of Sciences), Renwei Zhang (Huawei Technologies), and Weiliang Yin (Huawei Technologies)</i>	
An Empirical Study on API-Misuse Bugs in Open-Source C Programs .11.....	
<i>Zuxing Gu (Tsinghua University), Jiecheng Wu (Tsinghua University), Jiaxiang Liu (Shenzhen University), Min Zhou (Tsinghua University), and Ming Gu (Tsinghua University)</i>	
Characterization and Prediction of Popular Projects on GitHub .21.....	
<i>Junxiao Han (Zhejiang University), Shuiguang Deng (Zhejiang University), Xin Xia (Monash University), Dongjing Wang (Hangzhou Dianzi University), and Jianwei Yin (Zhejiang University)</i>	

SETA 2

- SENSORY: Leveraging Code Statement Sequence Information for Code Snippets Recommendation .27.....
Lei Ai (Nanjing University of Aeronautics and Astronautics), Zhiqiu Huang (Nanjing University of Aeronautics and Astronautics), Weiwei Li (Nanjing University of Aeronautics and Astronautics), Yu Zhou (Nanjing University of Aeronautics and Astronautics), and Yaoshen Yu (Nanjing University of Aeronautics and Astronautics)
- Supporting Consistency in the Heterogeneous Design of Safety-Critical Software .37.....
Andrés Paz (École de Technologie Supérieure, Canada) and Ghizlane El Boussaidi (École de Technologie Supérieure, Canada)
- A Heuristic Approach to Break Cycles for the Class Integration Test Order Generation .47.....
Miao Zhang (City University of Hong Kong), Jacky Keung (City University of Hong Kong), Yan Xiao (City University of Hong Kong), Md Alamgir Kabir (City University of Hong Kong), and Shuo Feng (City University of Hong Kong)
- Assessing the Significant Impact of Concept Drift in Software Defect Prediction .53.....
Md Alamgir Kabir (City University of Hong Kong), Jacky W. Keung (City University of Hong Kong), Kwabena E. Benniny (Blekinge Institute of Technology), and Miao Zhang (City University of Hong Kong)

SETA 3

- In Search of Scientific Agile .59.....
Robert Ward (Iowa State University) and Carl K. Chang (Iowa State University)
- Learning-Based Anomaly Cause Tracing with Synthetic Analysis of Logs from Multiple Cloud Service Components .66.....
Yue Yuan (Renmin University of China), Han Anu (Renmin University of China), Wenchang Shi (Renmin University of China), Bin Liang (Renmin University of China), and Bo Qin (Renmin University of China)
- Using Client-Based Class Cohesion Metrics to Predict Class Maintainability .72.....
Musaad Alzahrani (Albaha University), Saad Alqithami (Albaha University), and Austin Melton (Kent State University)

SETA 4

- ParaAim: Testing Android Applications Parallel at Activity Granularity .81.....
Chun Cao (Nanjing University), Jing Deng (Nanjing University), Ping Yu (Nanjing University), Zhiyong Duan (Shenzhen Feixiang Software Consulting Co., Ltd), and Xiaoxing Ma (Nanjing University)
- A Comparative Study of the Effectiveness of Meta-Heuristic Techniques in Pairwise Testing .91.....
Salim Ali Khan Mohammad (BITS-PILANI Hyderabad Campus), Sathvik Vamshi Valepe (BITS-PILANI Hyderabad Campus), Subhrakanta Panda (BITS-PILANI Hyderabad Campus), and Rajita B.S.A.S (BITS-PILANI Hyderabad Campus)
- An Adaptive Approach to Recommending Obfuscation Rules for Java Bytecode Obfuscators .97.....
Yanru Peng (Shanghai Jiao Tong University), Yuting Chen (Shanghai Jiao Tong University), and Beijun Shen (Shanghai Jiao Tong University)

SETA 5

- AutoPer: Automatic Recommender for Runtime-Permission in Android Applications .107.....
Hongcan Gao (Nankai University), Chenkai Guo (Nankai University), Yanfeng Wu (Nankai University), Naipeng Dong (National University of Singapore), Xiaolei Hou (Nankai University), Sihan Xu (Nankai University), and Jing Xu (Nankai University)
- Metrics Driven Architectural Analysis using Dependency Graphs for C Language Projects .117.....
Devansh Tiwari (Waseda University), Hironori Washizaki (Waseda University), Yoshiaki Fukazawa (Waseda University), Tomoyuki Fukuoka (eXmotion Limited), Junji Tamaki (eXmotion Limited), Nobuhiro Hosotani (eXmotion Limited), and Munetaka Kohama (eXmotion Limited)
- Identifying the Challenges of the Blockchain Community from StackExchange Topics and Trends .123.....
Irfan Alahi (Bangladesh University of Engineering and Technology), Mubassher Islam (Bangladesh University of Engineering and Technology), Anindya Iqbal (Bangladesh University of Engineering and Technology), and Amiangshu Bosu (Wayne State University)

SETA 6

- An Empirical Study on the Spreading of Fault Revealing Test Cases in Prioritized Suites .129.....
Wesley N. M. Torres (Universidade Federal de Campina Grande, Brasil), Everton L. G. Alves (Universidade Federal de Campina Grande, Brasil), and Patrícia D. L. Machado (Universidade Federal de Campina Grande, Brasil)
- Supporting Decision Makers in Search-Based Product Line Architecture Design using Clustering .139.....
Willian Marques Freire (State University of Maringa, Brazil), Carlos Vinícius Bindewald (State University of Maringa, Brazil), Aline M. M. Miotto Amaral (State University of Maringa, Brazil), and Thelma Elita Colanzi (State University of Maringa, Brazil)
- Execution Enhanced Static Detection of Android Privacy Leakage Hidden by Dynamic Class Loading .149.....
Yufei Yang (Nanjing University), Wenbo Luo (Nanjing University), Yu Pei (The Hong Kong Polytechnic University), Minxue Pan (Nanjing University), and Tian Zhang (Nanjing University)

SETA 7

- Deep-AutoCoder: Learning to Complete Code Precisely with Induced Code Tokens .159.....
Xing Hu (Key Laboratory of High Confidence Software Technologies (Peking University), Ministry of Education), Rui Men (Key Laboratory of High Confidence Software Technologies (Peking University), Ministry of Education), Ge Li (Key Laboratory of High Confidence Software Technologies (Peking University), Ministry of Education), and Zhi Jin (Key Laboratory of High Confidence Software Technologies (Peking University), Ministry of Education)

ConRS: A Requests Scheduling Framework for Increasing Concurrency Degree of Server Programs .169.....
Biyun Zhu (Institute of Software Chinese Academy of Sciences, University of Chinese Academy of Sciences), Ruijie Meng (Institute of Software Chinese Academy of Sciences, University of Chinese Academy of Sciences), Zhenyu Zhang (Institute of Software Chinese Academy of Sciences), and W.K. Chan (City University of Hong Kong)

LAC: Locating and Applying Consistent and Repetitive Changes .179.....
Sushma Sakala (University of Nebraska at Omaha), Vamshi Krishna Eperi (University of Nebraska at Omaha), Samuel Sungmin Cho (Northern Kentucky University), and Myoungkyu Song (University of Nebraska at Omaha)

Dockerfile TF Smell Detection Based on Dynamic and Static Analysis Methods .185.....
Jiwei Xu (University College Dublin), Yuewen Wu (Chinese Academy of Sciences), Zhigang Lu (Chinese Academy of Sciences), and Tao Wang (Chinese Academy of Sciences)

SETA 8

Empirical Analysis of the Growth and Challenges of New Programming Languages .191.....
Partha Chakraborty (Bangladesh University of Engineering and Technology), Rifat Shahriyar (Bangladesh University of Engineering and Technology), and Anindya Iqbal (Bangladesh University of Engineering and Technology)

Featured Event Sequence Graphs for Model-Based Incremental Testing of Software Product Lines .197.....
Tugkan Tuglular (Izmir Institute of Technology), Mutlu Beyazıt (Yaar University), and Dilek Öztürk (Izmir Institute of Technology)

Time-Aware and Location-Based Personalized Collaborative Recommendation for IoT Services .203.....
Rumeng Shao (East China Normal University), Hongyan Mao (East China Normal University), and Jinpeng Jiang (East China Normal University)

An Extended Abstract of "Metamorphic Testing: Testing the Untestable" .209.....
Sergio Segura (University of Seville, Spain), Dave Towey (University of Nottingham Ningbo China, China), Zhi Quan Zhou (University of Wollongong, Australia), and T.Y. Chen (Swinburne University of Technology, Australia)

Plenary Panel

Agile, Continuous Integration, and DevOps .211.....
Carl K. Chang (Iowa State University)

CELT: Computing Education & Learning Technologies

CELT 1

- A Declarative Approach for an Adaptive Framework for Learning in Online Courses .212.....
Djananjay Pandit (Arizona State University) and Ajay Bansal (Arizona State University)
- Empowering Engagement through Automatic Formative Assessment .216.....
Alice Barana (University of Turin), Marina Marchisio (University of Turin), and Sergio Rabellino (University of Turin)
- VISA: A Supervised Approach to Indexing Video Lectures with Semantic Annotations .226.....
Luca Cagliero (Politecnico di Torino), Lorenzo Canale (Politecnico di Torino), and Laura Farinetti (Politecnico di Torino)

CELT 2

- A Mobile System to Increase Efficiency of the Lecturers when Preventing Academic Dishonesty During Written Exams .236.....
Pedro Maroco (Universidade Nova de Lisboa), João Cambeiro (Universidade Nova de Lisboa), and Vasco Amaral (Universidade Nova de Lisboa)
- Study TOUR for Computer Science Students .242.....
Henry C. B. Chan (The Hong Kong Polytechnic University), H. V. Leong (The Hong Kong Polytechnic University), and Grace Ngai (The Hong Kong Polytechnic University)

NCIW: Networks, Communications, Internet & Web Technologies

NCIW 1

- C2P2: Content-Centric Privacy Platform for Privacy-Preserving Monitoring Services .252.....
Kalika Saksomboon (KDDI Research, Japan), Zhishu Shen (KDDI Research, Japan), Kazuaki Ueda (KDDI Research, Japan), and Atsushi Tagami (KDDI Research, Japan)
- Predicting Network Outages Based on Q-Drop in Optical Network .258.....
Yohei Hasegawa (Waseda University) and Masato Uchida (Waseda University)
- HeteroTSDB: An Extensible Time Series Database for Automatically Tiering on Heterogeneous Key-Value Stores .264.....
Yuuki Tsubouchi (SAKURA Internet Inc.), Asato Wakisaka (Hatena Co., Ltd.), Ken Hamada (Hatena Co., Ltd.), Masayuki Matsuki (Hatena Co., Ltd.), Hiroshi Abe (Lepidum Co. Ltd., COCON Inc., Japan Advanced Institute of Science and Technology (JAIST)), and Ryosuke Matsumoto (SAKURA Internet Inc.)
- FastContainer: A Homeostatic System Architecture High-Speed Adapting Execution Environment Changes .270
Ryosuke Matsumoto (SAKURA Internet Inc.), Uchio Kondo (GMO Pepabo, Inc.), and Kentaro Kuribayashi (GMO Pepabo, Inc.)

NCIW 2

- Hybrid Cellular-DTN for Vehicle Volume Data Collection in Rural Areas .276.....
Yuuichi Teranishi (National Institute of Information and Communications Technology, Japan), Takashi Kimata (National Institute of Information and Communications Technology, Japan), Eiji Kawai (National Institute of Information and Communications Technology, Japan), and Hiroaki Harai (National Institute of Information and Communications Technology, Japan)
- Modeling Restrained Epidemic Routing on Complex Networks .285.....
Natsuko Kawabata (Kwansei Gakuin University), Yasuhiro Yamasaki (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)
- Sparse Representation of Network Topology with K-SVD Algorithm .291.....
Ryotaro Matsuo (Kwansei Gakuin University, Japan), Ryo Nakamura (Kwansei Gakuin University, Japan), and Hiroyuki Ohsaki (Kwansei Gakuin University, Japan)

EATA: Emerging Advances in Technology & Applications

- Message from EATA Symposium Chairs .299.....
Ali Hurson (Missouri University of Science & Technology), Hiroyuki Sato (University of Tokyo), Toyokazu Akiyama (Kyoto Sangyo University), and Dan Lin (University of Missouri)

EATA 1

- DirectFlow: A Robust Method for Ocular Torsion Measurement .300.....
Bruno Kozen Stahl (School of Technology, PUCRS), Leonardo Pavanatto Soares (School of Technology, PUCRS), Vincenzo Abichequer Sangalli (School of Technology, PUCRS), Pedro Costa Klein (School of Technology, PUCRS), Rafael Neujahr Copstein (School of Technology, PUCRS), and Márcio Sarroglia Pinho (School of Technology, PUCRS)
- Pothole Detection in Asphalt: An Automated Approach to Threshold Computation Based on the Haar Wavelet Transform .306.....
Ricardo Silveira Rodrigues (UFSM, Brazil), Marcia Pasin (UFSM, Brazil), Alice Kozakevicius (UFSM, Brazil), and Vinicius Monego (UFSM, Brazil)

EATA 2

- An Ontology Enhanced User Profiling Algorithm Based on Application Feedback .316.....
Xin Dong (Beijing University of Technology), Tong Li (Beijing University of Technology), and Zhiming Ding (Beijing University of Technology)

A Dataflow Application Deployment Strategy for Hierarchical Networks .326.....	
	<i>Shintaro Ishihara (Kyoto Sangyo University), Satoshi Tanita (Kyoto Sangyo University), and Toyokazu Akiyama (Kyoto Sangyo University)</i>

DSAT: Data Sciences, Analytics & Technologies

DSAT 1

How the Academics Qualification Influence the Students Learning Development .336.....	
	<i>Edna Dias Canedo (UnB), Rhandy Raphael De Carvalho (UnB), Heloise Acco Tives Leão (CEULP/ULBRA), Pedro Henrique Teixeira Costa (UnB), and Marcio Vinicius Okimoto (UnB)</i>
Alchemy: Stochastic Feature Regeneration for Malicious Network Traffic Classification .346.....	
	<i>Bo Hu (NTT, Japan; The University of Tokyo), Atsutoshi Kumagai (NTT), Kazunori Kamiya (NTT), Kenji Takahashi (NTT Security, US), Daniel Dalek (NTT Security, Sweden), Ola Soderstrom (NTT Security, Sweden), Kazuya Okada (The University of Tokyo), Yuji Sekiya (The University of Tokyo), and Akihiro Nakao (The University of Tokyo)</i>
Purchasing Behavior Analysis Based on Customer's Data Portrait Model .352.....	
	<i>Jing Sun (North China University of Technology), Huiqun Zhao (North China University of Technology), Sanwen Mu (North China University of Technology), and Zimu Li (North China University of Technology)</i>
Recommender Systems Based on Autoencoder and Differential Privacy .358.....	
	<i>Jiahui Ren (East China University of Science and Technology), Xian Xu (East China University of Science and Technology), Zhihuan Yao (East China University of Science and Technology), and Huiqun Yu (East China University of Science and Technology)</i>

DSAT 3

Matrix Factorization Model with Dual Preferences for Rating Prediction .364.....	
	<i>Yuan Li (Peking University, China) and Kedian Mu (Peking University, China)</i>
View-Adaptive Weighted Deep Transfer Learning for Distributed Time-Series Classification .373.....	
	<i>Sreyasee Das Bhattacharjee (UNC Charlotte), William J. Tolone (UNC Charlotte), Ashish Mahabal (California Institute of Technology), Mohammed Elshambakey (IRI, SRTA-City), Isaac Cho (UNC Charlotte), and George Djorgovski (California Institute of Technology)</i>
Multi-Source Heterogeneous Core Data Acquisition Method in Edge Computing Nodes .382.....	
	<i>Hong Xia (Xi'an University of Posts and Telecommunications), Mingdao Zhao (Xi'an University of Posts and Telecommunications), Yanping Chen (Xi'an University of Posts and Telecommunications), Zhongmin Wang (Xi'an University of Posts and Telecommunication), Zhong Yu (Xi'an University of Posts and Telecommunication), and Jingwei Yang (California State University Sacramento)</i>

DSAT 4

- Chinese Social Media Entity Linking Based on Effective Context with Topic Semantics .386.....
Chengfang Ma (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS), Ying Sha (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS; Huazhong Agricultural University), Jianlong Tan (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS), Li Guo (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS), and Huailiang Peng (Institute of Information Engineering, CAS, School of Cyber Security, University of CAS)
- Identification of Cybersecurity Specific Content Using the Doc2Vec Language Model .396.....
Otgonpurev Mendsaikhan (Nagoya University), Hirokazu Hasegawa (Nagoya University), Yukiko Yamaguchi (Nagoya University), and Hajime Shimada (Nagoya University)
- Semantic Data-Driven Microservices .402.....
Ivan Luiz Salvadori (Federal University of Santa Catarina), Alexis Huf (Federal University of Santa Catarina), and Frank Siqueira (Federal University of Santa Catarina)
- Big Data Analytics in Telecommunication using State-of-the-art Big Data Framework in a Distributed Computing Environment: A Case Study .411.....
Mohit Ved (Centre for Development of Advanced Computing) and Rizwanahmed B (Indian National Centre for Ocean Information Services)

DSAT 5

- Keyword-Based Semi-Supervised Text Classification .417.....
Karl Severin (University of Connecticut), Swapna Gokhale (University of Connecticut), and Aldo Dagnino (ABB)
- TypoWriter: A Tool to Prevent Typosquatting .423.....
Ishtiyaque Ahmad (Bangladesh University of Engineering and Technology), Md Anwar Parvez (Bangladesh University of Engineering and Technology), and Anindya Iqbal (Bangladesh University of Engineering and Technology)
- Vehicle Travel Time Estimation by Sparse Trajectories .433.....
Mingyang Jiang (Shanghai Jiao Tong University) and Tianqi Zhao (Tsinghua University)

DSAT 6

- Xu: An Automated Query Expansion and Optimization Tool .443.....
Morgan Gallant (Queen's University, Canada), Haruna Isah (Queen's University, Canada), Farhana Zulkernine (Queen's University), and Shahzad Khan (Gnowit Inc.)
- Parallel Discovery of Trajectory Companions from Heterogeneous Streaming Data .453.....
Yongyi Xian (Concordia University), Chuanfei Xu (Concordia University), Sameh Elnikety (Microsoft Research, USA), and Yan Liu (Concordia University)

ASYS: Autonomous Systems

ASYS 1

- Cooperative UAVs Gas Monitoring using Distributed Consensus .463.....
Daniele Facinelli (University of Trento, Italy), Matteo Larcher (University of Trento, Italy), Davide Brunelli (University of Trento, Italy), and Daniele Fontanelli (University of Trento, Italy)
- Increasing Self-Adaptation in a Hybrid Decision-Making and Planning System with Reinforcement Learning .469.....
Christopher-Eyk Hrabia (Technische Universität Berlin, DAI-Lab), Patrick Marvin Lehmann (Technische Universität Berlin, DAI-Lab), and Sahin Albayrak (Technische Universität Berlin, DAI-Lab)
- AllLiveSim: An Extensible Virtual Environment for Training Autonomous Vehicles .479.....
Jérôme Leudet (AllLiveSim Oy, Finland), François Christophe (University of Helsinki, Finland), Tommi Mikkonen (University of Helsinki, Finland), and Tomi Männistö (University of Helsinki, Finland)

ASYS 2

- Learning Distributed Cooperative Policies for Security Games via Deep Reinforcement Learning .489.....
Hassam Ullah Sheikh (University of Central Florida), Mina Razghandi (University of Central Florida), and Ladislau Boloni (University of Central Florida)
- The SAMBA Approach for Self-Adaptive Model-Based Online Testing of Services Orchestrations .495.....
Lucas Leal (Unicamp), Andrea Ceccarelli (UniFi), and Eliane Martins (Unicamp)
- Visual Tracking with Autoencoder-Based Maximum A Posteriori Data Fusion .501.....
Yevgeniy Reznichenko (Marquette University), Enrico Prampolini (University of Genoa, Italy/Marquette University), Abubakar Siddique (Marquette University), Henry Medeiros (Marquette University), and Francesca Odone (University of Genoa)

ITiP: IT in Practice

ITiP 1

- Enhanced Detection of Crisis-Related Microblogs by Spatiotemporal Feedback Loops .507.....
Christian Meurisch (TU Darmstadt), Zain Hamza (TU Darmstadt), Bekir Bayrak (TU Darmstadt), and Max Mühlhäuser (TU Darmstadt)
- AssistantGraph: An Approach for Reusable and Composable Data-Driven Assistant Components .513.....
Christian Meurisch (TU Darmstadt), Bekir Bayrak (TU Darmstadt), and Max Mühlhäuser (TU Darmstadt)

Integrating Static Code Analysis Toolchains .523.....	
	<i>Matthias Kern (FZI Research Center for Information Technology), Ferhat Erata (Yale University), Markus Iser (Karlsruhe Institute of Technology), Carsten Sinz (Karlsruhe Institute of Technology), Frederic Loiret (KTH Royal Institute of Technology), Stefan Otten (FZI Research Center for Information Technology), and Eric Sax (FZI Research Center for Information Technology)</i>
Producing Green Computing Images to Optimize Power Consumption in OLED-Based Displays .529.....	
	<i>Sorath Asnani (Politecnico di Torino), Maria Giulia Canu (Politecnico di Torino), and Bartolomeo Montrucchio (Politecnico di Torino)</i>

ITiP 3

LIPs: A Protocol for Leadership Incentives for Heterogeneous and Dynamic Platoons .535.....	
	<i>Brian Ledbetter (Tennessee Tech University), Samuel Wehunt (Tennessee Tech University), Mohammad Ashiqur Rahman (Florida International University), and Mohammad Hossein Manshaei (Florida International University)</i>
Risk Assessment Methods for Cloud Computing Platforms .545.....	
	<i>Tim Weil (Alcohol Monitoring Systems)</i>
Employer Branding in the IT Industry: An Employer view .548.....	
	<i>Amir Dabirian (KTH Royal Institute of Technology)</i>

ITiP 4

A Game-Theoretic Analysis of Pricing Competition between Aggregators in V2G Systems .549.....	
	<i>Mgm Mehedi Hasan (Tennessee Tech University), Mohammad Ashiqur Rahman (Florida International University), Mohammad Hossein Manshaei (Florida International University), and Walid Saad (Virginia Tech)</i>
Information Exposure (IEX): A New Class in the Bugs Framework (BF) .559.....	
	<i>Irena Bojanova (NIST), Yaacov Yesha (UMBC and NIST), Paul E. Black (NIST), and Yan Wu (BGSU)</i>
DroidPatrol: A Static Analysis Plugin For Secure Mobile Software Development .565.....	
	<i>Md Arabin Islam Talukder (Kennesaw State University), Hossain Shahriar (Kennesaw State University), Kai Qian (Kennesaw State University), Mohammad Rahman (Florida International University), Sheikh Ahamed (Marquette University), Fan Wu (Tuskegee University), and Emmanuel Agu (Worcester Polytechnic Institute)</i>
Open Source Fog Architecture for Industrial IoT Automation Based on Industrial Protocols .570.....	
	<i>Mohammad Ghazi Vakili (Politecnico di Torino), Claudio Demartini (Politecnico di Torino), Mauro Guerrera (Politecnico di Torino), and Bartolomeo Montrucchio (Politecnico di Torino)</i>

CAP: Computer Architecture & Platforms

CAP 1

- An Actor-Based Design Platform for System of Systems .579.....
Marjan Sirjani (Mälardalen University), Giorgio Forcina (Mälardalen University), Ali Jafari (Reykjavik University), Stephan Baumgart (Volvo Construction Equipment AB), Ehsan Khamespanah (University of Tehran, Reykjavik University), and Ali Sedaghatbaf (Mälardalen University)
- Detecting Malicious Attacks Exploiting Hardware Vulnerabilities Using Performance Counters .588.....
Congmiao Li (University of California, Irvine) and Jean-Luc Gaudiot (University of California, Irvine)

CAP 2

- Research on Index Mechanism of HBase Based on Coprocessor for Sensor Data .598.....
Feng Ye (Hohai University), Songjie Zhu (Hohai University), Yuansheng Lou (Hohai University), Zihao Liu (Jiangsu University of Science and Technology), Yong Chen (Nanjing Longyuan Micro-Electronic Company), and Qian Huang (Hohai University)
- Testing Performance-Isolation in Multi-core Systems .604.....
Jakob Danielsson (Mälardalen University), Tiberiu Seceleanu (ABB AB), Marcus Jägemar (Ericsson AB), Moris Behnam (Mälardalen University), and Mikael Sjödin (Mälardalen University)

HCSC: Human Computing & Social Computing

HCSC 1

- Optimal Hand Sign Selection Using Information Theory for Custom Sign-Based Communication .610.....
Tokio Takahashi (Waseda University) and Masato Uchida (Waseda University)
- Touch-Based Ontology Browsing on Tablets and Surfaces .616.....
Fulvio Corno (Politecnico di Torino), Luigi De Russis (Politecnico di Torino), and Luisa Barrera León (Politecnico di Torino)
- Investigating Differences in Gaze and Typing Behavior Across Age Groups and Writing Genres .622.....
Jun Wang (The Hong Kong Polytechnic University), Eugene Yujun Fu (The Hong Kong Polytechnic University), Grace Ngai (The Hong Kong Polytechnic University), and Hong Va Leong (The Hong Kong Polytechnic University)

HCSC 2

- Application of Reconstructed Phase Space in Autism Intervention .630.....
*Piyush Saxena (Direct Supply), Devansh Saxena (Marquette University),
Xiao Nie (Direct Supply), Aaron Helmers (Direct Supply), Nithin
Ramachandran (Direct Supply), Alana McVey (Marquette University), Amy
VanHecke (Marquette University), and Sheikh Ahamed (Marquette
University)*
- Using Gamification to Motivate Occupants to Energy Efficiency in a Social Setting of a Building
Automation System .638.....
*Joana Páris (Universidade Nova de Lisboa), João Cambeiro (Universidade
Nova de Lisboa), Vasco Amaral (Universidade Nova de Lisboa), and
Armanda Rodrigues (Universidade Nova de Lisboa)*
- A Tale of the Social-Side of ASD .644.....
*Shameem Ahmed (Western Washington University), Md. Forhad Hossain
(Missouri State University), Kurt Price (Western Washington
University), Cody Pranger (Western Washington University), Md. Monsur
Hossain (We Work), and Moushumi Sharmin (Western Washington
University)*

HCSC 3

- Analyzing Happiness: Investigation on Happy Moments using a Bag-of-Words Approach and Related
Ethical Discussions .653.....
*Riddhiman Adib (Marquette University), Eyad Aldawod (Marquette
University), Nathan Lang (Marquette University), Nina Lasswell
(Marquette University), and Shion Guha (Marquette University)*
- Long-Term Monitoring of NIRS Signals for Mental Health Assessment .663.....
*Labiblais Rahman (Nihon University, Japan) and Katsunori Oyama (Nihon
University, Japan)*

MOWU: Mobile, Wearable & Ubiquitous Computing

MOWU 1

- Barrier Detection Using Sensor Data from Multiple Modes of Transportation with Data Augmentation .667.....
*Yuki Kurauchi (NTT Corporation), Naoto Abe (NTT Corporation), Hiroshi
Konishi (NTT Corporation), and Hitoshi Seshimo (NTT Corporation)*
- An Energy Efficient Pedestrian Heading Estimation Algorithm using Smartphones .676.....
*Yankan Yang (Inner Mongolia University), Baoqi Huang (Inner Mongolia
University), and Runze Yang (Inner Mongolia University)*

MOWU 2

- Towards An Effective and Efficient Machine-Learning-Based Framework for Supporting Event Detection
in Complex Environments .685.....
*Alfredo Cuzzocrea (University of Trieste), Enzo Mumolo (University of
Trieste), and Marco Tessarotto (University of Trieste)*

Towards Predicting Risky Behavior Among Veterans with PTSD by Analyzing Gesture Patterns .690.....
Tanvir Roushan (Marquette University), Riddhiman Adib (Marquette University), Nadiyah Johnson (Marquette University), Olawunmi George (Marquette University), Md Fitrat Hossain (Marquette University), Zeno Franco (Marquette University), Katinka Hooyer (Marquette University), and Sheikh Iqbal Ahamed (Marquette University)

SCH: Smart & Connected Health

SCH 1

Improving Classification of Breast Cancer by Utilizing the Image Pyramids of Whole-Slide Imaging and Multi-scale Convolutional Neural Networks .696.....
Li Tong (Georgia Institute of Technology and Emory University), Ying Sha (Georgia Institute of Technology), and May D Wang (Georgia Institute of Technology and Emory University)

Compliance Checking of Open Source EHR Applications for HIPAA and ONC Security and Privacy Requirements .704.....
Maryam Farhadi (Kennesaw State University), Hisham Haddad (Kennesaw State University), and Hossain Shahriar (Kennesaw State University)

Computer Vision Based Systems for Human Pupillary Behavior Evaluation: A Systematic Review of the Literature .714.....
Cleyton Rafael Gomes Silva (Federal University of Goias), Cristhiane Gonçalves (Federal University of Goias), Joyce Siqueira (Federal University of Goias), Fabrizio A. A. De Melo Nunes Soares (Federal University of Goias), Rodrigo Albernaz Bezerra (Federal University of Goias), Hedenir Monteiro Pinheiro (Federal University of Goias), Ronaldo Martins Da Costa (Federal University of Goias), Eduardo Nery Rossi Camillo (Goias Eye Bank Hospital), and Augusto Paranhos Junior (Goias Eye Bank Hospital)

SCH 2

The Causes Analysis of Ischemic Stroke Transformation into Hemorrhagic Stroke using PLS (partial Least Square)-GA and Swarm Algorithm .720.....
Chihhsiong Shih (Tunghai University), Cheng-Chung Chu William (Tunghai University), and You-Wei Chang (Tunghai University)

Fully Automatic Intervertebral Disc Segmentation Using Multimodal 3D U-Net .730.....
Chuanbo Wang (University of Wisconsin-Milwaukee), Ye Guo (University of Wisconsin-Milwaukee), Wei Chen (Army Medical University), and Zeyun Yu (University of Wisconsin-Milwaukee)

Comparing Health Outcomes in San Francisco and Boston Metro Areas .740.....
Swapna Gokhale (University of Connecticut)

SEPT: Security, Privacy & Trust in Computing

SEPT 1

- Dynamic Data Publishing with Differential Privacy via Reinforcement Learning .746.....
Ruichao Gao (Inner Mongolia University) and Xuebin Ma (Inner Mongolia University)
- Enforcing Optimal Moving Target Defense Policies .753.....
Jianjun Zheng (Texas Tech University) and Akbar Siami Namin (Texas Tech University)
- Automatic Detection of NoSQL Injection Using Supervised Learning .760.....
*Md Rafid Ul Islam (Bangladesh University of Engineering & Technology),
Md. Saiful Islam (Bangladesh University of Engineering & Technology),
Zakaria Ahmed (Bangladesh University of Engineering & Technology),
Anindya Iqbal (Bangladesh University of Engineering & Technology), and
Rifat Shahriyar (Bangladesh University of Engineering & Technology)*

SEPT 2

- Exploration into Gray Area: Efficient Labeling for Malicious Domain Name Detection .770.....
Naoki Fukushi (Waseda University), Daiki Chiba (NTT Secure Platform Laboratories), Mitsuaki Akiyama (NTT Secure Platform Laboratories), and Masato Uchida (Waseda University)
- Precise and Robust Detection of Advertising Fraud .776.....
Fumihiko Kanei (NTT Secure Platform Laboratories, Japan), Daiki Chiba (NTT Secure Platform Laboratories, Japan), Kunio Hato (NTT Secure Platform Laboratories, Japan), and Mitsuaki Akiyama (NTT Secure Platform Laboratories, Japan)
- Raising the Bar Really High: An MTD Approach to Protect Data in Embedded Browsers .786.....
Fadi Mohsen (University of Michigan-Flint) and Haadi Jafaarian (University of Colorado Denver)

SEPT 3

- Efficient SVM Based Packer Identification with Binary Diffing Measures .795.....
Yeongcheol Kim (Chungnam National University, South Korea), Joon-Young Paik (Tianjin Polytechnic University, China), Seokwoo Choi (National Security Research Institute, South Korea), and Eun-Sun Cho (Chungnam National University)
- CTRL-ALT-LED: Leaking Data from Air-Gapped Computers Via Keyboard LEDs .801.....
Mordechai Guri (Ben-Gurion University of the Negev), Boris Zadov (Ben-Gurion University of the Negev), Dima Bykhovskiy (Ben-Gurion University of the Negev; Shamoon College of Engineering, Beer-Sheva, Israel), and Yuval Elovici (Ben-Gurion University of the Negev)

The Sponge Structure Modulation Application to Overcome the Security Breaches for the MD5 and SHA-1 Hash Functions .811.....
Zeyad Al-Odat (North Dakota State University) and Samee Khan (North Dakota State University)

SEPT 4

CSKES: A Context-Based Secure Keyless Entry System .817.....
Juan Wang (Queen's University), Karim Lounis (Queen's University), and Mohammad Zulkernine (Queen's University)

Privacy Is The Best Policy: A Framework for BLE Beacon Privacy Management .823.....
Emmanuel Bello-Ogunu (The University of North Carolina at Charlotte), Mohamed Shehab (The University of North Carolina at Charlotte), and Nazmus Sakib Miazi (The University of North Carolina at Charlotte)

Safety and Security Co-Analyses: A Systematic Literature Review .833.....
Elena Lisova (Malardalen University), Irfan Sljivo (Malardalen University), and Aida Causevic (Malardalen University)

SISA: Smart IoT Systems & Applications

SISA 1

Sensor Networks and Data Management in Healthcare: Emerging Technologies and New Challenges .834.....
Matthew Pike (University of Nottingham Ningbo China), Nasser M. Mustafa (University of Nottingham Ningbo China), Dave Towey (University of Nottingham Ningbo China), and Vladimir Brusic (University of Nottingham Ningbo China)

Multi-Breath: Separate Respiration Monitoring for Multiple Persons with UWB Radar .840.....
Yanni Yang (The Hong Kong Polytechnic University), Jiannong Cao (The Hong Kong Polytechnic University), Xiulong Liu (The Hong Kong Polytechnic University), and Xuefeng Liu (Beihang University)

sEmoD: A Personalized Emotion Detection Using a Smart Holistic Embedded IoT System .850.....
Akm Jahangir Alam Majumder (University of South Carolina Upstate), Tanner M. Mcwhorter (Miami University), Yezhou Ni (Miami University), Hanqing Nie (Miami University), Jacob Iarve (Miami University), and Donald R Ucci (Miami University)

SISA 2

RIVER-MAC: A Receiver-Initiated Asynchronously Duty-Cycled MAC Protocol for the Internet of Things .860
Mathew L. Wymore (Iowa State University) and Daji Qiao (Iowa State University)

GeneSIS: Continuous Orchestration and Deployment of Smart IoT Systems .870.....	
<i>Nicolas Ferry (SINTEF ICT), Phu Nguyen (SINTEF ICT), Hui Song (SINTEF), Pierre-Emmanuel Novac (University Côte d'Azur, CNRS), Stéphane Lavirotte (University Côte d'Azur, CNRS), Jean-Yves Tigli (University Côte d'Azur, CNRS), and Arnor Solberg (TELU AS)</i>	
Degree Distribution of Wireless Networks for Mobile IoT Applications .876.....	
<i>Renato Ferrero (Politecnico di Torino) and Filippo Gandino (Politecnico di Torino)</i>	

Student Research Symposium

SRS 1

Experimental Comparison of Pure Flooding and Its Variants on Raspberry Pi in Small Scale Ad Hoc Networks .882.....	
<i>Sangwoo Jung (CNU) and Ki-Il Kim (CNU)</i>	
Threshold-Driven Class Decomposition .884.....	
<i>Mohammed Hamdi (Oakland University), Rashmi Pethe (Oakland University), Annapoorani Sevugan Chetty (Oakland University), and Dae-Kyoo Kim (Oakland University)</i>	
Optimized Division of Exploration Areas in Multi-robot Systems Considering Static and Dynamic Charging Stations .888.....	
<i>Robison Cris Brito (Federal University of Technology (UTFPR)), Nicollas Saque (Federal University of Paraná (UFPR)), Diego Addan Gonçalves (Federal University of Paraná (UFPR)), Fabio Favarim (Federal University of Technology (UTFPR)), and Eduardo Todt (Federal University of Paraná (UFPR))</i>	
Analysis of the Evolution of the Influence of Central Nodes in a Twitter Social Network .892.....	
<i>Minami Uehara (University of Tsukuba, Japan) and Sho Tsugawa (University of Tsukuba, Japan)</i>	

SRS 2

Spam Domain Detection Method Using Active DNS Data and E-Mail Reception Log .896.....	
<i>Kenya Dan (Tokyo University of Agriculture and Technology), Naoya Kitagawa (Tokyo University of Agriculture and Technology), Shuji Sakuraba (Internet Initiative Japan Inc., Japan), and Nariyoshi Yamai (Tokyo University of Agriculture and Technology)</i>	
A Traffic Distribution System Among Multiple Terminals Using MPTCP in Multihomed Network Environment....	900
<i>Ryuji Asakura (Tokyo University of Agriculture and Technology), 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 Ohzahata (The University of Electro-Communications)</i>	

A Modified Smart Contract Execution Environment for Safe Function Calls .904.....	
<i>Sooyeon Lee (Chungnam National University, Republic of Korea) and Eun-Sun Cho (Chungnam National University, Republic of Korea)</i>	
Parallelization of Plane Sweep Based Voronoi Construction with Compiler Directives .908.....	
<i>Anmol Paudel (Marquette University), Jie Yang (Marquette University), and Satish Puri (Marquette University)</i>	

Fast Abstracts

Fast Abstract 1

Toward an Optimal Anomaly Detection Pattern in Wireless Sensor Networks .912.....	
<i>Muhammad Alfian Amrizal (Tohoku University), Luis Guillen (Tohoku University), and Takuo Suganuma (Tohoku University)</i>	
Application and Research of Image-Based Modeling and 3D Printing Technology in Intangible Cultural Heritage Quanzhou Marionette Protection .914.....	
<i>Chao Gao (Xiamen University, China), Junfeng Yao (Xiamen University, China), Kaini Huang (Xiamen University, China), and Kai Qian (Kennesaw State University, USA)</i>	
Logistic Regression and Random Forest for Effective Imbalanced Classification .916.....	
<i>Hanwu Luo (East Inner Mongolia Electric Power Co. Ltd, China), Xiubao Pan (East Inner Mongolia Electric Power Co. Ltd, China), Qingshun Wang (East China Normal University), Shasha Ye (East China Normal University), and Ying Qian (East China Normal University)</i>	
Improving Prediction Accuracy for Logistic Regression on Imbalanced Datasets .918.....	
<i>Hao Zhang (Kennesaw State University), Zhuolin Li (Kennesaw State University), Hossain Shahriar (Kennesaw State University), Lixin Tao (Pace University), Prabir Bhattacharya (SUNY at Albany), and Ying Qian (East China Normal University)</i>	
IoT Malware Analysis .920.....	
<i>Victor Clincy (Kennesaw State University) and Hossain Shahriar (Kennesaw State University)</i>	
Blockchain Development Platform Comparison .922.....	
<i>Victor Clincy (Kennesaw State University) and Hossain Shahriar (Kennesaw State University)</i>	
Protecting Data in Android External Data Storage .924.....	
<i>Hao Zhang (Kennesaw State University), Zhuolin Li (Kennesaw State University), Hossain Shahriar (Kennesaw State University), Dan Lo (Kennesaw State University), Fan Wu (Tuskegee University), and Ying Qian (East China Normal University)</i>	
Achievements Visualization in Programming Education .926.....	
<i>Kaisei Hanayama (Osaka University), Shinsuke Matsumoto (Osaka University), Yoshiki Higo (Osaka University), and Shinji Kusumoto (Osaka University)</i>	
Virtualization for Flexibility and Network-Aware on 5G Mobile Devices .928.....	
<i>Kien Nguyen (Chiba University), Li Zhe-Tao (Xiangtan University), and Hiroo Sekiya (Chiba University)</i>	

Fast Abstract 2

- CloneTM: A Code Clone Detection Tool Based on Latent Dirichlet Allocation .930.....
Sandeep Reddivari (University of North Florida) and Mohammed Salman Khan (University of North Florida)
- VisioTM: A Tool for Visualizing Source Code Based on Topic Modeling .932.....
Sandeep Reddivari (University of North Florida) and Mohammed Salman Khan (University of North Florida)
- A Protocol for Preventing Transaction Commitment without Recipient's Authorization on Blockchain .934.....
Ryosuke Yamauchi (Hiroshima City University), Yoko Kamidoi (Hiroshima City University), and Shin'ichi Wakabayasi (Hiroshima City University)
- Rogue Wireless AP Detection using Delay Fluctuation in Backbone Network .936.....
Ziwei Zhang (Nagoya University), Hirokazu Hasegawa (Nagoya University), Yukiko Yamaguchi (Nagoya University), and Hajime Shimada (Nagoya University)
- Trust-Oriented Live Video Distribution Architecture .938.....
Tomoki Yoshihisa (Osaka University), Satoru Matsumoto (Osaka University), Tomoya Kawakami (Nara Institute of Science and Technology), and Yuuichi Teranishi (National Institute of Information and Communications Technology)
- Detecting No-Sleep Bugs Using Sequential Reference Counts .940.....
Priyanka Bharat Sakhare (Oakland University), Dae-Kyoo Kim (Oakland University), and Mohammed Hamdi (Oakland University)
- A Linear Regression Approach to Modeling Software Characteristics for Classifying Similar Software .942.....
Hyun-Il Lim (Kyungnam University, South Korea)
- Load Balancing Algorithm for Multiple UAVs Relayed Tactical Ad Hoc Networks .944.....
Sangwoo Jung (CNU), Ki-Il Kim (CNU), Bongsoo Roh (ADD), and Jae-Hyun Ham (ADD)
- Garbage Weight Estimation System .946.....
Sai Mullangi (Marshall University), Thulasidhar Reddy Kattamreddy (Marshall University), Shanthan Ramadugu (Marshall University), and Wook-Sung Yoo (Marshall University)

Fast Abstract 3

- Topic Shift Detection in Online Discussions using Structural Context .948.....
Yingcheng Sun (Case Western Reserve University) and Kenneth Loparo (Case Western Reserve University)
- A Clicked-URL Feature for Transactional Query Identification .950.....
Yingcheng Sun (Case Western Reserve University) and Kenneth Loparo (Case Western Reserve University)
- Context Aware Image Annotation in Active Learning with Batch Mode .952.....
Yingcheng Sun (Case Western Reserve University) and Kenneth Loparo (Case Western Reserve University)

Information Extraction from Free Text in Clinical Trials with Knowledge-Based Distant Supervision .954.....
Yingcheng Sun (Case Western Reserve University) and Kenneth Loparo (Case Western Reserve University)

Basic Concept of Emergency Optical Network Planning Using Multiagent-Based Flexible and Autonomous Network Control .956.....
Satoru Izumi (Tohoku University), Masaki Shiraiwa (National Institute of Information and Communications Technology), Goshi Sato (National Institute of Information and Communications Technology), Sugang Xu (National Institute of Information and Communications Technology), and Takuo Sukanuma (Tohoku University)

Basic Design of Network Control Method Based on Disaster Risk of OpenFlow C/M-Plane .958.....
Satoru Izumi (Tohoku University), Hiroyuki Takahira (Tohoku University), Kosuke Gotani (Tohoku University), Misumi Hata (Tohoku University), Luis Guillen (Tohoku University), Toru Abe (Tohoku University), and Takuo Sukanuma (Tohoku University)

Predicting Opioid Use Disorder (OUD) Using A Random Forest .960.....
Adway Wadekar (Saint John's High School)

Author Index 963

2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC 2019)

**Milwaukee, Wisconsin, USA
15-19 July 2019**

**Volume 2
Pages 1-706**



**IEEE Catalog Number: CFP19061-POD
ISBN: 978-1-7281-2608-1**

2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC) **COMPSAC 2019**

Table of Contents

Message from the Standing Committee Chair .xxi.....	
Message from the Standing Committee Vice Chair .xxiii.....	
Message from the 2019 General Chairs .xxiv.....	
Message from the 2019 Workshop Chairs .xxv.....	
Message from the Program Chairs .xxvii.....	
COMPSAC 2019 Organizers .xxviii.....	

COMPSAC 2019 Workshops

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

ADMNET 1

Over-the-Air Provisioning for IoT Wearable Devices via BLE and oneM2M .1.....	
<i>Wei-Han Chen (National Chiao Tung University) and Fuchun Joseph Lin (National Chiao Tung University)</i>	
A Dynamic Intervals Determination Method Based on Transaction Rates for Real-Time IoT Applications .7.....	
<i>Chaxiong Yukonhiatou (Osaka University), Tomoki Yoshihisa (Cybermedia Center Osaka University), Tomoya Kawakami (Nara Institute of Science and Technology), Yuuichi Teranishi (National Institute of Information and Communications Technology), and Shinji Shimojo (Cybermedia Center Osaka University)</i>	
Analyzing the Effect of Increased Distribution on a Wearable Appliance .13.....	
<i>Mateus Silva (Universidade Federal de Ouro Preto) and Ricardo Oliveira (Universidade Federal de Ouro Preto)</i>	

ADMNET 2

- On the Effectiveness of Position-Based Routing in Delay/Disruption-Tolerant Networking .19.....
Natusko Kawabata (Kwansei Gakuin University), Yasuhiro Yamasaki (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)
- On the Predictability of Network Robustness from Spectral Measures .24.....
Kazuyuki Yamashita (Kwansei Gakuin University, Japan), Yuichi Yasuda (Kwansei Gakuin University, Japan), Ryo Nakamura (Kwansei Gakuin University, Japan), and Hiroyuki Ohsaki (Kwansei Gakuin University, Japan)
- Spread of Anycast and GSLB .30.....
Kenichi Yoshida (University of Tsukuba), Kazunori Fujiwara (Japan Registry Services Co., Ltd), Akira Sato (University of Tsukuba), and Shuji Sannomiya (University of Tsukuba)
- A Proposal of SDN-FIT System to Evaluate Wide-Area Distributed Applications Based on Exhaustive FIT Scenario Generation .36.....
Hiroki Kashiwazaki (Cybersecurity R&D Center National Institute of Informatics), Shimnosuke Miura (Osaka University), and Shinji Shimojo (Osaka University)

AIML: Advances in AI and Machine Learning

AIML 1

- Multi-scale Discriminative Location-Aware Network for Few-Shot Semantic Segmentation .42.....
Zihao Dong (Nankai University), Ruixun Zhang (MIT Laboratory for Financial Engineering), Xiuli Shao (Nankai University), and Hongyu Zhou (Nankai University)
- Research on Evaluation Function of Clustering Algorithm Based on Duty Cycle .48.....
Hong Jie Liu (Xi'an Jiao Tong University), Hong Zhe Xu (Xi'an Jiao Tong University), Yu Yan (Xi'an Jiao Tong University), and Wen Li (Xi'an Jiao Tong University)
- How Smart is your Manufacturing? Build Smarter with AI .55.....
Mike McMahon (IBM), Dale Mumper (IBM), Mitsuko Ihaza (IBM), and Dominic Farrar (IBM)

AIML 2

- Feature Boosting in Natural Image Classification .61.....
Piyush Saxena (Direct Supply), Devansh Saxena (Marquette University), Xiao Nie (Direct Supply), Aaron Helmers (Direct Supply), Nithin Ramachandran (Direct Supply), Nazmus Sakib (Marquette University), and Sheikh Ahamed (Marquette University)

AIML 3

A Teaching Assistant Robot Design Tool Based on Knowledge Chunks Reuse .68.....	68
<i>Takeshi Morita (Keio University), Naoya Takahashi (Keio University), Mizuki Kosuda (Keio University), and Takahira Yamaguchi (Keio University)</i>	
Identifying Buildings with Ramp Entrances Using Convolutional Neural Networks .74.....	74
<i>Jiawei Wu (Marquette University), Wenliang Hu (Marquette University), Joseph Coelho (Marquette University), Paromita Nitu (Marquette University), Hanna R. Paul (University of Wisconsin-Milwaukee), Praveen Madiraju (Marquette University), Roger O. Smith (University of Wisconsin-Milwaukee), and Sheikh I. Ahamed (Marquette University)</i>	
Modeling the Structured Porous Network Using Stacked Ensemble Learning .80.....	80
<i>Mehdi Nekouei (Jvion Inc) and Sara Sartoli (University of North Georgia)</i>	

SCA: Smart Computing & Applications

SCA 1

Semantic Stream Management Framework for Data Consistency in Smart Spaces .85.....	85
<i>Oluwaseun Bamgboye (Edinburgh Napier University), Xiaodong Liu (Edinburgh Napier University), and Peter Cruickshank (Edinburgh Napier University)</i>	
Utilization of Bio-Ontologies for Enhancing Patent Information Retrieval .91.....	91
<i>Kincho Law (Stanford University), Siddarth Taduri (Stanford University), Jay Kesan (University of Illinois), and Ram Sriram (National Institute of Standards and Technology)</i>	
Micro-Level Analysis and Visualization of Tennis Shot Patterns with Fractal Tables .97.....	97
<i>Shiraj Pokharel (Georgia State University), Ying Zhu (Georgia State University), and Satish Puri (Marquette University)</i>	

SCA 2

From Data-Driven to Intelligent-Driven: Technology Evolution of Network Security in Big Data Era .103.....	103
<i>Yan Zhu (University of Science and Technology Beijing), Yi Zhang (University of Science and Technology Beijing), Jing Wang (University of Science and Technology Beijing), Weijing Song (University of Science and Technology Beijing), Cheng-Chung Chu (Tunghai University), and Guowei Liu (Beijing Municipal Bureau of Economy and Information Technology)</i>	
Intelligent Highway Traffic Forecast Based on Deep Learning and Restructured Road Models .110.....	110
<i>Seungyo Ryu (Korea University) and Dongseung Kim (Korea University)</i>	
A Mapping Language for IoT Device Descriptions .115.....	115
<i>Burzlaff Fabian (University of Mannheim), Ackel Maurice (Mosbach, Germany), and Bartelt Christian (University of Mannheim)</i>	

Development of Mobile Intercloud Applications .121.....	
	<i>Yuxuan Deng (The Hong Kong Polytechnic University) and Henry C. B. Chan (The Hong Kong Polytechnic University)</i>

SCA 3

Improving the Detection of Sequential Anomalies Associated with a Loop .127.....	
	<i>Faisal Fahmi (National Chiao-Tung University), Pei-Shu Huang (National Chiao-Tung University), and Feng-Jian Wang (National Chiao-Tung University)</i>
A Smart Role Mapping Recommendation System .135.....	
	<i>Lijuan Diao (East China Normal University), Huaduo Wang (University of Texas at Dallas), Sultan Alsarra (University of Texas at Dallas), I-Ling Yen (University of Texas at Dallas), and Farokh Bastani (University of Texas at Dallas)</i>

IEESD: Industrial Experience in Embedded Systems Design

IEESD 1

Modern Architecture for Deep Learning-Based Automatic Optical Inspection .141.....	
	<i>Johannes Richter (Göpel electronic GmbH, Germany) and Detlef Streitferdt (Technische Universität Ilmenau, Germany)</i>
A Data-Driven Approach to Energy Cost Prediction Of Dwellings Based on Partitioned Parallel Modeling.146	
	<i>Yingjie Zhang (Hunan University), Yujie Gong (Hunan University), Daniel Morgan (Housevault Limited), and Ying Zhang (Hunan University)</i>
Experiencing Technology Independence .153.....	
	<i>Anton Urvantsev (ABB, Mälardalen University), Morgan E. Johansson (ABB), Nils Müellner (Mälardalen University), and Tiberiu Seceleanu (ABB, Mälardalen University)</i>

IEESD 2

Embedded Control System for Decentralized Wastewater Treatment .159.....	
	<i>Tamer Omar (California State Polytechnic University, Pomona), Olusegun Bangbose (California State Polytechnic University, Pomona), Ibrahim Naffaa (California State Polytechnic University, Pomona), and Omar Naffaa (California State Polytechnic University, Pomona)</i>
Towards a Framework for Safe and Secure Adaptive Collaborative Systems .165.....	
	<i>Aida Causevic (Mälardalen University, Sweden), Alessandro V. Papadopoulos (Mälardalen University, Sweden), and Marjan Sirjani (Mälardalen University, Sweden)</i>

How to Bring Project Management of Embedded Systems to an Appropriate Level of Abstraction for a Discrete Event Model .171.....
Maxi Weichenhain (Technische Universitaet Ilmenau, Germany), Wolfgang Fengler (Technische Universitaet Ilmenau, Germany), and Detlef Streitferdt (Technische Universitaet Ilmenau, Germany)

DADA: Deep Analysis of Data Driven Applications

DADA 1

LiRUL: A Lightweight LSTM Based Model for Remaining Useful Life Estimation at the Edge .177.....
Olumide Kayode (University of Texas at San Antonio) and Ali Saman Tosun (University of Texas at San Antonio)

Modeling Genome Data Using Bidirectional LSTM .183.....
Neda Tavakoli (Georgia Institute of Technology)

A Scalable Framework for Multilevel Streaming Data Analytics using Deep Learning .189.....
Shihao Ge (Queen's University, Canada), Haruna Isah (Queen's University), Farhana Zulkernine (Queen's University), and Shahzad Khan (Gnowit Inc.)

DADA 2

Social Media and Forecasting Stock Price Change .195.....
Joseph Coelho (Marquette University), Dawson D'almeida (Carleton College), Scott Coyne (Marquette University), Nathan Gilkerson (Marquette University), Katelyn Mills (Marquette University), and Praveen Madiraju (Marquette University)

TALS: A Framework for Text Analysis, Fine-Grained Annotation, Localisation and Semantic Segmentation.201
Shatha Jaradat (KTH - Royal Institute of Technology, Sweden), Nima Dokoohaki (KTH - Royal Institute of Technology, Sweden), Ummul Wara (KTH - Royal Institute of Technology, Sweden), Mallu Goswami (KTH - Royal Institute of Technology, Sweden), Kim Hammar (KTH - Royal Institute of Technology, Sweden), and Mihhail Matskin (KTH - Royal Institute of Technology, Sweden)

Twitter vs News: Concern Analysis of the 2018 California Wildfire Event .207.....
Hanxiang Du (Texas Tech University), Long Nguyen (Texas Tech University), Zhou Yang (Texas Tech University), Hashim Abu-Gellban (Texas Tech University), Xingyu Zhou (Texas Tech University), Wanli Xing (Texas Tech University), Guofeng Cao (Texas Tech University), and Fang Jin (Texas Tech University)

DADA 3

A Speech Data-Driven Stakeholder Analysis Methodology Based on the Stakeholder Graph Models .213.....
Yuta Shirasaki (Nanzan University), Yuya Kobayashi (Nanzan University), and Mikio Aoyama (Nanzan University)

Fuzzy Value-at-Risk Forecasts Using a Novel Data-Driven Neuro Volatility Predictive Model .221.....	
<i>Aerambamoorthy Thavaneswaran (University of Manitoba), Ruppa K Thulasiram (University of Manitoba), Zimo Zhu (University of Manitoba), Mohammed Erfanul Hoque (University of Manitoba), and Nalini Ravishanker (University of Connecticut)</i>	
Detecting Phishing Websites through Deep Reinforcement Learning .227.....	
<i>Moitrayee Chatterjee (Texas Tech University) and Akbar-Siami Namin (Texas Tech University)</i>	

DADA 4

COMEX: Identifying Mislabeled Human Behavioral Context Data Using Visual Analytics .233.....	
<i>Hamid Mansoor (Worcester Polytechnic Institute), Walter Gerych (Worcester Polytechnic Institute), Luke Buquicchio (Worcester Polytechnic Institute), Kavin Chandrasekaran (Worcester Polytechnic Institute), Emmanuel Agu (Worcester Polytechnic Institute), and Elke Rundensteiner (Worcester Polytechnic Institute)</i>	
SpacePhaser: Phase Space Embedding Visual Analytics .239.....	
<i>Tommy Dang (Texas Tech University) and Ngan Nguyen (Texas Tech University)</i>	

CDS: Consumer Devices & Systems

CDS 1

A Pen-Grip Shaped Device for Estimating Writing Pressure and Altitude .245.....	
<i>Tsutomu Terada (Kobe University) and Masahiko Tsukamoto (Kobe University)</i>	
Communication Robot for Elderly Based on Robotic Process Automation .251.....	
<i>Toru Kobayashi (Nagasaki University), Kenichi Arai (Nagasaki University), Tetsuo Imai (Nagasaki University), Shigeaki Tanimoto (Chiba Institute of Technology), Hiroyuki Sato (The University of Tokyo), and Atsushi Kanai (Hosei University)</i>	
Estimation Method of Traffic Volume in Provincial City Using Big-Data .257.....	
<i>Kazuki Someya (Graduate School of Kanagawa Institute of Technology), Masashi Saito (Kanazawa Institute of Technology), and Ryoza Kiyohara (Kanagawa Institute of Technology)</i>	
Using Smartwatches as an Interactive Movie Controller: A Case Study with the Bandersnatch Movie .263.....	
<i>Thamer Horbylon Nascimento (Instituto Federal Goiano – Campus Ipora, Ipora), Fabrizio Alphonsus Alves De Melo Nunes Soares (Universidade Federal de Goiás), Marcos Alves Vieira (Instituto Federal Goiano - Campus Ipora), Juliana Paula Felix (Universidade Federal de Goiás), Jaline Gonçalves Mombach (Universidade Federal de Goiás), Livia Mancine Coelho De Campos (Instituto Federal Goiano - Campus Ipora), Wellington Galvão Rodrigues (Universidade Federal de Goiás), Wesley Flavio De Miranda (Instituto Federal Goiano - Campus Ipora), and Ronaldo Martins Da Costa (Universidade Federal de Goiás)</i>	

ESAS: E-Health Systems & Web Technologies

ESAS 1

- Machine Learning-Based Modeling of Big Clinical Trials Data for Adverse Outcome Prediction: A Case Study of Death Events .269.....
Ling Tong (University of Wisconsin Milwaukee), Jake Luo (University of Wisconsin Milwaukee), Ron Cisler (Western Michigan University), and Michael Cantor (Regeneron Pharmaceuticals Inc)
- A Framework for Dengue Surveillance and Data Collection in Pakistan .275.....
Komal Minhas (COMSATS University Islamabad), Munazza Tabassam (COMSATS University Islamabad), Rida Rasheed (COMSATS University Islamabad), Assad Abbas (COMSATS University Islamabad), Hasan Ali Khattak (COMSATS University Islamabad), and Samee U. Khan (North Dakota State University)
- A Real-Time Cardiac Monitoring using a Multisensory Smart IoT System .281.....
Akm Jahangir Majumder (University of South Carolina Upstate), Mohammed Elsaadany (Miami University), Joshua Aaron Izaguirre (University of South Carolina), and Donald R. Ucci (Miami University)

ESAS 2

- Educational app Proposal to Support Pregnant Women .288.....
Daniel Scherer (State University of Paraíba) and José George Dias De Souza (State University of Paraíba)
- World First Retransmission of Medical Images in an Operating Room via DICOM-RTV: Technical Details .294
Saad El Jaouhari (B-com, France), Patrick Hardy (Harmonic, France), Guillaume Pasquier (B-com, France), Pierrick Gutter (B-com, France), Eric Poiseau (INRIA, France), Cédric Moubri-Tournes (B-com, France), Stéphane Leduc (B-com, France), Sébastien Vincendeau (Hospital Pontchaillou, France), Laurent Bourgeois (Hospital Pontchaillou, France), Bernard Gibaud (Rennes University, France), and Emmanuel Cordonnier (B-com, France)

OER: Open Educational Resources

OER 1

- Prototyping for Internet of Things with Web Technologies: A Case on Project-Based Learning using Scrum .300.....
Bahtijar Vogel (Malmö University), Bo Peterson (Malmö University), and Blerim Emruli (Malmö University)
- Mindset for Software Architecture Students .306.....
Lotfi Ben Othmane (Iowa State University) and Monica Lamm (Iowa State University)

Implementing Cybersecurity into the Wisconsin K-12 Classroom .312.....
Justin Wang (Marquette University, USA), Dennis Brylow (Marquette University, USA), and Debbie Perouli (Marquette University, USA)

An Approach for Developing a Conceptual Quality Model by Changing the Learner Behavior with OER .318..
Ahmed Alzaghouh (Universidad Politécnica de Madrid) and Edmundo Tovar (Universidad Politécnica de Madrid)

STA: Software Test Automation

STA 1

Mitigating Threats to Validity in Empirical Software Engineering: A Traceability Case Study .324.....
Nasser Mustafa (University of Nottingham Ningbo China), Yvan Labiche (Carleton University), and Dave Towey (University of Nottingham Ningbo China)

Short-Term Performance Metrics Forecasting for Virtual Machine to Support Anomaly Detection Using Hybrid ARIMA-WNN Model .330.....
Juan Qiu (Tongji University), Qingfeng Du (Tongji University, Shanghai China), Wei Wang (Tongji University, Shanghai China), Kanglin Yin (Tongji University, Shanghai China), and Liang Chen (University of Shanghai for Science and Technology)

STA 2

Software Fault Proneness Prediction with Group Lasso Regression: On Factors that Affect Classification Performance .336.....
Katerina Goseva-Popstojanova (West Virginia University), Mohammad Ahmad (West Virginia University, Morgantown), and Yasser Alshehri (Yanbu University College, Saudi Arabia)

STA 3

SPL-AT Gherkin: A Gherkin Extension for Feature Oriented Testing of Software Product Lines .344.....
Tugkan Tuglular (Izmir Institute of Technology) and Sercan ensülüin (Izmir Institute of Technology)

Towards Transforming User Requirements to Test Cases Using MDE and NLP .350.....
Sai Chaithra Allala (Florida International University), Juan P. Sotomayor (Florida International University), Dionny Santiago (Florida International University), Tariq M. King (Ultimate Software), and Peter J. Clarke (Florida International University)

Comparison of Runtime Testing Tools for Microservices .356.....
Juan P. Sotomayor (Florida International University), Sai Chaithra Allala (Florida International University), Patrick Alt (Ultimate Software), Justin Phillips (Ultimate Software), Tariq M. King (Ultimate Software), and Peter J. Clarke (Florida International University)

MediComp: Medical Computing

MediComp 1

- An Improved Semi-Supervised Learning Method on Cataract Fundus Image Classification .362.....
Wenai Song (North University of China), Ying Cao (North University of China), Zhiqiang Qiao (Beijing University of Posts and Telecommunications), Qing Wang (Tsinghua University), and Ji-Jiang Yang (Tsinghua University)
- A Novel Grading Method of Cataract Based on AWM .368.....
Changshuai Huo (Beijing University of Technology), Faheem Akhtar (Beijing University of Technology), and Pengzhi Li (Beijing University of Technology)
- Bi-Dimensional Representation of Patients for Diagnosis Prediction .374.....
Weijing Wang (Nankai University), Chenkai Guo (Nankai University), Jing Xu (Nankai University), and Ao Liu (Nankai University)

MediComp 2

- Viscoelasticity Measurements of knee Muscles with Simulated Knee Osteoarthritis Treated by Novel Chinese Medicine: A Preliminary Study .380.....
Siyuan Fang (Shenzhen University), Lixia Hu (Shenzhen University), Bin Du (Shenzhen University), Haoteng Zheng (Shenzhen University), Minhua Lu (Shenzhen University), and Rui Mao (Shenzhen University)
- Towards Clinical Decision Support for Veteran Mental Health Crisis Events using Tree Algorithm .386.....
Fitrat Hossain (Marquette University), Olawunmi George (Marquette University), Nadiyah Johnson (Marquette University), Praveen Madiraju (Marquette University), Mark Flower (DryHootch America), Zeno Franco (Medical College of Wisconsin), Katinka Hooyer (Medical College of Wisconsin), Jose Lizarraga Mazaba (Medical College of Wisconsin), Lisa Rein (Medical College of Wisconsin), and Sheikh Iqbal Ahamed (Marquette University)
- Semi-Automatic Construction Method of Chronic Obstructive Pulmonary Disease Knowledge Graph .391.....
Xin-Hong Jia (North University of China), Wen-Ai Song (North University of China), Wei-Yan Li (North University of China), Ji-Jiang Yang (Tsinghua University), Qing Wang (Tsinghua University), Yi Lei (Dfusion Co.Ltd.), Ke Huang (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science), Jun Li (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science), and Ting Yang (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science)

Observational Measures for Effective Profiling of Healthcare Staffs' Security Practices .397.....
Prosper Yeng (Norwegian University of Science and Technology), Bian Yang (Norwegian University of Science and Technology), and Einar Snekkenes (Norwegian University of Science and Technology)

MediComp 3

Multi-Scale Network with the Deeper and Wider Residual Block for MRI Motion Artifact Correction .405.....
Wei-Liang Zhang (Beijing University of Posts and Telecommunications), Qin-Yan Zhang (Beijing University of Posts and Telecommunications), Ji-Jiang Yang (Tsinghua University), and Qing Wang (Tsinghua University)

Classification of Pulmonary Nodules by using Improved Convolutional Neural Networks .411.....
Jing Gao (Capital University of Economics and Business, China), Huanqing Zhang (Capital University of Economics and Business, China), and Ruifang Shen (Capital University of Economics and Business, China)

Supervised and Unsupervised-Based Analytics of Intensive Care Unit Data .417.....
Rehnuma Afrin (Kennesaw State University), Hisham Haddad (Kennesaw State University), and Hossain Shahriar (Kennesaw State University)

MediComp 4

Prediction and Study of the Applicability of Medical Gels to Patients .423.....
Bo Liu (Beijing University of Technology), Mengmeng Huang (Beijing University of Technology), Kelu Yao (Beijing University of Technology), Lan Wei (Xuanwu Hospital Capital Medical University), Xiaolu Fei (Xuanwu Hospital Capital Medical University), and Wang Qing (Research Institute of Information and Technology, Tsinghua University)

Drug Specification Named Entity Recognition Base on BiLSTM-CRF Model .429.....
Wei-Yan Li (North University of China), Wen-Ai Song (North University of China), Xin-Hong Jia (North University of China), Ji-Jiang Yang (Tsinghua University), Qing Wang (Tsinghua University), Yi Lei (Beijing Dfusion Co.Ltd.), Ke Huang (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science), Jun Li (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science), and Ting Yang (China-Japan Friendship Hospital; National Clinical Research Center for Respiratory Diseases; Institute of Respiratory Medicine, Chinese Academy of Medical Science)

AMCNet: Attention-Based Multiscale Convolutional Network for DCM MRI Segmentation .434.....
Chao Luo (Chengdu University of Information Technology), Canghong Shi (Southwest Jiangtong University), Xian Zhang (Chengdu University of Information Technology), Jing Peng (Chengdu University of Information Technology), Xiaojie Li (Chengdu University of Information Technology), and Yucheng Chen (West China Hospital, Sichuan University)

MediComp 5

- Non-Invasive Wi-Fi Sensors For Smart Healthcare .440.....
Lori Kim (Kennesaw State University), Hossain Shahriar (Kennesaw State University), and Chi Zhang (Kennesaw State University)
- A Scalable Automated Diagnostic Feature Extraction System for EEGs .446.....
Prakhar Agrawal (University of San Francisco), Divya Bhargavi (University of San Francisco), Gokul Krishna G (University of San Francisco), Xiao Han (University of San Francisco), Neha Tevathia (University of San Francisco), Abbie Popa (University of San Francisco), Nicholas Ross (University of San Francisco), Diane Myung-Kyung Woodbridge (University of San Francisco), Barbie Zimmerman-Bier (New Jersey Medical School), and William Bosl (University of San Francisco)
- Blockchain-Based Interoperable Electronic Health Record Sharing Framework .452.....
Gracie Carter (Kennesaw State University), Hossain Shahriar (Kennesaw State University), and Sweta Sneha (Kennesaw State University)

NETSAP: Network Technologies for Security, Administration & Protection

NETSAP 1

- Towards Enhancement of Fault Traceability Among Multiple Hazard Analyses in Cyber-Physical Systems .458
Daneth Horn (Chungbuk National University Cheongju, Korea), Nazakat Ali (Chungbuk National University Cheongju, Korea), and Jang Eui Hong (Chungbuk National University Cheongju, Korea)
- Automatic Whitelist Generation for SQL Queries Using Web Application Tests .465.....
Komei Nomura (Pepabo R&D Institute, GMO Pepabo, Inc.), Kenji Rikitake (Pepabo R&D Institute, GMO Pepabo, Inc. / Kenji Rikitake Professional Engineer's Office.), and Ryosuke Matsumoto (SAKURA Research Center, SAKURA Internet Inc.)
- Detecting Successful Attacks from IDS Alerts Based On Emulation of Remote Shellcodes .471.....
Yo Kanemoto (NTT), Kazufumi Aoki (NTT), Makoto Iwamura (NTT), Jun Miyoshi (NTT), Daisuke Kotani (Kyoto University), Hiroki Takakura (National Institute of Informatics), and Yasuo Okabe (Kyoto University)

WISH: Integrated Smart Healthcare

WISH 1

- Activity Segmentation Using Wearable Sensors for DVT/PE Risk Detection .477.....
Austin Gentry (Drexel University), William Mongan (Drexel University), Brent Lee (Drexel University), Owen Montgomery (Drexel University College of Medicine), and Kapil Dandekar (Drexel University)
- Scalable Motor Movement Recognition from Electroencephalography using Machine Learning .484.....
Aditi Sharma (University of San Francisco), Shivee Singh (University of San Francisco), Brian Wright (University of San Francisco), Alan Perry (University of San Francisco), Diane Myung-Kyung Woodbridge (University of San Francisco), and Abbie Popa (University of San Francisco)

WISH 2

- Personalized Pain Study Platform using Evidence-Based Continuous Learning Tool .490.....
Amit Kumar Saha (Kitestring Technical Services), G M Tanimul Ahsan (University of Wisconsin), Md Osman Gani (Miami University), and Sheikh Iqbal Ahamed (Marquette University)
- DrunkSelfie: Intoxication Detection from Smartphone Facial Images .496.....
Colin Willoughby (Worcester Polytechnic Institute), Ian Banatoski (Worcester Polytechnic Institute), Paul Roberts (Worcester Polytechnic Institute), and Emmanuel Agu (Worcester Polytechnic Institute)

SAPSE: Security Aspects for Process & Services Engineering

SAPSE 1

- Generating Real Time Cyber Situational Awareness Information Through Social Media Data Mining .502.....
Ariel Rodriguez (Kyushu University) and Koji Okamura (Kyushu University)
- Making the Pedigree to Your Big Data Repository: Innovative Methods, Solutions, and Algorithms for Supporting Big Data Privacy in Distributed Settings via Data-Driven Paradigms .508.....
Alfredo Cuzzocrea (University of Trieste, Italy) and Ernesto Damiani (Kustar University and EBTIC, UAE)

InfoFlow: Information Flow Oriented Approaches in Internet of Things and Cyber-Physical Systems

InfoFlow 1

- Hybrid Approach for Enabling Hierarchical Fog Networks in an IoT Deployment .517.....
Nuwan Jayawardene (Informatics Institute of Technology, Sri Lanka) and Pumudu Fernando (Informatics Institute of Technology, Sri Lanka)

- A Comparative Approach on the use of Unmanned Aerial Vehicles kind of Fixed-Wing and Rotative Wing Applied to the Precision Agriculture Scenario .522.....
Robison Cris Brito (UTFPR), Mainara Cristina Lorencena (UTFPR), José Felipe Loureiro (UTFPR), Fabio Favarim (UTFPR), and Eduardo Todt (UTFPR)
- OpenFlow Based Information Flow Control Considering Route Switching Cost .527.....
Kosuke Gotani (Tohoku University), Hiroyuki Takahira (Tohoku University), Misumi Hata (Tohoku University), Luis Guillen (Tohoku University), Satoru Izumi (Tohoku University), and Toru Abe (Tohoku University)

MVDA: Workshop on Modeling and Verifying Distributed Applications

MVDA 1

- A Discrete Model of IEEE 1588-2008 Precision Time Protocol with Clock Servo using PI Controller .531.....
Ryuichiro Maegawa (Kwansei Gakuin University), Daiki Matsui (Kwansei Gakuin University), Yasuhiro Yamasaki (Kwansei Gakuin University), and Hiroyuki Ohsaki (Kwansei Gakuin University)
- Optimization System for Dynamic Flight Planning for Groups of Drones using Cooperation with Mobile Recharge Bases by Means of Multiagent System and Recursive Auctions .537.....
Robison Cris Brito (Federal University of Technology, Brazil), Jose Felipe Loureiro (Federal University of Technology, Brazil), Andre Guedes (Federal University of Parana, Brazil), and Eduardo Todt (Federal University of Parana, Brazil)
- Fluid-Based Modeling of Large-Scale IEEE 802.15.4 Wireless Sensor Networks .543.....
Kei Katayama (Kwansei Gakuin University) and Hiroyuki Ohsaki (Kwansei Gakuin University)

MVDA 2

- A Grammar Based Approach to BPMN Model Semantic Preservation using Refinement .549.....
Salma Ayari (Laboratory LATICE), Yousra Bendali Hlaoui (University of El Manar), and Leila Ben Ayed (University of Manouba)
- Formal Verification of Blockchain Smart Contract Based on Colored Petri Net Models .555.....
Zhentian Liu (Inner Mongolia University) and Jing Liu (Inner Mongolia University)
- From BPMN2 to Event B: A Specification and Verification Approach of Workflow Applications .561.....
Ahlem Ben Younes (Laboratory LaTICE /ENSIT University of Tunis, Tunisia), Yousra Ben Daly Hlaoui (Laboratory LaTICE _ University of Tunis/ FST_University of El Mannar, Tunisia), Leila Ben Ayed (Laboratory LaTICE – University of Tunis, Tunisia / ENSI, University of Manouba, Tunisia), and Mayssa Bessifi (Laboratory LaTICE, University of Tunis, Tunisia)

STPSA: Security, Trust & Privacy for Software Applications

STPSA 1

STPSA 2019 Welcome Message .567.....	
<i>Sheikh Iqbal Ahamed (Marquette University), Mohammad Zulkernine (Queen's University), Hossain Shahriar (Kennesaw State University), and Hongmei Chi (Florida A&M University)</i>	
Identification of the Impacts of Code Changes on the Security of Software .569.....	
<i>Lotfi Ben Othmane (Iowa State University), Ameerah-Muhsina Jamil (Iowa State University), and Moataz Abdelkhalek (Iowa State University)</i>	
User Behaviour-Based Access Control for Social Media with Qualitative Research and Bayesian Modelling .575.....	
<i>Sara McCloskey (University College Cork, Ireland) and John Herbert (University College Cork, Ireland)</i>	
Designing Good Security Metrics .580.....	
<i>George O. M. Yee (Carleton University and Aptusinnova Inc., Canada)</i>	

STPSA 2

Toward Machine Learning Based Analyses on Compressed Firmware .586.....	
<i>Seoksu Lee (Chungnam National University, Republic of Korea), Joon-Young Paik (Tianjin Polytechnic University, China), Rize Jin (Tianjin Polytechnic University, China), and Eun-Sun Cho (Chungnam National University, Republic of Korea)</i>	
Security Features for Proximity Verification .592.....	
<i>Juan Wang (Queen's University), Karim Lounis (Queen's University), and Mohammad Zulkernine (Queen's University)</i>	
Continuous User Authentication Based on Context-Emphasized Behavior Profiling .598.....	
<i>Shen Fu (Iowa State University), Mathew L. Wymore (Iowa State University), Ting-Wei Chang (Iowa State University), and Daji Qiao (Iowa State University)</i>	
Hands-on File Inclusion Vulnerability and Proactive Control for Secure Software Development .604.....	
<i>Hossain Shahriar (Kennesaw State University), Md Arabin Islam Talukder (Kennesaw State University), Mohammad Rahman (Florida International University), Hongmei Chi (Florida A&M University), Sheikh Ahamed (Marquette University), and Fan Wu (Tuskegee University)</i>	

QUORS: Quality Oriented Reuse of Software

QUORS 1

Automatic Multi-class Non-Functional Software Requirements Classification Using Neural Networks .610.....	
<i>Cody Baker (Towson University), Lin Deng (Towson University), Suranjan Chakraborty (Towson University), and Josh Dehlinger (Towson University)</i>	

Mob Programming: A Systematic Literature Review .616.....
Makoto Shiraiishi (Waseda University), Hironori Washizaki (Waseda University), Yoshiaki Fukazawa (Waseda University), and Joseph Yoder (The Refactory, Inc.)

Research on the Realizability of Microservice Interaction Contract Based on CSP# .622.....
Ruiqiong Wu (Yunnan University), Qing Duan (Yunnan University), Fei Dai (Southwest Forestry University), Hongji Yang (Leicester University), Yi Zhang (Yunnan University), and Biseng Xie (Yunnan University)

DFM: Data Flow Models and Extreme-Scale Computing

DFM 1

Toward A High-Performance Emulation Platformfor Brain-Inspired Intelligent SystemsExploring Dataflow-Based Execution Model and Beyond .628.....
Sihan Zeng (Carnegie Mellon University), Jose M Monsalve Diaz (Argonne National Laboratory and University of Delaware), and Siddhisanket Raskar (Argonne National Laboratory and University of Delaware)

A Disparity Computation Framework .634.....
Gabriel Da Silva Vieira (Federal Institute Goiano, Computer Vision Laboratory), Fabrizzio Alphonsus A.M.N. Soares (Federal University of Goiás, Pixelab Laboratory), Junio Cesar De Lima (Federal Institute Goiano, Computer Vision Laboratory), Hugo A. D. Do Nascimento (Federal University of Goiás, Pixelab Laboratory), Gustavo T. Laureano (Federal University of Goiás, Pixelab Laboratory), Ronaldo Martins Da Costa (Federal University of Goiás, Pixelab Laboratory), Júlio C. Ferreira (Federal Institute Goiano, Computer Vision Laboratory), and Wellington Galvão Rodrigues (Universidade Federal de Goias)

DFM 2

Position Paper: Extending Codelet Model for Dataflow Software Pipelining using Software-Hardware Co-Design .640.....
Siddhisanket Raskar (Argonne National Lab, University of Delaware), Thomas Applencourt (Argonne National Lab), Kalyan Kumaran (Argonne National Lab), and Guang Gao (University of Delaware)

A Functional Programming Model for Embedded Dataflow Applications .646.....
Christoph Kühbacher (University of Augsburg), Christian Mellwig (University of Augsburg), Florian Haas (University of Augsburg), and Theo Ungerer (University of Augsburg)

An Evaluation of An Asynchronous Task Based Dataflow Approach For Uintah .652.....
Alan Humphrey (University of Utah) and Martin Berzins (University of Utah)

BDCAA: The 1st IEEE International Workshop on Big Data Computation, Analysis, and Applications

BDCAA 1

Open Science, Business Analytics, and FAIR Digital Objects .658.....
George Strawn (National Academy of Sciences)

Job-Aware Optimization of File Placement in Hadoop .664.....
Makoto Nakagami (Kogakuin University Graduate School, Tokyo), Jose A. B. Fortes (University of Florida), and Saneyasu Yamaguchi (Kogakuin University, Tokyo)

An Emperical Study on Application of Big Data Analytics to Automate Service Desk Business Process .670...
Dan Lo (Kennesaw State Univeristy), Karl Kevin Tiba (Kennesaw State Univeristy), Sergiu Buciumas (Kennesaw State Univeristy), and Frank Ziller (Intelliteach)

SDIM: Secure Digital Identity Management

SDIM 1

Encrypted QR Code Based Optical Challenge-Response Authentication by Mobile Devices for Mounting Concealed File System .676.....
Yong Jin (Tokyo Institute of Technology) and Masahiko Tomoishi (Tokyo Institute of Technology)

An Interactive and Continuous Authorization Scheme by using Belnap Logic .682.....
Hiroyuki Sato (The University of Tokyo, Japan) and Sridhar Nikita (None)

Polysizemic Encryption: Towards a Variable-Length Output Symmetric-Key Cryptosystem .688.....
Jacob Hendricks (Southern Illinois University Edwardsville), Brandon Burke (Southern Illinois University Edwardsville), and Thoshitha Gamage (Southern Illinois University Edwardsville)

A Privacy-Preserving and Fully Decentralized Storage and Sharing System on Blockchain .694.....
Gen Li (The University of Tokyo) and Hiroyuki Sato (The University of Tokyo)

Author Index 701.....