

2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC 2021)

**Virtual Conference
12 – 16 July 2021**

Pages 1-651



**IEEE Catalog Number: CFP21061-POD
ISBN: 978-1-6654-2464-6**

**Copyright © 2021 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:	CFP21061-POD
ISBN (Print-On-Demand):	978-1-6654-2464-6
ISBN (Online):	978-1-6654-2463-9
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

2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC) **COMPSAC 2021**

Table of Contents

Message from the Standing Committee Chair .xl	.....
Message from the Standing Committee Vice Chair .xliii	.....
Message from the COMPSAC 2021 Program Chairs-in-Chief .xliv	.....
Message from COMPSAC 2021 Fast Abstract Co-Chairs .xlvi	.....
Message from the COMPSAC 2021 Workshop Chairs .xlvii	.....
COMPSAC 2021 Committees .xlix	.....
In Memorium .lii	.....
IEEE in an Internet Dominated World .liii	.....
<i>Susan Kathy Land (2021 IEEE President & CEO)</i>	
Safety and Resiliency Challenges for Highly Autonomous Intelligent Systems .liv	.....
<i>Cecilia Metra (University of Bologna (Italy), IEEE Computer Society Past-President)</i>	
Envisioning the Future of Software Engineering .lv	.....
<i>Forrest Shull (Carnegie Mellon, Software Engineering Institute, 2021 IEEE Computer Society President)</i>	
Panel Discussion: Publications of the Future .lvi	.....
Panel Discussion: Deriving Past, Present, and Future Tech to More Intelligent and Resilient Digital Realities for a Collaborative World .lviii	.....
COMPSAC 2021 President's Panel .lxi	.....
Panel Discussion: Future of the Workforce .lxiii	.....
Panel Discussion: Career Pointers from Computer Society Leadership .lxiv	.....

COMPSAC 2021 Symposia

ASYS – Autonomous Systems

Implementing Inductive Logic Into Embedded Industrial Control System with Polynomial Ring on F2 .1	.....
<i>Minzhong Luo (Institute of Information Engineering, Chinese Academy of Science, China) and Shan Yu (Institute of Automation, Chinese Academy of Sciences, China)</i>	
Comparison of Three Metaheuristic Algorithms for Optimization of Cyber Physical Systems .11	.....
<i>Fu-Shiung Hsieh (Chaoyang University of Technology, Taiwan)</i>	

Domain-Agnostic Context-Aware Framework for Natural Language Interface in a Task-Based Environment .15.....	
	<i>Sarthak Tiwari (Arizona State University, USA) and Ajay Bansal (Arizona State University, USA)</i>
Robot Motion Planning: can GPUs be a Game Changer? .21.....	
	<i>Enrico Saccon (University of Trento, Italy), Paolo Bevilacqua (University of Trento, Italy), Daniele Fontanelli (University of Trento, Italy), Marco Frego (Free University of Bozen, Italy), Luigi Palopoli (University of Trento, Italy), and Roberto Passerone (University of Trento, Italy)</i>
YOLOv4-Object: An Efficient Model and Method for Object Discovery .31.....	
	<i>Mang Ning (KTH Royal Institute of Technology, Sweden), Yao L (University of Bristol, UK), Wenyuan Hou (KTH Royal Institute of Technology, Sweden), and Mihhail Matskin (KTH Royal Institute of Technology, Sweden)</i>
Streaming Data Priority Scheduling Framework for Autonomous Driving by Edge .37.....	
	<i>Lingbing Yao (South China University of Technology, China), Hang Zhao (South China University of Technology, China), Jie Tang (South China University of Technology, China), Shaoshan Liu (PerceptIn, USA), and Jean-Luc Gaudiot (University of California, Irvine)</i>

CAP – Computer Architectures & Platforms

Synthesis of Heterogeneous Dataflow Models from Synchronous Specifications .43.....	
	<i>Omair Rafique (University of Kaiserslautern, Germany), Yu Bai (Hebei University of Science and Technology, China), Klaus Schneider (University of Kaiserslautern, Germany), and Guangxi Yan (Central South University, China)</i>
LLM-Shark – A Tool for Automatic Resource-Boundness Analysis and Cache Partitioning Setup .49	
	<i>Jakob Danielsson (Mälardalen University, Sweden), Tiberiu Seceleanu (Mälardalen University, Sweden), Marcus Jägemar (Mälardalen University, Sweden), Moris Behnam (Mälardalen University, Sweden), and Mikael Sjödin (Mälardalen University, Sweden)</i>
Resource Sharing and Security Implications on Machine Learning Inference Accelerators .59.....	
	<i>Plínio Silveira (Pontifical Catholic University of Rio Grande do Sul, Brazil), Cesar Augusto De Rose (Pontifical Catholic University of Rio Grande do Sul Porto Alegre, Brazil), Francisco Avelino Zorzo (Pontifical Catholic University of Rio Grande do Sul, Brazil), Miguel Gomes Xavier (Pontifical Catholic University of Rio Grande do Sul, Brazil), Dejan Milojicic (Hewlett Packard Labs, USA), Sai Rahul Chalamalasetti (Hewlett Packard Labs, USA), and Sergey Serebryakov (Hewlett Packard Labs, USA)</i>
HybridSkipList: A Case Study of Designing Distributed Data Structure with Hybrid RDMA .68.....	
	<i>Teng Ma (Tsinghua University, China), Dongbiao He (Tsinghua University, China), and Ning Liu (Tsinghua University, China)</i>

CELT – Computing Education & Learning Technologies

CLACER: A Deep Learning-Based Compilation Error Classification Method for Novice Students' Programs .74.....	
<i>Zheng Li (Beijing University of Chemical Technology, China), Fuxiang Sun (Beijing University of Chemical Technology, China), Haifeng Wang (Beijing University of Chemical Technology, China), Yifan Ding (Tsinghua University High School International, China), Yong Liu (Beijing University of Chemical Technology, China), and Xiang Chen (Nantong University, China)</i>	
Mathematics in Higher Education: A Transition from Blended to Online Learning in Pandemic Times .84.....	
<i>Federica Galluzzi (Università di Torino, Italy), Marina Marchisio (Università di Torino, Italy), Fabio Roman (Università di Torino, Italy), and Matteo Sacchet (Università di Torino, Italy)</i>	
Using Cognitive Interest Graphs and Knowledge-Activated Attention for Learning Resource Recommendation .93.....	
<i>Zeyu He (Institute of Acoustics, China; Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences), Jianzong Kuang (Key Laboratory of Speech Acoustics and Content Understanding, Institute of Acoustics, China), Li Wang (Key Laboratory of Speech Acoustics and Content Understanding, Institute of Acoustics, China), and Yonghong Yan (Key Laboratory of Speech Acoustics and Content Understanding, Institute of Acoustics, China)</i>	
Automatic Slides Generation in the Absence of Training Data .103.....	
<i>Luca Cagliero (Politecnico di Torino, Italy) and Moreno La Quatra (Politecnico di Torino, Italy)</i>	
What Should I Learn Next? Ranking Educational Resources .109.....	
<i>Victor Connes (Nantes University, France), Colin De La Higuera (Nantes University, France), and Hoël Le Capitaine (Nantes University, France)</i>	
From Teaching Books to Educational Videos and vice Versa: A Cross-Media Content Retrieval Experience .115.....	
<i>Lorenzo Canale (Politecnico di Torino, Italy), Luca Cagliero (Politecnico di Torino, Italy), and Laura Farinetti (Politecnico di Torino, Italy)</i>	
OPUS: An Alternate Reality Game to Learn SQL at University .121.....	
<i>Mara Lupano (Politecnico di Torino, Italy), Laura Farinetti (Politecnico di Torino, Italy), and Domenico Morreale (Politecnico di Torino, Italy)</i>	
Enhancing Student Learning Through an Open Educational Resource Competition .127.....	
<i>Henry C. B. Chan (The Hong Kong Polytechnic University), Isabel M. Kemp (The Hong Kong Polytechnic University), Winnie C. L. Leung (The Hong Kong Polytechnic University), Edmundo Tovar (Universidad Politécnica de Madrid), and Sorel Reisman (CSU Fullerton)</i>	
An Immersive Virtual Reality Platform for Training CBRN Operators .133.....	
<i>Fabrizio Lamberti (Politecnico di Torino, Italy), Federico De Lorenzis (Politecnico di Torino, Italy), F. Gabriele Praticò (Politecnico di Torino, Italy), and Massimo Migliorini (LINKS Foundation, Italy)</i>	

Study and Proposal for Visual Programming Platform - Design for Educational Robotics for Children Aged 8 to 14 Years .138.....
Daniel Scherer (Paraiba State University, Brasil) and Fábio Dantas Guimarães (Paraiba State University, Brasil)

DSAT – Data Sciences, Analytics & Technologies

Using Cloudmesh GAS for Speedy Generation of Hybrid Multi-cloud Auto Generated AI Services.144
Gregor von Laszewski (Indiana University, USA), Anthony Orłowski (Indiana University, USA), Richard H. Otten (Indiana University, USA), Reilly Markowitz (Indiana University, USA), Sunny Gandhi (Indiana University, USA), Adam Chai (Indiana University, USA), Geoffrey C. Fox (Indiana University, USA), and Wo L. CHang (NIST, USA)

A Machine Learning Approach for Gas Price Prediction in Ethereum Blockchain .156.....
Rawya Mars (redcad laboratory, Tunisia), Saoussen Cheikhrouhou (redcad laboratory, Tunisia), Slim Kallel (redcad laboratory, Tunisia), and Amal Abid (redcad laboratory, Tunisia)

Intelligent Probabilistic Forecasts of Day-Ahead Electricity Prices in a Highly Volatile Power Market .166.....
Behrouz Banitalebi (University of Manitoba, Canada), Srimantoora S. Appadoo (University of Manitoba, Canada), Yuvraj Gajpal (University of Manitoba, Canada), and Aerambamoorthy Thavaneswaran (University of Manitoba, Canada)

Learning to Match Workers and Tasks via a Multi-view Graph Attention Network .176.....
Nan Cui (Shanghai Jiao Tong University, China), Chunqi Chen (Shanghai Jiao Tong University, China), Beijun Shen (Shanghai Jiao Tong University, China), and Yuting Chen (Shanghai Jiao Tong University, China)

A Fast Training Method using Bounded Continual Learning in Image Classification .186.....
Seunghui Jang (Towson University, USA) and Yanggon Kim (Towson University, USA)

CGAN-IRB: A Novel Data Augmentation Method for Apple Leaf Diseases .192.....
Xinbin Yuan (Northwest A&F University, China), Cong Yu (Northwest A&F University, China), Bin Liu (Northwest A&F University, China), Henan Sun (Northwest A&F University, China), and Xianyu Zhu (Northwest A&F University, China)

An Empirical Evaluation of Algorithms for Data Labeling .201.....
Teodor Fredriksson (Chalmers University of Technology, Sweden), David Issa Mattos (Chalmers University of Technology, Sweden), Jan Bosch (Chalmers University of Technology, Sweden), and Helena Holmström Olsson (Malmö University, Sweden)

Enhancing LSTM Prediction of Vehicle Traffic Flow Data via Outlier Correlations .210.....
Wesley Fitters (Eindhoven University of Technology, The Netherlands), Alfredo Cuzzocrea (University of Calabria, Italy), and Marwan Hassani (Eindhoven University of Technology, The Netherlands)

A Novel Dynamic Demand Forecasting Model for Resilient Supply Chains using Machine Learning .218.....	
	<i>Md. Erfanul Hoque (Univeristy of Manitoba, Canada), Aerambamoorthy Thavaneswaran (University of Manitoba, Canada), Srimantoorao S. Appadoo (University of Manitoba, Canada), Ruppa K. Thulasiram (University of Manitoba, Canada), and Behrouz Banitalebi (University of Manitoba, Canada)</i>
ROCT: Radius-Based Class Overlap Cleaning Technique to Alleviate the Class Overlap Problem in Software Defect Prediction .228.....	
	<i>Shuo Feng (City University of Hong Kong, China), Jacky Keung (City University of Hong Kong, China), Jie Liu (Wuhan University, China), Yan Xiao (National University of Singapore, Singapore), Xiao Yu (Wuhan University of Technology, China), and Miao Zhang (City University of Hong Kong, China)</i>
Personalized and Dynamic top-k Recommendation System using Context Aware Deep Reinforcement Learning .238.....	
	<i>Anubha Kabra (Adobe Systems) and Anu Agarwal (Samsung R&D)</i>
Defect Detection of Metal Nuts Applying Convolutional Neural Networks .248.....	
	<i>Daniel Sauter (Aalen University, Germany), Anna Schmitz (Aalen University, Germany), Fulya Dikici (Aalen University, Germany), Hermann Baumgartl (Aalen University, Germany), and Ricardo Buettner (Aalen University, Germany)</i>
FaasRS: Remote Sensing Image Processing System on Serverless Platform .258.....	
	<i>Guang Yang (University of Chinese Academy of Sciences, China), Jie Liu (University of Chinese Academy of Sciences, China), Muzi Qu (University of Chinese Academy of Sciences, China), Shuai Wang (University of Chinese Academy of Sciences, China), Dan Ye (University of Chinese Academy of Sciences, China), and Hua Zhong (University of Chinese Academy of Sciences, China)</i>
Quantifying Event Impact on the Bitcoin Blockchain .268.....	
	<i>Anthony Luo (Columbia University, USA) and Dianxiang Xu (University of Missouri, USA)</i>
Improved Causal Models of Alzheimer's Disease .274.....	
	<i>Hengyi Hu (George Mason University, USA) and Larry Kerschberg (George Mason University, USA)</i>
Hierarchical Clustering Based on Local Cores and Sharing Concept .284.....	
	<i>Jinxin Shi (Chongqing University, China), Qingsheng Zhu (Chongqing University, China), Junnan Li (Chongqing University, China), Ji Liu (Chongqing University, China), and Dongdong Cheng (Yangtze Normal University, China)</i>
CASR: A Collaborative Attention Model for Session-Based Recommendation .290.....	
	<i>Peiyao Han (Heilongjiang University, China), Nan Wang (Heilongjiang University, China), Kun Li (Heilongjiang University, China), and Xiaokun Li (Postdoctoral Program of Heilongjiang Hengxun Technology Co., Ltd, China)</i>

Assessing Palliative Care Needs using Machine Learning Approaches .297.....	
	<i>Yun Shi (Fordham University, USA), Zhiyao Wu (Fordham University, USA), Shaolun Zhang (Fordham University, USA), Hong Xiao (University of Florida, Gainesville, USA), and Yijun Zhao (Fordham University, USA)</i>
Visual Defect Detection of Metal Screws using a Deep Convolutional Neural Network .303.....	
	<i>Daniel Sauter (Aalen University, Germany), Cem Atik (Aalen University, Germany), Christian Schenk (Aalen University, Germany), Ricardo Buettner (Aalen University, Germany), and Hermann Baumgartl (Aalen University, Germany)</i>
Abnormal Transaction Detection Based on Graph Networks .312.....	
	<i>Lian Yu (Peking University, China), Ning Zhang (Peking University, China), and Weiping Wen (Peking University, China)</i>
Consumer Fraud Detection via P-Feature Conversion .318.....	
	<i>Shanyan Lai (Hainan University, China), Junfang Wu (Hainan University, China), Zhiwei Ma (Hainan University, China), Chunyang Ye (Hainan University, China), and Hui Zhou (Hainan University, China)</i>
Lightnings over Rose Bouquets: An Analysis of the Topology of the Bitcoin Lightning Network .324.....	
	<i>Andrea Lisi (University of Pisa, Italy), Damiano Di Francesco Maesa (University of Cambridge, UK), Paolo Mori (Consiglio Nazionale delle Ricerche, IIT, Italy), and Laura Ricci (University of Pisa, Italy)</i>
A Bayesian Framework for Supporting Predictive Analytics over Big Transportation Data .332.....	
	<i>Marshall D. Jackson (University of Manitoba, Canada), Carson K. Leung (University of Manitoba, Canada), M. Diarra B. Mbacke (University of Manitoba, Canada), and Alfredo Cuzzocrea (University of Calabria, Italy)</i>
One Source to Detect Them All: Gender, Age, and Emotion Detection from Voice .338.....	
	<i>Syed Rohit Zaman (Military Institute of Science and Technology, Bangladesh), Dipan Sadekeen (Military Institute of Science and Technology, Bangladesh), M Aqib Alfaz (Military Institute of Science and Technology, Bangladesh), and Rifat Shahriyar (Bangladesh University of Engineering and Technology, Bangladesh)</i>
SALAD: Self-Adaptive Lightweight Anomaly Detection for Real-Time Recurrent Time Series .344.	
	<i>Ming-Chang Lee (Norwegian University of Science and Technology), Jia-Chun Lin (Norwegian University of Science and Technology), and Ernst Gunnar Gran (Norwegian University of Science and Technology)</i>
TimeRadar: Visualizing the Dynamics of Multivariate Communities via Timeline Views .350.....	
	<i>Ngan Nguyen (Texas Tech University, USA), Jon Hass (Dell Inc, USA), and Tommy Dang (Texas tech University, USA)</i>

EATA – Emerging Advances in Technologies & Applications

A Survey on Blockchain Data Analysis .357.....	
	<i>Wenhan Hou (Inner Mongolia University, China), Bo Cui (Inner Mongolia University, China), and Ru Li (Inner Mongolia University, China)</i>

A Novel Software Defect Prediction Method Based on Hierarchical Neural Network .366.....	
	<i>Huiqun Yu (East China University of Science and Technology, China), Xingjie Sun (East China University of Science and Technology, China), Ziyi Zhou (East China University of Science and Technology, China), and Guisheng Fan (East China University of Science and Technology, China)</i>
Diversifying Relevant Search Results from Social Media using Community Contributed Images .376	
	<i>Vaibhav Kalakota (Arizona State University, USA) and Ajay Bansal (Arizona State University, USA)</i>
In-air Signature Authentication using Smartwatch Motion Sensors .386.....	
	<i>Gen Li (The University of Tokyo), Lingfeng Zhang (The University of Tokyo), and Hiroyuki Sato (The University of Tokyo)</i>
Effectiveness of a Data-Based Influence Maximization Algorithm using Information Diffusion Cascades .396.....	
	<i>Takuya Nagase (University of Tsukuba, Japan) and Sho Tsugawa (University of Tsukuba, Japan)</i>
Estimating the Incidence of Adverse Weather Effects on Road Traffic Safety using Time Series Embeddings .402.....	
	<i>Jacopo Fior (Politecnico di Torino, Italy) and Luca Cagliero (Politecnico di Torino, Italy)</i>

HCSC – Human Computing & Social Computing

Improving Human-Centric Software Defect Evaluation, Reporting, and Fixing .408.....	
	<i>Kenny Huynh (Monash University, Australia), Juvent Benarivo (Monash University, Australia), Chew Da Xuan (Monash University, Australia), Giridhar Gopal Sharma (Monash University, Australia), Jeffrey Kang (Monash University, Australia), Anuradha Madugalla (Monash University, Australia), and John Grundy (Monash University, Australia)</i>
PeakVis: A Visual Analysis Tool for Social Network Data and Video Broadcasts .418.....	
	<i>Pedro Henrique M. Sanvido (Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil), Gabriela B. Kurtz (Arts and Design, Brazil), Carlos R. G. Teixeira (Arts and Design, Brazil), Pedro P. Wagner (Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil), Lorenzo P. Leuck (Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil), Milene S. Silveira (Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil), Roberto Tietzmann (Arts and Design, Brazil), and Isabel H. Manssour (Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil)</i>
College Life is Hard! - Shedding Light on Stress Prediction for Autistic College Students using Data-Driven Analysis .428.....	
	<i>Tanzima Z. Islam (Texas State University, USA), Philip Wu Liang (Western Washington University, USA), Forest Sweeney (Western Washington University, USA), Cody Pragner (Western Washington University, USA), and Jayaraman J. Thiagarajan (Lawrence Livermore National Laboratory, USA)</i>

Visualization as a Tool to Understand the Experience of College Students with Autism .438.....
Sean McCulloch (Western Washington University, USA), Joseph Gildner (VMWare, Seattle, WA, USA), Bradley Hoefel (Boeing, Seattle, WA, USA), Gabrielle Cervantes (Western Washington University, USA), Shameem Ahmed (Western Washington University, USA), and Moushumi Sharmin (Western Washington University, USA)

Detecting Offensive Content on Social Media During Anti-Lockdown Protests in Michigan .446.....
Jihye Moon (University of Connecticut, USA), Hieu Nguyen (University of Connecticut, USA), Bradshaw Pines (University of Connecticut, USA), and Swapna Gokhale (University of Connecticut, USA)

ITIP – IT in Practice

Challenges in Geographically Distributed Information System Development: A Case Study .452....
Jali Asp (University of Jyväskylä, Finland), Toni Taipalus (University of Jyväskylä, Finland), and Ville Seppänen (University of Jyväskylä, Finland)

Real-Time End-to-End Federated Learning: An Automotive Case Study .459.....
Hongyi Zhang (Chalmers University of Technology, Sweden), Jan Bosch (Chalmers University of Technology, Sweden), and Helena Holmström Olsson (Malmö University, Sweden)

Data Integrity Security Spots Detected by Object Reference .469.....
Rajasree Punmeth Radhakrishnan (Texas Tech University, USA), Michael Shin (Texas Tech University, USA), and Pushkar Ogale (Stephen F. Austin State University Nacogdoches, USA)

Behind the Mask: Masquerading the Reason for Prediction .475.....
Tomohiro Koide (Waseda University, Japan) and Masato Uchida (Waseda University, Japan)

SINETStream: Enabling Research IoT Applications with Portability, Security and Performance Requirements .482.....
Atsuko Takefusa (National Institute of Informatics, Japan), Jingtao Sun (National Institute of Informatics, Japan), Ikki Fujiwara (National Institute of Informatics, Japan), Hiroshi Yoshida (National Institute of Informatics, Japan), Kento Aida (National Institute of Informatics, Japan), and Calton Pu (Georgia Institute of Technology, USA)

Social-Based City Reconstruction Planning in Case of Natural Disasters: A Reinforcement Learning Approach .493.....
Ghulam Mudassir (University of L’Aquila, Italy) and Antinisca Di Marco (University of L’Aquila, Italy)

Ensemble-Based Efficient Anomaly Detection for Smart Building Control Systems .504.....
Nur Intiazul Haque (Florida International University, USA), Mohammad Ashiqur Rahman (Florida International University, USA), and Hossain Shahriar (Kennesaw State University, USA)

A Human-Centric Approach to Building a Smarter and Better Parking Application .514.....	
	<i>Chenlin Li (Monash University, Australia), Yuting Yu (Monash University, Australia), Jeremy Leckning (Monash University, Australia), Weicheng Xing (Monash University, Australia), Chun Long Fong (Monash University, Australia), John Grundy (Monash University, Australia), Devi Karolita (Monash University, Australia), Jennifer McIntosh (Monash University, Australia), and Humphrey Obie (Monash University, Australia)</i>
Towards an Indoor Navigation System using Monocular Visual SLAM .520.....	
	<i>Akshat Bajpai (University of the Pacific, USA) and Sepehr Amir-Mohammadian (University of the Pacific, USA)</i>
EasyCloud: Multi-clouds Made Easy .526.....	
	<i>Cosimo Anglano (University of Piemonte Orientale, Italy), Massimo Canonico (University of Piemonte Orientale, Italy), and Marco Guazzone (University of Piemonte Orientale, Italy)</i>
Augmented Reality for Training and Maintenance of Reclosers: A Case Study of a Wearable Application .532.....	
	<i>Arthur Bastos (Instituto Atlântico, Brazil), Samira Ribeiro (Instituto Atlântico, Brazil), Alano Pinto (Instituto Atlântico, Brazil), Francisco Marques (Instituto Atlântico, Brazil), Diogo Baldissin (Sense Plus, Brazil), and Flávio Reis (COPEL, Brazil)</i>
Combining Mobile Crowdsensing and Wearable Devices for Managing Alarming Situations .538..	
	<i>Viktoriya Kutsarova (Royal Institute of Technology - KTH, Sweden) and Mihhail Matskin (Royal Institute of Technology - KTH, Sweden)</i>

NCIW – Networks, Communications, Internet & Web Technologies

P4 Transformer: Towards Unified Programming for the Data Plane of Software Defined Network.544	
	<i>Zijun Hang (National University of Defense Technology, China), Yongjie Wang (National University of Defense Technology, China), and Shuguang Huang (National University of Defense Technology, China)</i>
Resource Discovery for Edge Computing over Named Data Networking .552.....	
	<i>Daishi Kondo (Osaka Prefecture University, Japan), Thomas Ansquer (Osaka Prefecture University, Japan), Yosuke Tanigawa (Osaka Prefecture University, Japan), and Hideki Tode (Osaka Prefecture University, Japan)</i>
A Multipath Routing Approach for Tile-Based Virtual Reality Video Streaming Based on SDN .560	
	<i>Fanyuan Zou (Beijing University of Posts and Telecommunications, China), Yumei Wang (Beijing University of Posts and Telecommunications, China), and Yu Liu (Beijing University of Posts and Telecommunications, China)</i>
A Data Scheduling Method for Video-on-Demand Systems on Radio Broadcasting Environments .566	
	<i>Satoru Matsumoto (Osaka University, Japan), Tomoki Yoshihisa (Osaka University, Japan), and Shinji Shimojo (Osaka University, Japan)</i>
Bringing Opportunistic Networking to Smartphones: A Pragmatic Approach .574.....	
	<i>Frédéric Guidec (IRISA-UBS, France), Yves Mahéo (IRISA-UBS, France), Pascale Launay (IRISA-UBS, France), Lionel Touseau (IRISA-UBS, France), and Camille Noûs (Laboratoire Cogitamus, France)</i>

SCH – Smart & Connected Health

An Investigation on Non-Invasive Brain-Computer Interfaces: Emotiv Epoc+ Neuroheadset and Its Effectiveness .580.....	
<i>Md Jobair Hossain (Kennesaw State University, USA), Maria Valero (Kennesaw State University, USA), and Hossain Shahriar (Kennesaw State University, USA)</i>	
Pain Level Assessment for Infants using Facial Expression Scores .590.....	
<i>Hermann Baumgartl (Aalen University, Germany), Dennis Flathau (Aalen University, Germany), Samuel Bayerlein (Aalen University, Germany), Ingo J. Timm (Trier University, Germany), and Ricardo Buettner (Aalen University, Germany)</i>	
Diagnostic Imaging Support System for Rheumatoid Arthritis using Ultrasound Images .599.....	
<i>Kenichi Arai (Nagasaki University, Japan), Chisato Miura (Nagasaki University, Japan), Shin-ya Kawashiri (Nagasaki University, Japan), Tetsuo Imai (Nagasaki University, Japan), and Toru Kobayashi (Nagasaki University, Japan)</i>	
Does Our Collective Stringency Control the Virus? Investigating Lockdown Effectiveness on Community Mobility Data .608.....	
<i>Kangcheng Li (Coventry University, UK), Jiangtao Wang (Coventry University, UK), Zhicen Liu (Beijing Jiaotong University, China), Yunqi Zhang (Beijing Jiaotong University, China), and Zihao Xie (Beijing Jiaotong University, China)</i>	
Auto-Grading OCT Images Diagnostic Tool for Retinal Diseases .618.....	
<i>Shiyu Tian (Marquette University, USA), Nihel Charfi (Marquette University, USA), Jannatul F Tumpa (Marquette University, USA), Nivedh Mudiam (Marquette University, USA), Velinka Medic (Medical College of Wisconsin, USA), Judy E Kim (Medical College of Wisconsin, USA), and Sheikh Iqbal Ahamed (Marquette University, USA)</i>	
Data-Driven Generation of Medical-Research Hypotheses in Cancer Patients .626.....	
<i>Hsin-Hsiung Chang (National Cheng Kung University, Taiwan; Paochien Hospital, Taiwan), Jung-Hsien Chiang (National Cheng Kung University, Taiwan), and Cheng-Chung Chu (Tunghai University, Taiwan)</i>	
Towards a Template Matching Approach for Human Fall Detection .632.....	
<i>Snigdha Chaudhari (Missouri State University, USA) and Razib Iqbal (Missouri State University, USA)</i>	
A Multi-case Perspective Analytical Framework for Discovering Human Daily Behavior from Sensors using Process Mining .638.....	
<i>Frans Prathama (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)</i>	
Pain Action Unit Detection in Critically Ill Patients .645.....	
<i>Subhash Nerella (University of Florida, USA), Julie Cupka (University of Florida, USA), Matthew Ruppert (University of Florida, USA), Patrick Tighe (University of Florida, USA), Azra Bihorac (University of Florida, USA), and Parisa Rashidi (University of Florida, USA)</i>	

A Markovian Probabilistic Model for Risk Analysis and Forecasting in Big Healthcare Data Settings .652.....	
	<i>Antonio Coronato (ICAR-CNR, Italy) and Alfredo Cuzzocrea (University of Calabria, Italy; LORIA, France)</i>
Prediction of COVID-19 from Chest X-ray Images using Multiresolution Texture Classification with Robust Local Features .663.....	
	<i>Zakariya A. Oraibi (University of Basrah, Iraq) and Safaa Albasri (University of Missouri - Columbia, USA)</i>
Data Analysis Methods for Health Monitoring Sensors: A Survey .669.....	
	<i>Shahriar Sobhan (Kennesaw State University), Md Saiful Islam (Kennesaw State University), Maria Valero (Kennesaw State University), Hossain Shahriar (Kennesaw State University), and Sheikh I. Ahamed (Marquette University)</i>
Unmasking the Mask Debate on Social Media .677.....	
	<i>Luca Cerbin (University of Connecticut, USA), Jason DeJesus (University of Connecticut, USA), Julia Warnken (University of Connecticut, USA), and Swapna Gokhale (University of Connecticut, USA)</i>
Gestation: A Microservice Architecture for a Prenatal Care Application .683.....	
	<i>Jose George Dias de Souza (Paraiba State University, Brasil) and Daniel Scherer (Paraiba State University, Brasil)</i>
Towards Developing an EMR in Mental Health Care for Children's Mental Health Development Among the Underserved Communities in USA .688.....	
	<i>Kazi Zawad Arefin (Marquette University, USA), Kazi Shafiul Alam Shuvo (Marquette University, USA), Masud Rabbani (Marquette University, USA), Peter Dobbs (Marquette Energy Analytics Milwaukee, USA), Leah Jepson (Next Step Clinic, Mental Health America of WI, USA), Amy Leventhal (Next Step Clinic, Mental Health America of WI, USA), Amy Vaughan Van Hecke (Marquette University, USA), and Sheikh Iqbal Ahamed (Marquette University, USA)</i>

SEPT – Security, Privacy & Trust in Computing

The Impact Analysis of Multiple Miners and Propagation Delay on Selfish Mining .694.....	
	<i>Qing Xia (Institute of Software, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Wensheng Dou (Institute of Software, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Tong Xi (Institute of Information Engineering, Chinese Academy of Sciences, China), Jing Zeng (Institute of Software, Chinese Academy of Sciences, China), Fengjun Zhang (Institute of Software, Chinese Academy of Sciences, China), Jun Wei (Institute of Software, Chinese Academy of Sciences, China), and Geng Liang (Institute of Software, Chinese Academy of Sciences, China)</i>
Detecting Event-Synced Navigation Attacks Across User-Generated Content Platforms .704.....	
	<i>Hiroki Nakano (NTT, Japan), Daiki Chiba (NTT, Japan), Takashi Koide (NTT, Japan), and Mitsuaki Akiyama (NTT, Japan)</i>

Integrating Heterogeneous Security Knowledge Sources for Comprehensive Security Analysis .714	
<i>Guodi Wang (Beijing University of Technology, China), Runzi Zhang (NSFOCUS Technologies Group Co., Ltd., China), Tong Li (Beijing University of Technology, China), Hao Yue (Beijing University of Technology, China), and Zhen Yang (Beijing University of Technology, China)</i>	
DDAF: Deceptive Data Acquisition Framework Against Stealthy Attacks in Cyber-Physical Systems .725.....	
<i>Md Hasan Shahriar (Florida International University, USA), Mohammad Ashiqur Rahman (Florida International University, USA), Nur Imtiazul Haque (Florida International University, USA), and Badrul Chowdhury (The University of North Carolina at Charlotte, USA)</i>	
An Empirical Study of Vulnerabilities in Robotics .735.....	
<i>Kaitlyn Cottrell (Tennessee Technological University), Dibyendu Brinto Bose (Reeve Systems, Bangladesh), Hossain Shahriar (Kennesaw State University), and Akond Rahman (Tennessee Technological University)</i>	
LANTENNA: Exfiltrating Data from Air-Gapped Networks via Ethernet Cables Emission .745.....	
<i>Mordechai Guri (Ben-Gurion University of the Negev, Israel)</i>	
A Systematic Mapping Study on Approaches for AI-Supported Security Risk Assessment .755.....	
<i>Gencer Erdogan (SINTEF, Norway), Enrique Garcia-Ceja (SINTEF, Norway), Åsmund Hugo (SINTEF, Norway), Phu Nguyen (SINTEF, Norway), and Sagar Sen (SINTEF, Norway)</i>	
Towards Provenance-Based Trust-Aware Model for Socio-Technically Connected Self-Adaptive System .761.....	
<i>Hyo-Cheol Lee (Ajou University, South Korea) and Seok-Won Lee (Ajou University, South Korea)</i>	
Impact of Resource-Constrained Networks on the Performance of NIST Round-3 PQC Candidates 768	
<i>Dale Auten (Anti-Tamper Engineering Capability Center, Boeing, USA) and Thoshitha Gamage (Southern Illinois University Edwardsville, USA)</i>	

MOWU – Mobile, Wearable & Ubiquitous Computing

An Adaptively Parameterized Algorithm Estimating Respiratory Rate from a Passive Wearable RFID Smart Garment .774.....	
<i>Robert Ross (Drexel University, USA), William Mongan (Drexel University, USA), Patrick O’Neill (Drexel University, USA), Ilhaan Rasheed (Drexel University, USA), Adam Fontecchio (Drexel University, USA), Genevieve Dion (Drexel University, USA), and Kapil Dandekar (Drexel University, USA)</i>	
A Bowel Sound Detection Method Based on a Novel Non-Speech Body Sound Sensing Device .785	
<i>Yuzhe Qiao (Nanjing University, China), Liang Wang (Nanjing University, China), and Xianping Tao (Nanjing University, China)</i>	

A Transfer Learning Approach to Surface Detection for Accessible Routing for Wheelchair Users .794.....
Valeria Mokrenko (Miami University, Oxford, OH, USA), Haoxiang Yu (Miami University, Oxford, OH, USA), Vaskar Raychoudhury (Miami University, Oxford, OH, USA), Janick Edinger (University of Hamburg, Germany), Roger O. Smith (University of Wisconsin, Milwaukee, USA), and Md Osman Gani (University of Maryland Baltimore County)

Predicting Next Call Duration: A Future Direction to Promote Mental Health in the Age of Lockdown .804.....
Sudip Vhaduri (Fordham University, USA), Sayanton V. Dibbo (Dartmouth College, USA), Chih-You Chen (Fordham University, USA), and Christian Poellabauer (University of Notre Dame, USA)

SETA – Software Engineering Technologies & Applications

Recommending Bug-Fixing Comments from Issue Tracking Discussions in Support of Bug Repair .812
Rezarta Krasniqi (University of Notre Dame, USA)

Automatic Learning Path Recommendation for Open Source Projects using Deep Learning on Knowledge Graphs .824.....
Hang Yin (Peking University, China), Zhiyu Sun (Peking University, China), Yanchun Sun (Peking University, China), and Gang Huang (Peking University, China)

Predicting Entity Relations Across Different Security Databases by using Graph Attention Network .834.....
Liu Yuan (Tianjin University, Tianjin, China), Yude Bai (Tianjin University, Tianjin, China), Sen Chen (Tianjin University, Tianjin, China), Zhenchang Xing (Australian National University, Australia), Xiaohong Li (Tianjin University, Tianjin, China), and Zhidong Deng (State Grid Customer Service Center, China)

Graphical Modeling VS. Textual Modeling: An Experimental Comparison Based on iStar Models .844
Wenxing Liu (Beijing University of Technology, China), Yunduo Wang (Beijing University of Technology, China), Qixiang Zhou (Beijing University of Technology, China), and Tong Li (Beijing University of Technology, China)

A Support Tool for the L+1-Layer Divide & Conquer Approach to Leads-to Model Checking .854..
Yati Phyo (Japan Advanced Institute of Science and Technology, Japan), Canh Minh Do (Japan Advanced Institute of Science and Technology, Japan), and Kazuhiro Ogata (Japan Advanced Institute of Science and Technology, Japan)

Exploiting Multi-aspect Interactions for God Class Detection with Dataset Fine-Tuning .864.....
Shaojun Ren (Beijing Institute Of Technology School of Computer Science, China), Chongyang Shi (Beijing Institute Of Technology School of Computer Science, China), and Shuxin Zhao (Beijing Institute Of Technology School of Computer Science, China)

Uncertainty Modeling and Quantitative Evaluation of Cyber-Physical Systems .874.....	
	<i>Chenchen Yang (East China Normal University, China), Haiying Sun (East China Normal University, China), Jing Liu (East China Normal University, China), Jiexiang Kang (China Aeronautical Radio Electronics Research Institute, China), Wei Yin (China Aeronautical Radio Electronics Research Institute, China), Hui Wang (China Aeronautical Radio Electronics Research Institute, China), and Tengfei Li (R&D Institute, CASCO Signal Ltd., China)</i>
Trace-Based Intelligent Fault Diagnosis for Microservices with Deep Learning .884.....	
	<i>Hao Chen (Institute of Software Chinese Academy of Sciences, China), Kegang Wei (Institute of Software Chinese Academy of Sciences, China), An Li (Institute of Software Chinese Academy of Sciences, China), Tao Wang (Institute of Software Chinese Academy of Sciences, China), and Wenbo Zhang (Institute of Software Chinese Academy of Sciences, China)</i>
API Change Impact Analysis for Android Apps .894.....	
	<i>Tarek Mahmud (Texas State University, USA), Mujahid Khan (Texas State University, USA), Jihan Rouijel (Texas State University, USA), Meiru Che (Concordia University Texas, USA), and Guowei Yang (The University of Queensland, Australia)</i>
A Self-Enhanced Automatic Traceability Link Recovery via Structure Knowledge Mining for Small-Scale Labeled Data .904.....	
	<i>Lei Chen (Laboratory for Internet Software Technologies, ISCAS and University of Chinese Academy of Sciences, China), Dandan Wang (Laboratory for Internet Software Technologies, ISCAS, China), Lin Shi (Laboratory for Internet Software Technologies, ISCAS, China), and Qing Wang (Laboratory for Internet Software Technologies and State Key Laboratory of Computer Science, ISCAS and University of Chinese Academy of Sciences, China)</i>
A Large-Scale Empirical Study of COVID-19 Themed GitHub Repositories .914.....	
	<i>Liu Wang (Beijing University of Posts and Telecommunications, China), Ruiqing Li (The University of Queensland, China), Jiaxin Zhu (Institute of Software, Chinese Academy of Sciences, China), Guangdong Bai (The University of Queensland, China), and Haoyu Wang (Beijing University of Posts and Telecommunications, China)</i>
Multi-faceted Classification for the Identification of Informative Communications During Crises: Case of COVID-19 .924.....	
	<i>Zhuoli Xie (University of North Texas, USA), Ajay Jayanth (University of North Texas, USA), Kapil Yadav (University of North Texas, USA), Guanghui Ye (Central China Normal University, USA), and Lingzi Hong (University of North Texas, USA)</i>
Perceived Benefits of Continuous Deployment in Software-Intensive Embedded Systems .934.....	
	<i>Anas Dakkak (Ericsson AB, Sweden), David Issa Mattos (Chalmers University of Technology, Sweden), and Jan Bosch (Chalmers University of Technology, Sweden)</i>
Local and Global Feature Based Explainable Feature Envy Detection .942.....	
	<i>Xin Yin (Beijing Institute of Technology, China), Chongyang Shi (Beijing Institute of Technology, China), and Shuxin Zhao (Beijing Institute of Technology, China)</i>

Graph Representation for Data Flow Coverage .952.....	
	<i>Mario Concilio Neto (University of Sao Paulo, Brazil), Roberto Paulo Andrioli de Araujo (University of Sao Paulo, Brazil), Marcos Lordello Chaim (University of Sao Paulo, Brazil), and Jeff Offutt (George Mason University, USA)</i>
MuKEA-TCP: A Mutant Kill-Based Local Search Augmented Evolutionary Algorithm Approach for Test Case Prioritization .962.....	
	<i>Ekincan Ufuktepe (University of Missouri - Columbia, USA), Deniz Kavzak Ufuktepe (University of Missouri - Columbia, USA), and Korhan Karabulut (Yasar University, Turkey)</i>
A Variability-Enabling and Model-Driven Approach to Adaptive Microservice-Based Systems .968	
	<i>Chang-ai Sun (University of Science and Technology Beijing, China), Jing Wang (University of Science and Technology Beijing, China), Zhenxian Liu (University of Science and Technology Beijing, China), and Yanbo Han (North China University of Technology, China)</i>
Second-Order Mutation Testing Cost Reduction Based on Mutant Clustering using SOM Neural Network Model .974.....	
	<i>Jing Liu (Inner Mongolia University, China) and Li Song (Inner Mongolia University, China)</i>
Weighted Reward for Reinforcement Learning Based Test Case Prioritization in Continuous Integration Testing .980.....	
	<i>Guowei Li (Beijing University of Chemical Technology, China), Yang Yang (Beijing University of Chemical Technology, China), Zhaolin Wu (Beijing University of Chemical Technology, China), Tiange Cao (Beijing University of Chemical Technology, China), Yong Liu (Beijing University of Chemical Technology, China), and Zheng Li (Beijing University of Chemical Technology, China)</i>
DockerGen: A Knowledge Graph Based Approach for Software Containerization .986.....	
	<i>Hongjie Ye (University of Chinese Academy of Sciences, China), Jiahong Zhou (University of Chinese Academy of Sciences, China), Wei Chen (Institute of Software, Chinese Academy of Sciences, China), Jiabin Zhu (Institute of Software, Chinese Academy of Sciences, China), Guoquan Wu (Institute of Software, Chinese Academy of Sciences, China), and Jun Wei (Institute of Software, Chinese Academy of Sciences, China)</i>
An Architecture for Enabling A/B Experiments in Automotive Embedded Software .992.....	
	<i>Yuchu Liu (Volvo Cars, Sweden), Jan Bosch (Chalmers University of Technology, Sweden), Helena Holmström Olsson (Malmö University, Sweden), and Jonn Lantz (Volvo Cars, Sweden)</i>
Effective Multi-fault Localization Based on Fault-Relevant Statistics .998.....	
	<i>Sihan Xu (Nankai University, China), Ya Gao (Nanjing University of Science and Technology, China), Xiangrui Cai (Nankai University, China), Zhiyu Wang (Nankai University, China), and Hua Ji (Nankai University, China)</i>
Scrum, Sampling, and the 90 Percent Syndrome .1004.....	
	<i>Carl K. Chang (Iowa State University, USA) and Robert Ward (Iowa State University, USA)</i>

- Code Change Sniffer: Predicting Future Code Changes with Markov Chain .1014.....
Ekincan Ufuktepe (University of Missouri - Columbia, USA) and Tugkan Tuglular (Izmir Institute of Technology, Turkey)
- Key Aspects Augmentation of Vulnerability Description Based on Multiple Security Databases.1020
Hao Guo (Tianjin University, China), Zhenchang Xing (Australian National University and Data61 CSIRO, Australia), Sen Chen (Tianjin University, China), Xiaohong Li (Tianjin University, China), Yude Bai (Tianjin University, China), and Hu Zhang (State Grid Customer Service Center, China)
- Towards a Modelling Workbench with Flexible Interaction Models for Model Editors Operating Through Voice and Gestures .1026.....
Joao Fonseca de Carvalho (Nova School of Science and Technology, Portugal) and Vasco Amaral (Nova School of Science and Technology, Portugal)

SRS – Student Research Symposium

- Parallel Deep Neural Networks for Musical Genre Classification: A Case Study .1032.....
Hui Yuan (Fordham University, USA), Wenjia Zheng (Fordham University, USA), Yun Song (Fordham University, USA), and Yijun Zhao (Fordham University, USA)
- How Do Avatar Appearances Affect Communication from Others? .1036.....
Yasuaki Kobayashi (University of Fukui, Japan), Tomoya Kawakami (University of Fukui, Japan), Satoru Matsumoto (Osaka University, Japan), Tomoki Yoshihisa (Osaka University, Japan), Yuuichi Teranishi (Osaka University / National Institute of Information and Communications Technology, Japan), and Shinji Shimojo (Osaka University, Japan)

SIOT – Smart IoT Systems & Applications

- Consistent Substitution of Object in Rule-Based IoT Applications .1040.....
Gwen Salaün (University Grenoble Alpes, France)
- Securing Smart Homes via Software-Defined Networking and Low-Cost Traffic Classification .1049
Bhagyashri Tushir (Santa Clara University, USA), Holden Gordon (Santa Clara University, USA), Christopher Batula (Santa Clara University, USA), Behnam Dezfouli (Santa Clara University, USA), and Yuhong Liu (Santa Clara University, USA)
- MI-FIWARE: A web Component Development Method for FIWARE using Microservices .1058....
Juan Alberto Llopis (University of Almeria, Spain), Manel Mena (University of Almeria, Spain), Javier Criado (University of Almeria, Spain), and Luis Iribarne (University of Almeria, Spain)

MediComp: Medical Computing

- Discriminative Pattern Mining for Runtime Security Enforcement of Cyber-Physical Point-of-Care Medical Technology .1066.....
Fredrick Love (Missouri University of Science and Technology, USA), Jennifer Leopold (Missouri University of Science and Technology, USA), Bruce McMillin (Missouri University of Science and Technology, USA), and Fei Su (Intel Corporation, USA)
- Reviewing Polypharmacy in Elderly Individuals of Rural Regions .1073.....
Sayeda Farzana Aktar (Marquette University, USA), Feroz Jahangir Rana (Marquette University, USA), Siam Rezwan (Johns Hopkins University, USA), Iysa Iqbal (Iqbal5 Nicolet High School, USA), Lopa Kabir (Marshfield Clinic Health System, USA), Rezwan Islam (Ascension - Medical Group, USA), and Sheikh Iqbal Ahamed (Marquette University, USA)
- MLNER: Exploiting Multi-Source Lexicon Information Fusion for Named Entity Recognition in Chinese Medical Text .1079.....
Yinlong Xiao (Beijing University of Technology, China), Qing Zhao (Beijing University of Technology, China), Jianqiang Li (Beijing University of Technology, China), Jieqing Chen (Peking Union Medical College Hospital, China), and Zhenning Cheng (Analyzefocus Information Consultant Ltd, China)

NETSAP: Network Technologies for Security, Administration & Protection

- Updating the Taxonomy of Intrusion Detection Systems .1085.....
Abhishek Phadke (Texas A&M University, Corpus Christi, USA) and Stanislav Ustymenko (Texas A&M University, Corpus Christi, USA)
- Potential Security Risks of Internationalized Domain Name Processing for Hyperlink .1092.....
Taiga Shirakura (Nagoya University, Japan), Hirokazu Hasegawa (Nagoya University, Japan), Yukiko Yamaguchi (Nagoya University, Japan), and Hajime Shimada (Nagoya University, Japan)
- Identification of TLS Communications using Randomness Testing .1099.....
Atsushi Kanda (Institute of Information Security, Japan) and Masaki Hashimoto (Institute of Information Security, Japan)
- Security Metric for Networks with Intrusion Detection Systems Having Time Latency using Attack Graphs .1107.....
Shuvo Bardhan (National Institute of Standards and Technology (NIST), USA) and Abdella Battou (National Institute of Standards and Technology (NIST), USA)

OER: Open Education Resources for Computer Science & Information Technology

- Teaching Entrepreneurship using C3 Model-Map .1114.....
Henry C. B. Chan (The Hong Kong Polytechnic University)

Use of Augmented and 3D Visualization as a Tool to Support the Teaching of Spatial Geometry .1119.....	<i>Thiciany Matsudo Iwano (Paraiba State University, Brasil), Dayvson Duarte Pereira (Paraiba State University, Brasil), and Daniel Scherer (Paraiba State University, Brasil)</i>
Remote Software Development: A Student-Staff Collaboration to Build a Showcase Platform for Non-Traditional Digital Artefacts .1125.....	<i>Dave Towey (University of Nottingham Ningbo, China), Kevin Ferdinand (University of Nottingham Ningbo, China), Gabrielle Saputra Hadian (University of Nottingham Ningbo, China), Ioan Christian Halim (University of Nottingham Ningbo, China), Aurelie U-King Im (University of Nottingham Ningbo, China), Joseph Manuel Thenara (University of Nottingham Ningbo, China), Patricia Wong (University of Nottingham Ningbo, China), and Li-Kai Wu (University of Nottingham Ningbo, China)</i>
Transcribathons as Practice-Based Learning for Historians and Computer Scientists .1131.....	<i>Ciara Breathnach (University of Limerick Lero and Health Research Institute, Ireland), Rachel Murphy (University of Limerick Limerick, Ireland), and Tiziana Margaria (University of Limerick, Ireland; Lero and Health Research Institute Limerick, Ireland)</i>
Creating a Virtual Reality OER Application to Teach Web Accessibility .1137.....	<i>Chengke Tang (University of Nottingham Ningbo China, China), Amarpreet Gill (University of Nottingham Ningbo China, China), Matthew Pike (University of Nottingham Ningbo China, China), and Dave Towey (University of Nottingham Ningbo China, China)</i>

QUORS: Quality Oriented Reuse of Software

A Keyword Query Approach Based on Community Structure of RDF Entity Graph .1143.....	<i>Hanning Zhang (Xi'an Jiaotong University, China), Bo Dong (Xi'an Jiaotong University, China), Boqin Feng (Xi'an Jiaotong University, China), and Bifan Wei (Xi'an Jiaotong University, China)</i>
ApproxiFuzzer: Fuzzing Towards Deep Code Snippets in Java Programs .1149.....	<i>Xintian Yu (Shanghai Jiao Tong University, China), Enze Ma (Beijing Forestry University, China), Pengbo Nie (Shanghai Jiao Tong University, China), Beijun Shen (Shanghai Jiao Tong University, China), Yuting Chen (Shanghai Jiao Tong University, China), and Ziyi Lin (Alibaba Group Inc., China)</i>
Classifying Memory Bugs using Bugs Framework Approach .1157.....	<i>Irena Bojanova (NIST, USA) and Carlos Eduardo Cardoso Galhardo (INMETRO, Brazil)</i>
Optimised Fusion Model for Meeting Sulphur Abatement Standards in Shipping Industry .1165...	<i>Yuting Hu (University of Portsmouth, United Kingdom), Shikun Zhou (University of Portsmouth, United Kingdom), David Sanders (University of Portsmouth, United Kingdom), Weicong Zhang (Zhejiang Wanli University, China), and Linda Yang (University of Portsmouth, United Kingdom)</i>

- An Optimal Composite Service Selection Model Based on Edge-Cloud Collaboration .1170.....
Yan Wang (Inner Mongolia University, China), Na Zhou (Inner Mongolia University, China), Haixia Lang (Inner Mongolia University, China), and Yunying Li (Inner Mongolia University, China)
- A Distributed Cloud Honeypot Architecture .1176.....
Jason Xiaojun Huang (University of Portsmouth, UK), Shikun Zhou (University of Portsmouth, UK), Nick Savage (University of Portsmouth, UK), and Weicong Zhang (Zhejiang Wanli University, China)

SCA: Smart Computing & Applications

- Design and Implementation of a Voice Interactive Tool to Facilitate Web Collaboration .1182.....
Qiang Li (North Minzu University, China), Wenxia Qiao (North Minzu University, China), Haiyang Tian (North Minzu University, China), Zhi Li (North Minzu University, China), and Mingjuan Ma (North Minzu University, China)
- Accelerating Transmission of Streaming Files Based on AL-FEC Protection Blocks .1188.....
Shih-Ying Chang (Information and Communication Research Labs, ITRI), Hsin-Ta Chiao (Tunghai University, Taiwan), Ruey-Kai Sheu (Tunghai University, Taiwan), Lun-Chi Chen (Tunghai University, Taiwan), and Welly Chen (Tunghai University, Taiwan)

SDIM: Secure Digital Identity Management

- FireBugs: Finding and Repairing Cryptography API Misuses in Mobile Applications .1194.....
Larry Singleton (Mutual of Omaha Insurance Company), Rui Zhao (University of Nebraska at Omaha), Harvey Siy (University of Nebraska at Omaha, USA), and Myoungkyu Song (University of Nebraska at Omaha, USA)
- Mutual Secrecy of Attributes and Authorization Policies in Identity Federation .1202.....
Satsuki Nishioka (Kyoto University, Japan) and Yasuo Okabe (Kyoto University, Japan)
- Addressing Audit and Accountability Issues in Self-Sovereign Identity Blockchain Systems using Archival Science Principles .1210.....
Lemieux Victoria (University of British Columbia, Canada), Voskobojnikov Artemij (University of British Columbia, Canada), and Kang Meng (University of British Columbia, Canada)
- Decentralizing Identity Management and Vehicle Rights Delegation Through Self-Sovereign Identities and Blockchain .1217.....
Sofia Terzi (Centre for Research & Technology Hellas/ITI, Greece), Charalampos Savvaidis (Centre for Research & Technology Hellas/ITI, Greece), Athanasios Sersemis (Centre for Research & Technology Hellas/ITI, Greece), Konstantinos Votis (Centre for Research & Technology Hellas/ITI, Greece), and Dimitrios Tzovaras (Centre for Research & Technology Hellas/ITI, Greece)

SE4ICPS: Software Engineering for Industrial Cyber-Physical Systems

- Learning Models of Cyber-Physical Systems using Automata Learning .1224.....
Lutz Schammer (TU Hamburg, Germany), Swantje Plambeck (TU Hamburg, Germany), Fin Hendrik Bahnsen (TU Hamburg, Germany), and Görschwin Fey (TU Hamburg, Germany)
- YOLO-Based Panoptic Segmentation Network .1230.....
Manuel Alejandro Diaz-Zapata (Inria Grenoble - Rhône Alpes, France), Özgür Ercent (Inria Grenoble - Rhône Alpes, France), and Christian Laugier (Inria Grenoble - Rhône Alpes, France)
- A Model to Helping the Construction of Creative Service-Based Software .1235.....
Pei-Shu Huang (National Yang-Ming Chiao-Tung University, Taiwan), Faisal Fahmi (National Yang-Ming Chiao-Tung University, Taiwan), and Feng-Jian Wang (National Yang-Ming Chiao-Tung University, Indonesia)

SESS: Software Engineering for Smart Systems

- H-FFMRA: A Multi Resource Fully Fair Resources Allocation Algorithm in Heterogeneous Cloud Computing .1243.....
Hamed Hamzeh (Bournemouth University, UK), Sofia Meacham (Bournemouth University, UK), Kashaf Khan (British Telecom, UK), Angelos Stefanidis (Xi'an Jiaotong-Liverpool University, China), and Keith Phalp (Bournemouth University, UK)
- A CNN Sign Language Recognition System with Single & Double-Handed Gestures .1250.....
Neil Buckley (Liverpool Hope University, UK), Lewis Sherrett (Liverpool Hope University, UK), and Emanuele Lindo Secco (Liverpool Hope University, UK)
- Towards a Digital Twin Framework for Autonomous Robots .1254.....
Gill Lumer-Klabbers (Aarhus University, Denmark), Jacob Odgaard Hausted (Aarhus University, Denmark), Jakob Levisen Kvistgaard (Aarhus University, Denmark), Hugo Daniel Macedo (Aarhus University, Denmark), Mirgita Frasheri (Aarhus University, Denmark), and Peter Gorm Larsen (Aarhus University, Denmark)

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

- Automatic Cataract Grading with Visual-Semantic Interpretability .1260.....
Xi Xu (Beijing University of Technology), Jianqiang Li (Beijing University of Technology), Yu Guan (Beijing University of Technology), Linna Zhao (Beijing University of Technology), Li Zhang (Capital Medical University), and Li Li (Capital Medical University)
- A Framework for the Composition of IoT and CPS Capabilities .1265.....
Khalid Halba (Grenoble Alpes University, France; National Institute of Standards and Technology, USA; Johns Hopkins University, USA), Edward Griffor (National Institute of Standards and Technology, USA), Ahmed Lbath (Grenoble Alpes University, France), and Anton Dahbura (Johns Hopkins University, USA)

SSMLS: Smart & Sustainable Mobility & Logistics in Smart Cities

- Smart Home Applied to Historic Buildings A Real Case Study .1273.....
Andrea Bauchiero (Foundation of the Association of Engineers, Turin Chapter, Italy), Guido Perboli (DIGEP Politecnico di Torino, Italy), and Mariangela Rosano (DAUIN Politecnico di Torino, Italy)
- Decision-Support System for the Optimal Technology Split of a Decarbonized Bus Network .1279
Nathalie Frieß (University of Graz) and Ulrich Pferschy (University of Graz)
- A Blockchain, 5G and IoT-Based Transaction Management System for Smart Logistics: An Hyperledger Framework .1285.....
Vittorio Capocasale (Politecnico di Torino, Italy), Danilo Gotta (TIM, Italy), Stefano Musso (Politecnico di Torino, Italy), and Guido Perboli (Politecnico di Torino, Italy)
- Mixing Machine Learning and Optimization for the Tactical Capacity Planning in Last-Mile Delivery .1291.....
Edoardo Fadda (DAUIN, Politecnico di Torino, Italy), Stanislav Fedorov (DAUIN & CARS@Polito, Politecnico di Torino, Italy), Guido Perboli (DIGEP & CARS@Polito, Politecnico di Torino, Italy), and Ivan Dario Cardenas Barbosa (University of Antwerp, Belgium)
- A Complexity Reduction Method for Road Pricing Based on Demand Distribution .1297.....
Koki Murata (University of Fukui, Japan), Noriyoshi Yamamoto (University of Fukui, Japan), and Tomoya Kawakami (University of Fukui, Japan)

STA: Software Test Automation

- A Requirement-Based Regression Test Selection Technique in Behavior-Driven Development .1303
Jincheng Xu (Tongji University, China), Qingfeng Du (Tongji University, China), and Xiaojun Li (Tongji University, China)
- Formal Simulation and Verification of Solidity Contracts in Event-B .1309.....
Jian Zhu (Beihang University, China), Kai Hu (Beihang University, China), Mamoun Filali (IRIT-CNRS, France), Jean-Paul Bodeveix (IRIT-CNRS, France), Jean-Pierre Talpin (INRIA, France), and Haitao Cao (Beihang University, China)
- Metamorphic Testing for Block Ciphers .1315.....
Mingjia Zhang (University of Nottingham Ningbo China, China), Dave Towey (University of Nottingham Ningbo China, China), Tsong Yueh Chen (Swinburne University of Technology, Australia), and Zhi Quan Zhou (University of Wollongong, Australia)

STPSA: Security, Trust & Privacy for Software Applications

- Utilizing Obfuscation Information in Deep Learning-Based Android Malware Detection .1321.....
Junji Wu (Hosei University, Japan) and Atsushi Kanai (Hosei University, Japan)

Software Safety Verification Framework Based on Predicate Abstraction .1327.....	
	<i>Haowei Liang (Tianjin University of Technology, China), Chunyan Hou (Tianjin University of Technology, China), Jinsong Wang (Tianjin University of Technology, China), and Chen Chen (Nankai University, China)</i>
Towards Verified Safety-Critical Autonomous Driving Scenario with ADSML .1333.....	
	<i>DeHui Du (East China Normal University, China), Jiena Chen (East China Normal University, China), Mingzhuo Zhang (East China Normal University, China), and Mingjun Ma (East China Normal University, China)</i>
A Taxonomy of XSS Attack Detections in Mobile Environments Based on Automation Capabilities .1339.....	
	<i>Alexander Boyett (Georgia Southern University, USA), Atef Shalan (Georgia Southern University, USA), Hossain Shahriar (Kennesaw State University, USA), and Muhammad Asadur Rahman (Clayton State University, USA)</i>
Design Scheme of Perceptual Hashing Based on Output of CNN for Digital Watermarking .1345..	
	<i>Zhaoxiong Meng (Kanagawa University, Japan), Tetsuya Morizumi (Kanagawa University, Japan), Sumiko Miyata (Shibaura Institute of Technology, Japan), and Hirotsugu Kinoshita (Kanagawa University, Japan)</i>
Cybersecurity Risks and Mitigation Techniques During COVID-19 .1351.....	
	<i>ABM Kamrul Riad (Kennesaw University, USA), Hossain Shahriar (Kennesaw State University), Maria Valero (Kennesaw State University), and Mokter Hossain (Kennesaw State University, USA)</i>
Towards Concurrent Audit Logging in Microservices .1357.....	
	<i>Sepehr Amir-Mohammadian (University of the Pacific, USA) and Afsoon Yousefi Zowj (University of the Pacific, USA)</i>
Human Susceptibility to Phishing Attacks Based on Personality Traits: The Role of Neuroticism .1363.....	
	<i>Pablo López-Aguilar (Anti-Phishing Working Group - Europe (APWG.EU), Spain) and Agusti Solanas (Universitat Rovira i Virgili, Spain)</i>
OPD: Network Packet Distribution After Achieving Equilibrium to Mitigate DDOS Attack .1369..	
	<i>Abdullah Al Farooq (Wentworth Institute of Technology, USA), Thomas Moyer (The University of North Carolina, Charlotte, USA), and Dewan Ahmed (The University of North Carolina, Charlotte, USA)</i>
A Preliminary Study on Common Programming Mistakes that Lead to Buffer Overflow Vulnerability .1375.....	
	<i>Giovanni George (Montclair State University), Jeremiah Kotey (Montclair State University), Megan Ripley (Montclair State University), Kazi Zakia Sultana (Montclair State University), and Zadia Codabux (University of Saskatchewan)</i>

Fast Abstracts

Fast Abstract 1

- An Innovative Virtual Learning Environment to Enhance Age-Friendly Cultural Competencies .1381
Pamela Mutombo (maxSIMhealth; Canada; Ontario Tech University, Canada), Andrei Torres (maxSIMhealth; Software and Informatics Research Centre Ontario Tech University, Canada), Bill Kapralos (maxSIMhealth; Ontario Tech University, Canada), Brenda Gamble (Ontario Tech University, Canada), Celeste Adams (Oshawa Senior Community Centres, Canada), Lynda Lawson (City of Oshawa, Canada), Celina Da Silva (York University, Canada), and Adam Dubrowski (maxSIMhealth; Ontario Tech University, Canada)
- Person-Centered Virtual Serious Games: Mental Health Education .1383.....
Celina Da Silva (York University, Canada), Andrei Torres (maxSIMhealth; Ontario Tech University, Canada), Bill Kapralos (maxSIMhealth; Software and Informatics Research Centre, Ontario Tech University, Canada), Eva Peisachovich (maxSIMhealth, Canada), Adam Dubrowski (maxSIMhealth; Software and Informatics Research Centre, Ontario Tech University, Canada), Veronica Baltazar (York University, Canada), Bilal Qureshi (York University, Canada), and Nelson Caraballo (York University, Canada)
- Research on Periodic Precaching Optimization Strategy Based on Access Mode .1385.....
Liang Ye (Shanghai University, China), Weijie Li (Shanghai University, China), and Wenhao Zhu (Shanghai University, China)
- Artificial Intelligence-Based School Decision Support System to Enhance Care Provided for Children at Schools in the United Arab Emirates .1387.....
Nabeel Al-Yateem (University of Sharjah), Amina Al Marzooqi (University of Sharjah), Jacqueline Dias (University of Sharjah), Muhammad Subu (University of Sharjah), Syed Azizur Rahman (University of Sharjah), Iqbal Shaikh Ahamed (Marquette University, USA), and Mohammad Alshabi (University of Sharjah)
- VisLan: A Tool for Visualizing Landmark Files in Source Code .1389.....
Sandeep Reddivari (University of North Florida, USA)

Fast Abstract 2

- Relationship between Internet Gaming Addiction and Body Mass Index Status Among Indonesian Junior High School Students .1391.....
Muhammad Subu (University of Sharjah, United Arab Emirates), Nabeel Al-Yateem (University of Sharjah, United Arab Emirates), Imam Waluyo (University of Binawan, Indonesia), Jacqueline Dias (University of Sharjah, United Arab Emirates), Syed Azizur Rahman (University of Sharjah, United Arab Emirates), Rinto Agustino (University of Binawan, Indonesia), Iqbal Shaikh Ahamed (Marquette University, USA), and Amina Al Marzooqi (University of Sharjah, United Arab Emirates)

- Social Media Use and Physical Activity Among Junior High School Students in Indonesia .1394....
Muhammad Subu (University of Sharjah, United Arab Emirates), Nabeel Al-Yateem (University of Sharjah, United Arab Emirates), Imam Waluyo (University of Binawan, Indonesia), Djadjang Aditaruna (University of Binawan, Indonesia), Syed Azizur Rahman (University of Sharjah, United Arab Emirates), Amina Al Marzooqi (University of Sharjah, United Arab Emirates), Jacqueline Dias (University of Sharjah, United Arab Emirates), and Iqbal Shaikh Ahamed (University of Sharjah, USA)
- Lightweight Privacy-Preserving Similar Documents Retrieval over Encrypted Data .1397.....
Zaid Ameen Abduljabbar (University of Basrah Basrah, Iraq; Al-Kunooze University, Iraq), Ayad Ibrahim (University of Basrah Basrah, Iraq), Mustafa A. Al Sibahee (Internet Shenzhen Technology University Shenzhen, China; Iraq University, Iraq), Songfeng Lu (Engineering Huazhong University of Science and Technology Wuhan, China; University of Science and Technology, China), and Samir M. Umran (Engineering Huazhong University of Science and Technology Wuhan, China)
- A Classification of Web Service Credibility Measures .1399.....
Jaciel E. Reyes (Georgia Southern University, USA), Atef Shalan (Georgia Southern University, USA), Hossain Shahriar (Kennesaw State University, USA), Mohammad Rahman (Clayton State University, USA), and Sarika Jain (National Institute of Technology, India)

Fast Abstract 3

- Deep Feature Learning to Quantitative Prediction of Software Defects .1401.....
Lei Qiao (Beijing Institute of Technology, China), Guangjie Li (National Innovation Institute of Defense Technology, China), Daohua Yu (Beijing Institute of Technology, China), and Hui Liu (Beijing Institute of Technology, China)
- Predicting Number of Bugs Before Launch: An Investigation Based on Machine Learning .1403....
Shyam Rajendren (University of North Florida, USA) and Sandeep Reddivari (University of North Florida, USA)
- Automated Educational Program Mapping on Learning Standards in Computer Science .1405.....
Koki Miura (Waseda University, Japan), Daisuke Saito (Waseda University, Japan), Hironori Washizaki (Waseda University, Japan), and Yoshiaki Fukazawa (Waseda University, Japan)
- Preliminary Literature Review of Machine Learning System Development Practices .1407.....
Yasuhiro Watanabe (Waseda University, Japan), Hironori Washizaki (Waseda University, Japan), Kazunori Sakamoto (Waseda University, Japan), Daisuke Saito (Waseda University, Japan), Kiyoshi Honda (Osaka Institute of Technology, Japan), Naohiko Tsuda (Waseda University, Japan), Yoshiaki Fukazawa (Waseda University, Japan), and Nobukazu Yoshioka (Waseda University, Japan)
- T-ReQs: A Tool for Tracking Similarity in Software ReRequirements .1409.....
Sandeep Reddivari (University of North Florida)

COMPSAC 2021 Workshops

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

- Analysis of Route Announcements of Unassigned IP Addresses .1411.....
Kentaro Goto (Waseda University, Japan), Akira Shibuya (Japan Network Information Center, Japan), Masayuki Okada (University of Nagasaki, Japan), and Masato Uchida (Waseda University, Japan)
- Analysis of Inter-Regional Relationship Among Regional Tier-1 ASes in the Internet .1417.....
Takuya Urimoto (Kyoto University, Japan), Daisuke Kotani (Kyoto University, Japan), and Yasuo Okabe (Kyoto University, Japan)
- Same World Broadcasting: An Internet Broadcasting System for Real-Time Distributed Video Compositions .1423.....
Koki Makida (University of Fukui, Japan), Tomoya Kawakami (University of Fukui, Japan), Satoru Matsumoto (Osaka University, Japan), Tomoki Yoshihisa (Osaka University, Japan), Yuuichi Teranishi (NICT/Osaka University, Japan), and Shinji Shimojo (Osaka University, Japan)
- The Latency Characteristics of GTP-U and SRv6 Stateless Translation on VPP Software Router.1429
Chunghan Lee (Toyota Motor Corporation), Naoyuki Mori (Intel Corporation), Yasuhiro Ohara (NTT Communications Corporation), Tetsuya Murakami (Arrcus, Inc.), Shogo Asaba (NEC Corporation), and Satoru Matsushima (SoftBank Corp.)
- A Quantitative Causal Analysis for Network Log Data .1437.....
Richard Jarry (Grenoble INP Ensimag), Satoru Kobayashi (NII), and Kensuke Fukuda (NII/Sokendai)
- Towards Extracting Semantics of Network Config Blocks .1443.....
Kazuki Otomo (University of Tokyo), Satoru Kobayashi (National Institute of Informatics), Kensuke Fukuda (National Institute of Informatics), Osamu Akashi (National Institute of Informatics), Kimihiro Mizutani (Kindai University), and Hiroshi Esaki (University of Tokyo)
- An Evaluation of Stochastic Quantitative Resilience Index Based on SLAs of Communication Lines .1449.....
Hiroki Kashiwazaki (National Institute of Informatics, Japan), Hiroki Takakura (National Institute of Informatics, Japan), and Shinji Shimojo (Osaka University, Japan)

AIML: Artificial Intelligence & Machine Learning: Applications, Challenges & Concerns

- Advancing Design and Runtime Management of AI Applications with AI-SPRINT .1455.....
Hamta Sedghani (Politecnico di Milano), Danilo Ardagna (Politecnico di Milano), Matteo Matteucci (Politecnico di Milano), Giulio Angelo Fontana (Politecnico di Milano), Giacomo Verticale (Politecnico di Milano), Fabrizio Amarilli (Politecnico di Milano), Rosa Badia (Barcelona supercomputing center), Daniele Lezzi (Barcelona supercomputing center), Ignacio Blanquer (Universitat Politècnica de València), André Martin (Technische Universität Dresden), and Konrad Waworuch (7Bulls)
- A Reinforcement Learning Based Approach of Context-driven Adaptive User Interfaces .1463.....
Lamia Zouhaier (University of Tunis El Manar, Tunisia), Yousra Ben Daly Hlaoui (University of Tunis El Manar, Tunisia), and Leila Ben Ayed (University of Tunis El Manar, Tunisia)
- STARS: Spatial Temporal Graph Convolution Network for Action Recognition System on FPGAs
1469
Songwen Pei (University of Shanghai for Science and Technology, China), Xianrong Wang (University of Shanghai for Science and Technology, China), Wei Qin (University of Shanghai for Science and Technology, China), and Sheng Liang (University of Shanghai for Science and Technology, China)
- Automatic Identification of Vulnerable Code: Investigations with an AST-Based Neural Network .1475.....
Garrett Partenza (Towson University, USA), Trevor Amburgey (Towson University, USA), Lin Deng (Towson University, USA), Josh Dehlinger (Towson University, USA), and Suranjan Chakraborty (Towson University, USA)
- A Reactive System for Specifying and Running Flexible Cloud Service Business Processes Based on Machine Learning .1483.....
Imen Ben Fraj (University of La Manouba, Tunisia), Yousra BenDaly Hlaoui (University of Tunis El Manar, Tunisia), and Leila BenAyed (University of La Manouba, Tunisia)
- Recognizing the Type of Mask or Respirator Worn Through a CNN Trained with a Novel Database .1490.....
Antonio Costantino Marceddu (Politecnico di Torino, Italy) and Bartolomeo Montrucchio (Politecnico di Torino, Italy)
- Characteristics of High-Frequency Trading and Its Forecasts .1496.....
Shigeki Kohda (Tsukuba University, Japan) and Kenichi Yoshida (Tsukuba University, Japan)
- A Method for the Detection and Reconstruction of Foliar Damage Caused by Predatory Insects.1502
Gabriel Vieira (Instituto Federal de Educação, Ciência e Tecnologia Goiano (IF Goiano), Brazil), Naiane Sousa (Universidade Federal de Goiás, Brazil), Bruno Rocha (Universidade Federal de Goiás, Brazil), Afonso Fonseca (Universidade Federal de Goiás, Brazil), and Fabrizio Soares (Universidade Federal de Goiás, Brazil)

- Metamorphic Testing of Fake News Detection Software .1508.....
Yingrui Ma (University of Nottingham Ningbo China, China), Dave Towey (University of Nottingham Ningbo China, China), Tsong Yueh Chen (Swinburne University of Technology, Australia), and Zhi Quan Zhou (University of Wollongong, Australia)
- On the Use of Causal Models to Build Better Datasets .1514.....
Fabio Garcea (Politecnico di Torino), Lia Morra (Politecnico di Torino), and Fabrizio Lamberti (Politecnico di Torino)
- A Machine Learning-Based Decision Support System Design for Restraining Orders in Turkey .1520
Hüseyin Umutkan Ay (Istanbul Technical University, Turkey), Alime Aysu Öner (Istanbul Technical University, Turkey), Nihan Yıldırım (Istanbul Technical University, Turkey), and Tolga Kaya (Istanbul Technical University, Turkey)
- Effects of Resampling Image Methods in Sugarcane Classification and the Potential use of Vegetation Indices Related to Chlorophyll .1526.....
Priscila M. Kai (Universidade Federal de Goiás, Brazil), Bruna M. de Oliveira (Universidade Federal de Goiás, Brazil), Gabriel S. Vieira (Instituto Federal de Educação, Brazil), Fabrizzio Soares (Universidade Federal de Goiás, Brazil), and Ronaldo M. Costa (Universidade Federal de Goiás, Brazil)
- Multi-class Cardiovascular Disease Detection and Classification from 12-Lead ECG Signals using an Inception Residual Network .1532.....
Jian Ni (University of Nevada Las Vegas, USA), Yingtao Jiang (University of Nevada Las Vegas, USA), Yihan Chen (University of Nevada Las Vegas, USA), Sijia Li (University of Nevada Las Vegas, USA), Amei Amei (University of Nevada Las Vegas, USA), Dieu-My.T. Tran (University of Nevada Las Vegas, USA), Lijie Zhai (Northwestern University, USA), and Yu Kuang (University of Nevada Las Vegas, USA)
- Learning Motion Planning Functions using a Linear Transition in the C-space: Networks and Kernels .1538.....
Victor Parque (Waseda University)

AIOT: Advanced IoT Computing

- Solutions to Ventilate Learning Spaces: a Review of Current CO2 Sensors for IoT Systems .1544....
Alejandro Leo-Ramírez (Universidad Politécnica de Madrid, Spain), Bernardo Tabuena (Universidad Politécnica de Madrid, Spain), Vicente García-Alcántara (Universidad Politécnica de Madrid, Spain), Edmundo Tovar (Universidad Politécnica de Madrid, Spain), Wolfgang Greller (Vienna University College of Teacher Education, Austria), and Carlos Gilarranz-Casado (Universidad Politécnica de Madrid, Spain)
- Anomaly Detection in air Conditioners using IoT Technologies .1552.....
Toshiaki Hirata (University of Tsukuba & Computron Co., Ltd., Japan), Kenichi Yoshida (University of Tsukuba, Japan), Kunihiko Koido (Computron Co., Ltd., Japan), and Sumiei Takahashi (DAIKOU GIKEN.Co., Ltd., Japan)
- An Enhanced Routing Method for Overlay Networks Based on Multiple Different Time Intervals.1559
Tatsuya Kubo (University of Fukui, Japan) and Tomoya Kawakami (University of Fukui, Japan)

BDCAA: Big Data Computation, Analysis & Applications

- Learning to Rank Relevant Documents for Information Retrieval in Bioengineering Text Corpora .1565.....
Kowk Sun Cheng (University of Nebraska at Omaha, USA) and Myoungkyu Song (University of Nebraska at Omaha, USA)
- “Frontline Mediators” — An Ethnographic Study of Online Welfare Applications at the Public Library .1573.....
Dustin O’Hara (Western Washington University, USA)
- Toward a Novel Measurement Framework for Big Data (MEGA) .1579.....
Dave Bhardwaj (Concordia University, Canada) and Olga Ormandjieva (Concordia University, Canada)
- FILCIO: Application Agnostic I/O Aggregation to Scale Scientific Workflows .1587.....
Quentin Jensen (Western Washington University, USA), Filip Jagodzinski (Western Washington University, USA), and Tanzima Islam (Texas State University, USA)

CCR: Cognitive Computing & Robotics

- Field Study on Usability and Security Perceptions Surrounding Social Robots .1593.....
Subhash Rajapaksha (Marquette University, USA), Shivam Thakrar (Vanguard), Matt Kinzler (ReliaQuest), Haochen Sun (Marquette University, USA), Justin Smith (Direct Supply), and Debbie Perouli (Marquette University, USA)
- Bidirectional Edge-Enhanced Graph Convolutional Networks for Aspect-Based Sentiment Classification .1599.....
Jinyang Du (Zhongnan University of Economics and Law, China), Yin Zhang (University of Electronic Science and Technology of China, China), Binglei Yue (Zhongnan University of Economics and Law, China), and Min Chen (Huazhong University of Science and Technology, China)
- A Robotic Vision Model via Xception and Light Gradient Boosting Machine .1605.....
Fang Hu (Hubei University of Chinese Medicine, China), Mingfang Huang (Hubei University of Chinese Medicine, China), Jia Liu (University of West Florida, USA), Xingyu Yan (Hubei University of Chinese Medicine, China), and Xiufeng Cheng (Central China Normal University, China)
- Shared-Latent Variable Network Alignment .1611.....
Degen Zhang (Beijing Institute of Technology, China), Xin Li (Beijing Institute of Technology, China), and Linjing Lai (Beijing Institute of Technology, China)
- Multi-relational EHR Representation Learning with Infusing Information of Diagnosis and Medication .1617.....
Yu Shi (Beijing Institute of Technology, China), Yuhang Guo (Beijing Institute of Technology, China), Hao Wu (Beijing Institute of Technology, China), Jingxiu Li (the first affiliated hospital of USTC, Anhui provincial hospital, China), and Xin Li (Beijing Institute of Technology, China)

- IIS: Intelligent Identification Scheme of Massive IoT Devices .1623.....
Jie Liu (Beijing University of Posts and Telecommunications Beijing, China), Yi Sun (Beijing University of Posts and Telecommunications Beijing, China), Fengkai Xu (The 6th Research Institute of China Electronics Corporation Beijing, China), Keping Yu (Global Information and Telecommunication Institute Waseda University, Japan), Ali Kashif Bashir (Manchester Metropolitan University, United Kingdom), and Zhaoli Liu (Beijing University of Posts and Telecommunications Beijing, China)
- Online Vehicle Selection for Task Replication via Bandit Learning .1627.....
Yongfeng Qian (China University of Geosciences, China), Zhoutong Zuo (China University of Geosciences, China), and Yixue Hao (Huazhong University of Science and Technology, China)

CDS: Consumer Devices & Systems

- Development of Observation Device with Multi Sensor Platform for Underwater Aquaculture Cages .1633.....
Kazuki Fukae (Nagasaki University, Japan), Tetsuo Imai (Hiroshima City University, Japan), Toru Kobayashi (Nagasaki University, Japan), Kenichi Arai (Nagasaki University, Japan), and Shintaro Yamabe (Nagasaki University, Japan)
- QoS Network Control for Elderly Support Services .1639.....
Taku Tanaka (Kyoto University, Japan), Daisuke Kotani (Kyoto University, Japan), and Yasuo Okabe (Kyoto University, Japan)

DADA: Deep Analysis of Data-Driven Applications

- Analyzing Bug Reports by Topic Mining in Software Evolution .1645.....
Uy Nguyen (University of Nebraska at Omaha, USA), Kowk Sun Cheng (University of Nebraska at Omaha, USA), Samuel Sungmin Cho (Northern Kentucky University, USA), and Myoungkyu Song (University of Nebraska at Omaha, USA)
- Adaptation Space Reduction using an Explainable Framework .1653.....
Alhassan Boner Diallo (Osaka University, Japan), Hiroyuki Nakagawa (Osaka University, Japan), and Tatsuhiro Tsuchiya (Osaka University, Japan)
- Determinants of Consumer Purchasing Factors Through LDA Modeling using YouTube Data .1661
Hyun Park (Towson University, USA) and Yanggon Kim (Towson University, USA)
- Vision-Based Hand Gesture Recognition for Human-Computer Interaction using MobileNetV2 .1667
Hermann Baumgartl (Aalen University, Germany), Daniel Sauter (Aalen University, Germany), Christian Schenk (Aalen University, Germany), Cem Atik (Aalen University, Germany), and Ricardo Buettner (Aalen University, Germany)
- A Comprehensive Qualitative and Quantitative Review of Current Research in GANs .1675.....
Jiachen Ma (Marquette University, USA), Piyush Saxena (Direct Supply, Inc, USA), and Sheikh Ahamed (Marquette University, USA)

Abnormal Gait Recognition Based on Integrated Gait Features in Machine Learning .1683.....	Wonjin Kim (Towson University, USA) and Yanggon Kim (Towson University, USA)
A Data Science Solution for Supporting Social and Economic Analysis .1689.....	Yubo Chen (University of Manitoba, Canada), Carson K. Leung (University of Manitoba, Canada), Hao Li (University of Manitoba, Canada), Siyuan Shang (University of Manitoba, Canada), Wanmeng Wang (University of Manitoba, Canada), and Zhi Zheng (University of Manitoba, Canada)
Attack Prediction using Hidden Markov Model .1695.....	Shuvalaxmi Dass (Texas Tech University, USA), Prerit Datta (Texas Tech University, USA), and Akbar Siami Namin (Texas Tech University, USA)
Toward Explainable Users: using NLP to Enable AI to Understand Users' Perceptions of Cyber Attacks .1703.....	Faranak Abri (Texas Tech University, USA), Luis Felipe Gutiérrez (Texas Tech University, USA), Chaitra T. Kulkarni (Texas Tech University, USA), Akbar Siami Namin (Texas Tech University, USA), and Keith S. Jones (Texas Tech University, USA)
COVID-19 SIHR Modeling and Dynamic Analysis .1711.....	Zhenhe Pan (Texas Tech University, USA), Taige Wang (University of Cincinnati, USA), and Yuanlin Zhang (Texas Tech University, USA)

DBDM: Distributed Big Data Management

HIR: A Hybrid IR Ranking Model .1717.....	Sameh Neji (Sfax University, Tunisia), Tarek Chenaina (University of Manouba, Tunisia), Abdullah Shoeb (Fayoum University, Egypt), and Leila Ben Ayed (University of Manouba, Tunisia)
Distributed Big Data Computing for Supporting Predictive Analytics of Service Requests .1723....	Tianlei Wang (University of Manitoba, Canada), James D. Harvey (University of Manitoba, Canada), Carson K. Leung (University of Manitoba, Canada), Adam G.M. Pazdor (University of Manitoba, Canada), Animesh Singh Chauhan (University of Manitoba, Canada), Lihe Fan (University of Manitoba, Canada), and Alfredo Cuzzocrea (University of Calabria, Italy)

DDS-BDAF: Dynamic Data Science & Big Data Analytics in Finance

Dempster-Shafer Theory for Stock Selection .1729.....	Nima Salehy (Louisiana Tech University, USA) and Giray Okten (Florida State University, USA)
Supervised Temporal Autoencoder for Stock Return Time-Series Forecasting .1735.....	Steven Y. K. Wong (University of Technology Sydney, Australia), Jennifer S. K. Chan (University of Sydney, Australia), Lamiae Azizi (University of Sydney, Australia), and Richard Y. D. Xu (University of Technology Sydney, Australia)

- Novel Data-Driven Resilient Portfolio Risk Measures using Sign and Volatility Correlations.1742.
Aerambamoorthy Thavaneswaran (University of Manitoba, Canada), You Liang (Ryerson University, Canada), Na Yu (Ryerson University, Canada), Alex Paseka (University of Manitoba, Canada), and Ruppa K. Thulasiram (University of Manitoba, Canada)
- Portfolio Optimization using Novel Intelligent Probabilistic Forecasts of Risk Measures .1748.....
You Liang (Ryerson University, Canada), Aerambamoorthy Thavaneswaran (University of Manitoba, Canada), Alexander Paseka (University of Manitoba, Canada), Ruppa K. Thulasiram (University of Manitoba, Canada), and Ethan Johnson-Skinner (Ryerson University, Canada)
- Multimodal Machine Learning for Credit Modeling .1754.....
Cuong V. Nguyen (Amazon Web Services, USA), Sanjiv R. Das (Amazon Web Services and Santa Clara University, USA), John He (Amazon Web Services, USA), Shenghua Yue (Amazon Web Services, USA), Vinay Hanumaiah (Amazon Web Services, USA), Xavier Ragot (Amazon Web Services, USA), and Li Zhang (Amazon Web Services, USA)
- An Algorithmic Multiple Trading Strategy using Data-Driven Random Weights Innovation Volatility .1760.....
Md. Erfanul Hoque (University of Manitoba, Canada), Aerambamoorthy Thavaneswaran (University of Manitoba, Canada), Alex Paseka (University of Manitoba, Canada), and Ruppa K. Thulasiram (University of Manitoba, Canada)
- A Novel Algorithmic Trading Strategy using Hidden Markov Model for Kalman Filtering Innovations .1766.....
Ethan Johnson-Skinner (Ryerson University, Canada), You Liang (Ryerson University, Canada), Na Yu (Ryerson University, Canada), and Alin Morariu (Ryerson University, Canada)

DewCom: Dew Computing

- Motrol 2.0: A Dew-Oriented Hardware/software Platform for Batch-Benchmarking Smartphones 1772
Cristian Mateos (Isistan-Unicen-Conicet, Argentina), Matias Hirsch (Isistan-Unicen-Conicet, Argentina), Juan Manuel Toloza (Isistan-Unicen-Conicet, Argentina), and Alejandro Zunino (Isistan-Unicen-Conicet, Argentina)
- Thine - Approach for a Fault Tolerant Distributed Packet Manager Based on Hypercore Protocol .1778.....
Jannik Blähser (TH Köln, Germany), Tim Göller (TH Köln, Germany), and Matthias Böhmer (TH Köln, Germany)
- A Vision of Dew-IoT Ecosystem: Requirements, Architecture, and Challenges .1783.....
Partha Pratim Ray (Sikkim University, India) and Karolj Skala (Rudjer Boskovic Institute, Croatia)
- Dew Computing in Industrial Automation: Applying Machine Learning for Process Control .1789
Mladen Sverko (Juraj Dobrila University of Pula), Nikola Tankovic (Juraj Dobrila University of Pula), and Darko Etinger (Juraj Dobrila University of Pula)

- What Makes Dew Computing More Than Edge Computing for Internet of Things .1795.....
Marjan Gusev (University Sts.Cyril and Methodius in Skopje, North Macedonia)
- An API for Dew Computing Services .1801.....
Yingwei Wang (University of Prince Edward Island, Canada)
- A Dew Computing Architecture for Smart Parking System with Cloud Image Recognition Service.....
 1805
Yuan-Chih Yu (Chinese Culture University)
- Implementation of Dewblock Clients on a Mobile Platform .1810.....
Rahman Minhajur (University of Prince Edward Island, Canada) and Wang Yingwei (University of Prince Edward Island, Canada)
- Serverless and Deviceless Dew Computing: Founding an Infrastructureless Computing .1814.....
Marjan Gusev (University Sts.Cyril and Methodius in Skopje, Faculty of Computer Science and Engineering, North Macedonia)
- Dew Intelligence: Federated Learning Perspective .1819.....
Emanuel Guberović (University of Zagreb, Croatia), Tomislav Lipić (Laboratory for Machine Learning and Knowledge Representation, Ruđer Bošković Institute, Croatia), and Igor Čavrak (University of Zagreb, Croatia)

DFM: Data Flow Models & Extreme-Scale Computing

- An Object-Oriented Interface to the Sparse Polyhedral Library .1825.....
Tobi Popoola (Boise State University, USA), Ravi Shankar (Boise State University, USA), Anna Rift (Boise State University, USA), Shivani Singh (Boise State University, USA), Eddie C. Davis (Vulcan Inc., Seattle, USA), Michelle Mills Strout (University of Arizona, Tucson, USA), and Catherine Olschanowsky (Boise State University, USA)

ESAS: E-Health Systems & Web Technologies

- Few Shot Learning of COVID-19 Classification Based on Sequential and Pretrained Models: A Thick Data Approach .1832.....
Darien Sawyer (Lakehead University, Canada), Jinan Fiaidhi (Lakehead University, Canada), and Sabah Mohammed (Lakehead University, Canada)
- ProvVacT: A Provenance Based mHealth Application for Tracking Vaccine History .1837.....
Dilek Yilmazer Demirel (Istanbul Technical University, Turkey) and Ozgu Can (Ege University, Turkey)
- A Review of Data Sources for the Study of Ageing .1843.....
Mary Carlota Bernal (Universidad Simón Bolívar, Colombia), Antoni Martínez-Ballesté (Universitat Rovira i Virgili, Spain), and Agusti Solanas (Universitat Rovira i Virgili, Spain)
- Holistic Approach to Intrinsic Capacity Assessment: An Engineering Perspective .1849.....
Montse Garcia-Famoso (Universitat Rovira i Virgili, Spain), M. Angels Moncusi (Universitat Rovira i Virgili, Spain), and Agusti Solanas (Universitat Rovira i Virgili, Spain)

TIKD: A Trusted Integrated Knowledge Dataspace for Sensitive Healthcare Data Sharing .1855....
Julio Hernandez (Dublin City University, Ireland), Lucy McKenna (Dublin City University, Ireland), and Rob Brennan (Dublin City University, Ireland)

ICT4sSmartGrid: ICT Solutions for Smart Grids as Multi-energy Systems

Deep Learning Applied to Automatic Reclosers Detection in Power Grid .1861.....
Francisco Marques (Instituto Atlântico, Brazil), Alano Pinto (Instituto Atlântico, Brazil), Arthur Bastos (Instituto Atlântico, Brazil), Ana Gonçalves (Instituto Atlântico, Brazil), Gilherbson Pereira (Instituto Atlântico, Brazil), and Flávio Reis (Copel, Brazil)

Forecasting the Grid Power Demand of Charging Stations from EV Drivers' Attitude .1867.....
Alberto Bocca (Politecnico di Torino, Italy), Alberto Macii (Politecnico di Torino, Italy), and Enrico Macii (Politecnico di Torino, Italy)

Design of District-Level Photovoltaic Installations for Optimal Power Production and Economic Benefit .1873.....
Matteo Orlando (Politecnico di Torino, Italy), Lorenzo Bottaccioli (Politecnico di Torino, Italy), Sara Vinco (Politecnico di Torino, Italy), Enrico Macii (Politecnico di Torino, Italy), Massimo Poncino (Politecnico di Torino, Italy), and Edoardo Patti (Politecnico di Torino, Italy)

IEESD: Industrial Experience in Embedded Systems Design

Modelling Application Cache Behavior using Regression Models .1879.....
Jakob Danielsson (Mälardalen University, Sweden), Janne Suuronen (Mälardalen University, Sweden), Marcus Jägemar (Mälardalen University, Sweden), Tiberiu Seceleanu (Mälardalen University, Sweden), Moris Behnam (Mälardalen University, Sweden), and Mikael Sjödin (Mälardalen University, Sweden)

Control as a Service — Intelligent Networking .1887.....
T. Seceleanu (Mälardalen University, Sweden), N. Xiong (Mälardalen University, Sweden), and C. Seceleanu (Mälardalen University, Sweden)

MediComp: Medical Computing

Motor Imagery: A Review of Existing Techniques, Challenges and Potentials .1893.....
Olawunmi George (Marquette University, USA), Roger Smith (University of Wisconsin-Milwaukee, USA), Praveen Madiraju (Marquette University, USA), Nasim Yahyasoltani (Marquette University, USA), and Sheikh Iqbal Ahamed (Marquette University, USA)

Integration of mHealth Into Primary Health Care for Child Cancer Patients – An Approach to Reduce Health Inequities in Bangladesh .1900.....	
	<i>Syed Azizur Rahman (University of Sharjah, United Arab Emirates), Sheikh Iqbal Ahamed (Marquette University, USA), Nabeel Al-Yateem (University of Sharjah, United Arab Emirates), Amina Al Marzooqi (University of Sharjah, United Arab Emirates), Muhammad Arsyad Subu (University of Sharjah, United Arab Emirates), and Swetha Variyath (University of Sharjah, United Arab Emirates)</i>
Usability in m-Health Applications for Application in Healthcare Environments .1904.....	
	<i>Enoch Menezes de Oliveira Junior (Paraíba State University, Brazil) and Daniel Scherer (Paraíba State University, Brazil)</i>
IoT-Health Platform to Monitor and Improve Quality of Life in Smart Environments .1909.....	
	<i>Pedro Almir M. Oliveira (GREat/UFC, Brazil), Rossana M. C. Andrade (GREat/UFC, Brazil), and Pedro A. Santos Neto (LOST/UFPI, Brazil)</i>
Facial Image Classification for Obstructive Sleep Apnea Pre-Screening .1913.....	
	<i>Weihao Lin (Beijing University of Posts and Telecommunications, China), Qinyan Zhang (Beijing University of Posts and Telecommunications, China), Jijiang Yang (Tsinghua University, China), Fang Fang (Beijing Anzhen Hospital, Capital Medical University, China), Qing Wang (Tsinghua University, China), Qi Chen (Beijing Anzhen Hospital, Capital Medical University, China), and Yi Lei (Beijing Dfusion Co., Ltd. China)</i>
Breast Mass Detection and Classification using Deep Convolutional Neural Networks for Radiologist Diagnosis Assistance .1918.....	
	<i>Tariq Mahmood (Beijing University of Technology, China), Jianqiang Li (Beijing University of Technology, China), Yan Pei (University of Aizu, Japan), Faheem Akhtar (Sukkur IBA University, Pakistan), Yanhe Jia (Beijing Information Science & Technology, China), and Zahid Hussain Khand (Sukkur IBA University, Pakistan)</i>
Joint Extraction of Events in Chinese Electronic Medical Records .1924.....	
	<i>Jingnan Wang (Beijing University of Technology, China), Jianqiang Li (Beijing University of Technology, China), Zhichao Zhu (Beijing University of Technology, China), Qing Zhao (Beijing University of Technology, China), Yang Yu (Beijing University of Technology, China), Liyin Yang (Beijing University of Technology, China), and Chun Xu (Xinjiang University of Finance and Economy, China)</i>
Medical Named Entity Recognition of Chinese Electronic Medical Records Based on Stacked Bidirectional Long Short-Term Memory .1930.....	
	<i>Zhichao Zhu (Beijing University of Technology, China), Jianqiang Li (Beijing University of Technology, China), Qing Zhao (Beijing University of Technology, China), Yu-Chih Wei (National Taipei University of Technology, China), and Yanhe Jia (Beijing Information Science & Technology University, China)</i>
Screening of Viral Pneumonia and COVID-19 in Chest X-ray using Classical Machine Learning .1936	
	<i>Afonso U. Fonseca (Universidade Federal de Goiás, Brazil), Gabriel S. Vieira (Instituto Federal de Educação, Brazil), and Fabrizzio Soares (Universidade Federal de Goiás, Brazil)</i>

Automatic Classification of Amyotrophic Lateral Sclerosis Through Gait Dynamics	1942
<i>Juliana Felix (Universidade Federal de Goiás, Brazil), Hugo Alexandre Dantas do Nascimento (Universidade Federal de Goiás, Brazil), Nilza Nascimento Guimarães (Universidade Federal de Goiás, Brazil), Eduardo Di Oliveira Pires (Universidade de Rio Verde, Brazil), Afonso Ueslei da Fonseca (Universidade Federal de Goiás, Brazil), and Gabriel da Silva Vieira (Instituto Federal de Educação, Brazil)</i>	
Examining the Perception of Drilling Depth Using Auditory Cues	1948
<i>Guoxuan Ning (maxSIMhealth, Software and Informatics Research Centre, Ontario Tech University, Canada), Bill Kapralos (maxSIMhealth, Software and Informatics Research Centre, Ontario Tech University, Canada), Alvaro Uribe Quevedo (maxSIMhealth, Software and Informatics Research Centre, Ontario Tech University, Canada), KC Collins (Carleton University, Canada), Kamen Kanev (Shizuoka University, Japan), and Adam Dubrowski (maxSIMhealth, Faculty of Health Sciences Ontario Tech University, Canada)</i>	
Enhancing Port's Competitiveness Thanks to 5G Enabled Applications and Services	1950
<i>Andrea Porelli (ICOOR, Italy), Natalia Selini Hadjidimitriou (ICOOR, Italy), Mariangela Rosano (ICOOR CARS@PoliTO, Italy), and Stefano Musso (ICOOR CARS@PoliTO, Italy)</i>	

Author Index