

2022 IEEE 8th World Forum on Internet of Things (WF-IoT 2022)

Yokohama, Japan
26 October - 11 November 2022

Pages 1-327



IEEE Catalog Number: CFP2218V-POD
ISBN: 978-1-6654-9154-9

**Copyright © 2022 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:	CFP2218V-POD
ISBN (Print-On-Demand):	978-1-6654-9154-9
ISBN (Online):	978-1-6654-9153-2

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

TABLE OF CONTENTS

MU-MIMO-GFDM Joint Receivers for Next-Generation Wireless Communications.....	1
<i>James Wang, Fang-Biau Ueng, Li-Der Jeng, Xi-Lin Wang</i>	
Predictive Model Resilience in Edge Computing.....	7
<i>Qiyuan Wang, Jordi Mateo Fornes, Christos Anagnostopoulos, Kostas Kolomvatsos</i>	
Secrecy in the UAV Ad Hoc Network	13
<i>Xian Liu</i>	
QoS in IoT-Based River Flood Monitoring System Using MQTT Brokers in Tandem Connection	19
<i>Yoshiyuki Shinji, Kohei Shiimoto</i>	
Teaching Internet of Things During the Health Pandemic	21
<i>Ramakrishnan Sundaram</i>	
IoT Driving New Business Model, and IoT Security, Privacy, and Awareness Challenges.....	26
<i>Mehrdad S. Sharaf</i>	
Federated Lab (FedLab): An Open-Source Distributed Platform for Internet of Things (IoT) Research and Experimentation	30
<i>Max Meijer, Giacomo Tommaso Petrucci, Matthijs Schotsman, Luca Morgese Zangrandi, Thijs Van Ede, Andrea Continella, Gandulga Gankhuyag, Luca Alodi, Savio Sciancalepore</i>	
Performance of a Cloud Radio Access Model with Correlated Dual Antennas.....	38
<i>Xian Liu</i>	
A Floating Calculation Revamp for the Ethereum Blockchain-Based IoT Systems.....	44
<i>Cheng Yiyang, Kazunori Takashio</i>	
Privacy-Preserving BLE Scanning for Population Estimation to Mitigate the Spread of COVID-19.....	50
<i>Ping Du, Fei Xia, Anan Sawabe, Takanori Iwai, Akihiro Nakao</i>	
On the Energy-Efficient Use of Discontinuous Reception and Release Assistance in NB-IoT.....	56
<i>Muhammad Tahir Abbas, Johan Eklund, Anna Brunstrom, Stefan Alfredsson, Mohammad Rajiullah, Karl-Johan Grinnemo, Giuseppe Caso, Konstantinos Kousias, Özgür Alay</i>	
Robust Timing Synchronization Algorithm for 5G New Radio	63
<i>Yu Lee, Tzu-Chieh Kao, Zhen-Ming Huang, Hsuan-Po Lin, Chun-Ta Wu, Chao-Yu Chen</i>	
USB PD Based Microgrid for Accelerating the Power Grid Transition to a Low Carbon Future	68
<i>Haruhisa Ichikawa, Shinji Yokogawa, Yuusuke Kawakita, Yoshito Tobe</i>	
Dynamic Network Tomography with Sparse Recovery-Based Link Delay Estimation	75
<i>Hao-Ting Wei, Chung-Shou Liao, Sung-Hsien Hsieh, Chun-Shien Lu</i>	
IoT Based Network Model and Sensor Node Prototype for Precision Agriculture Application.....	81
<i>Josip Spisic, Josip Balen, Drago Zagar, Vlatko Galic</i>	
WISE: A Semantic and Interoperable Web of Things Architecture for Smart Environments.....	89
<i>Luca Bedogni, Sebastiano Manfredini, Francesco Poggi, Davide Rossi</i>	

Dual-Band Slot-SSR Antenna on PLA-Printed Substrate for 2.4/5.8 GHz ISM-Band Internet of Things (IoT) Applications	95
<i>Karen N. Olan-Nuñez, Roberto S. Murphy-Arteaga, Mohammad Alibakhshikenari</i>	
Caching in SWIPT-Enabled Bidirectional Cooperative Hybrid Relaying Networks.....	101
<i>Kevanna Mutha, Prabhat K. Upadhyay, Jules M. Moualeu</i>	
Uplink Resource Allocation for Video Transmission in Wireless LAN System.....	107
<i>Ryota Yamada, Hiromichi Tomeba, Takuhiro Sato, Osamu Nakamura, Yasuhiro Hamaguchi</i>	
Half-Farmer: A Human-Machine Augmented Learning Framework for Seed Germination Recognition in Smart Farming	113
<i>Yunfeng Huang, Khaled Elewa, Tien-Cheng Wang, Tsu-Wei Chen, Fang-Jing Wu</i>	
ECOFACT Platform Architecture Supporting Manufacturing Energy Management and Holistic Sustainability	119
<i>Davide Conzon, Claudio Pastrone, Panagiotis Vlacheas, Susana Martin Toral, Francisco Morenatin, Talib Sankal, George Pavlidis, Emilia Ingemarsdotter, Andrea Perego, Javier Arenas, Robert Schmitt</i>	
Daylight Harvesting with Nonlinear Neural Network Control for Supplemental Lighting Systems with Saturated Inputs*	125
<i>Afagh Mohagheghi, Mehrdad Moallem</i>	
Applied Post-Quantum Secure Method for IoT Devices: A Case Study for Autonomous Vehicles Communication	131
<i>Gabriel Rossi Figlarz, Fabiano Passuelo Hessel</i>	
Resource Allocation for Mobile Metaverse with the Internet of Vehicles Over 6G Wireless Communications: A Deep Reinforcement Learning Approach	137
<i>Terence Jie Chua, Wenhan Yu, Jun Zhao</i>	
Quantifying the Trade-Off Between Latency and Power Consumption in Bluetooth Low Energy and Its Mitigation by Using a Wake-Up Receiver	144
<i>Maryam Dodangeh, Mark S. Oude Alink, Bram Nauta</i>	
Decentralized Identifier and Access Control Based Architecture for Privacy-Sensitive Data Distribution Service.....	152
<i>Reiya Oku, Kohei Shiomoto, Yoshihiro Ohba</i>	
Zydeco-Style Spike Sorting Low Power VLSI Architecture for IoT BCI Implants	158
<i>Zag Elsayed, Murat Ozer, Nelly Elsayed, Hazem Said</i>	
Autonomous Low Power IoT System Architecture for Cybersecurity Monitoring	164
<i>Zag Elsayed, Nelly Elsayed, Chengcheng Li, Magdy Bayoumi</i>	
Low Latency Federated Learning Over Wireless Edge Networks Via Efficient Bandwidth Allocation	169
<i>Deepali Kushwaha, Surender Redhu, Rajesh M. Hegde</i>	
Recognitions of Tele-Homecare and Self-Medication Against a Pandemic Outbreak	175
<i>Isao Nakajima, Masatsugu Tsuji, Yukako Yagi</i>	
A Survey on the Internet of Musical Things: Environment Challenges, Standards, Services, and Future Visions.....	180
<i>Rômulo Vieira, Débora C. Muchaluat-Saade</i>	

A Proposal for Standardization of Internet of Musical Things (IoMusT) Environments	186
<i>Rômulo Vieira, Flávio Schiavoni, Débora C. Muchaluat-Saade</i>	
Conceptualizing IIoT Platform Ecosystem Verticalization.....	188
<i>Simon Frederic Dietlmeier, Rob Jago Floetgen, Julius Bock, Florian Urmeter</i>	
Evaluation of Private 5G in Smart Automation Applications.....	194
<i>William O'Brien, Martin Hayes, Mihai Penica, Jeff McCann, Denis Moore, Eoin O'Connell</i>	
Using Entropy Measures for Monitoring the Evolution of Activity Patterns	196
<i>Yushan Huang, Yuchen Zhao, Hamed Haddadi, Payam Barnaghi</i>	
Enhancing an Open Source IoT System for Vertical System Integration in Photonics.....	202
<i>Alexander Tessmer, Bjoern Bourdon, Yannic Toschke, Mirco Imlau, Nils Aschenbruck</i>	
IoT Adoption: Classification Based on Customer Purchase Behavior.....	210
<i>Majid Nasirinejad, Srinivas Sampalli</i>	
Computation Offloading with Reinforcement Learning for Improving QoS in Edge Computing Environments.....	212
<i>Jinho Park, Kwangsue Chung</i>	
Low-Latency Data Transfer Over SNR Constrained IoT Networks Using Optimal Active RIS Elements: A Q-Learning Framework.....	218
<i>Shraddha Tripathi, Om Jee Pandey, Rajesh M. Hegde</i>	
DiffNet Framework for On-Device Object Detection	224
<i>Seongju Kang, Kwangsue Chung</i>	
Energy-Efficient Data Transfer in Delay-Throughput Constrained Small-World LPWAN Using RISs	230
<i>Shraddha Tripathi, Om Jee Pandey, Rajesh M. Hegde</i>	
Bayesian Estimation for 3D-Point Object Identification Based on Probabilistic Field Representation	236
<i>Hiroaki Sato, Shin'Ichi Arakawa, Masayuki Murata</i>	
Run-Time Probabilistic Model Checking for Failure Prediction: A Smart Lift Case Study	242
<i>Xin Xin, Sye Loong Keoh, Michele Sevagnani, Martin Saerbeck</i>	
Development of ESP32-Based Smart Greenhouse Controller.....	249
<i>Sopheaktra Chhorn, Sovichea Tep, Chanthan Hel, Rothna Pec</i>	
An Edge Autonomous Lamp Control with Camera Feedback.....	255
<i>Satoshi Matsushita, Teruo Tanimoto, Satoshi Kawakami, Takatsugu Ono, Koji Inoue</i>	
An Architecture for Performance Improvement of IoT Mobile Application Verification Using Statistical Methods	262
<i>Sulochan Naik, Ganesh P</i>	
A Simple Design of Puncturing Pattern for Symbol-Wise Viterbi Decoding	268
<i>Kanako Yamaguchi, Akinori Nakajima, Masaki Noda</i>	
A Novel Three-Dimensional Mobility Model for mmWave UAV Swarms	274
<i>Nisha Mani Bharti, M. P. R. S. Kiran</i>	

Customer Classification Recommender to Support Personalised Service Level Agreements Across the Internet of Things	280
<i>Cathryn Peoples, Adrian Moore, Nektarios Georgalas</i>	
Indoor Positioning Method Using Time-Series Data of Multiple Human Sensors.....	286
<i>Ikuto Ogawa, Masayuki Otani, Koji Abe, Nobukazu Iguchi, Hitoshi Habe</i>	
Code-Based Cryptography in IoT: A HW/SW Co-Design of HQC.....	288
<i>Maximilian Schöffel, Johannes Feldmann, Norbert Wehn</i>	
Digital Twins in the Future Networking: A Use Case in IOWN.....	295
<i>Gürkan Solmaz, Flavio Cirillo, Umberto Fattore</i>	
Horizontal Federating Decision Tree Learning from Data Streams: Building Intelligence in IoT Edge Networks	303
<i>Shachi Sharma, Kanishka Arora, Prem S. P. Thakur</i>	
Achieving Hard Reliability in RPL for Mission-Critical IoT Applications	309
<i>Soumya Nandan Mishra, Manas Khatua</i>	
A Comprehensive Approach for Applying Threat Modeling to Internet of Things Systems.....	315
<i>Lucas Peixoto Da Silva, Bernardo S. Nascimento, Rafael A. Mello P. Dias, Diogo S. Mendonça</i>	
Secure Heterogeneous Multi-Robot Collaboration and Docking with Hyperledger Fabric Blockchain.....	321
<i>Salma Salimi, Paola Torrico Morón, Jorge Peña Queralta, Tomi Westerlund</i>	
Black-Box Adversarial Attack for Deep Learning Classifiers in IoT Applications	328
<i>Abhijit Singh, Biplob Sikdar</i>	
Serverless Outlier Management for Environmental IoT Data - A Case Study of PuhatuMonitoring	334
<i>Shivananda Poojara, Argo Jõeleht, Pelle Jakovits, Satish Narayana Srirama</i>	
Anomaly Attack Detection in Wireless Networks Using DCNN	341
<i>Van-Lan Dao, Björn Leander</i>	
IMOST: An IoT Framework for Energy Efficient Street Lights.....	347
<i>Md Milon Uddin, Joshua Stapp, Matthew Vechione, Prabha Sundaravadivel</i>	
Enabling Unobtrusive Gait Analysis for Self-Health Monitoring Using a Smartphone	349
<i>Nagender Kumar Suryadevara, Irfan Mohd, Ashish Gupta</i>	
A Reinforcement Learning-Based Multipath Scheduling for Heterogeneous Wireless Networks	351
<i>Thanh Trung Nguyen, Minh Hai Vu, Phi Le Nguyen, Phan Thuan Do, Kien Nguyen</i>	
Artificial Intelligence for Cybersecurity in IoT-Enabled Avionics: Challenges and Solutions.....	353
<i>Ranwa Al Mallah, Talal Halabi, Mohammad Alja'Afreh, Ali Karime</i>	
Mobile Energy Transmitter Scheduling in Energy Harvesting IoT Networks Using Deep Reinforcement Learning.....	361
<i>Aditya Singh, Rahul Rustagi, Surender Redhu, Rajesh M. Hegde</i>	
Optimizing Freshness in IoT Scans	367
<i>Johannes K Becker, David Starobinski</i>	

6LoFD: A Failure Detector for 6LoWPAN.....	373
<i>Philipp Raich, Wolfgang Kastner</i>	
Fast, Robust & Light Machine Learning for Signal Classification in Next Generation Mobile Networks	379
<i>Muhammed Furkan Kucuk, Ismail Uysal</i>	
Mosquito Ovitraps IoT Sensing System (MOISS): Internet of Things-Based System for Continuous, Real-Time and Autonomous Environment Monitoring.....	384
<i>Aisha Aldosery, Dinarte Vasconcelos, Miguel Ribeiro, Nuno Nunes, Patty Kostkova</i>	
Future Sustainable and Humanity-Centred Intelligent Networks - Translating Theory into Practise.....	392
<i>Kaja Fjørtoft Ystgaard</i>	
Terahertz Refractive Index Sensing Using Metamaterial Absorber.....	394
<i>Pritha Mukherjee, Mohammad S. Khan, Shruti, S. Pahadsingh, B. Appasani</i>	
Decentralized Federated Learning for Intrusion Detection in IoT-Based Systems: A Review	399
<i>Francisco Assis Moreira Do Nascimento, Fabiano Hessel</i>	
Enhancing an Information-Centric Network of Things at the Internet Edge with Trust-Based Access Control.....	405
<i>Nicholas K. Clark</i>	
Progressive Short-Term Household Load Demand Forecast: A Dual-Model Approach.....	411
<i>João Silva, Paulo C. Bartolomeu</i>	
Machine Learning Technique Predicting Video Streaming Views to Reduce Cost of Cloud Services.....	418
<i>Mahmoud Darwich</i>	
CSI-Based Efficient Self-Quarantine Monitoring System Using Branchy Convolution Neural Network.....	422
<i>Jingtao Guo, Ivan Wang-Hei Ho</i>	
Averting Human-Elephant Conflict Using IoT and Machine Learning of Elephant Vocalizations	428
<i>Chinmayi Ramasubramanian, Suresh Lokiah, Yashaswini Viswanath, Sudha Jamthe</i>	
A Trustworthy Blockchain-Enabled System for Indoor Contact Tracing in Epidemic Control.....	434
<i>Mohammad Salimibeni, Zohreh Hajikhondi, Arash Mohammadi</i>	
Exploiting Physical Layer Vulnerabilities in LoRaWAN-Based IoT Networks	436
<i>Nuno Torres, Pedro Pinto, Sérgio Ivan Lopes</i>	
Speech Emotion Recognition Using Supervised Deep Recurrent System for Mental Health Monitoring.....	442
<i>Nelly Elsayed, Zag Elsayed, Navid Asadizanjani, Murat Ozer, Ahmed Abdalgawad, Magdy Bayoumi</i>	
GDPR-Inspired IoT Ontology Enabling Semantic Interoperability, Federation of Deployments and Privacy-Preserving Applications	448
<i>Rachit Agarwal, Tarek Elsaleh, Elias Tragos</i>	
LoRaWAN Cattle Tracking Prototype with AI-Based Coverage Prediction	456
<i>Alex R. Facina, Lenin Patricio Jiménez Jiménez, Michelle S. P. Facina, Gustavo Fraidenraich, Eduardo R. De Lima</i>	

Static Hardware Partitioning on RISC-V: Shortcomings, Limitations, and Prospects	462
<i>Ralf Ramsauer, Stefan Huber, Konrad Schwarz, Jan Kiszka, Wolfgang Mauerer</i>	
Dynamic Data Source Selection: A Case of Weather Stations for IoT Applications	468
<i>John Byabazaire, Gregory M. P. O'Hare, Rem Collier, Declan Delaney</i>	
Energy Efficiency and Throughput of Random Access Protocols for RIS-Aided IoT Networks	474
<i>João Henrique Inacio De Souza, José Carlos Marinello Filho, Taufik Abrão, Cristiano Panazio</i>	
Scalable Naming in ICN.....	480
<i>Kazuki Kohama, Noriaki Kamiyama</i>	
Comparative Evaluation of Low-Cost CO ₂ Sensors for Indoor Air Pollution Monitoring	486
<i>Rishikesh Bose, Ayu Parmar, Harsha Narla, Sachin Chaudhari</i>	
IoT-Based AQI Estimation Using Image Processing and Learning Methods.....	492
<i>Nitin Nilesh, Ishan Patwardhan, Jayati Narang, Sachin Chaudhari</i>	
Perching Drones for Distributed Communication Systems in IoT Applications	497
<i>Jingmin Liu, Wilson Yik, Bernard Saw, Henrik Hesse</i>	
Secure IoT Deployment Checklist for Building Management System.....	503
<i>Raymond Chan, Wye Kaye Yan, Jung Man Ma, Malcolm Yoke Hean Low, Kar Peo Yar, Kai Mun Loh, Greger Chen Zhi En, Habib Rehman, Thong Chee Phua</i>	
UNITE: Integrated IoT-Edge-Cloud Continuum	509
<i>Marcin Brzozowski, Peter Langendoerfer, Augusto Casaca, Antonio Grilo, Manuel Diaz, Cristian Martín, Jose Camacho, Giada Landi</i>	
Recent Trends on Artificial Intelligence-Enabled Internet of Things Platform and Standard Technologies.....	515
<i>Jieun Lee, Ahmed Abid, Franck Le Gall, Jaeseung Song</i>	
ConShar: An Edge-Based Context Sharing Model for the Internet of Things.....	521
<i>Everton De Matos, Ramão Tiburski, Fabiano Hessel</i>	
Enhancing LwM2M for Operational Cybersecurity and Situational Awareness in Industrial IoT	527
<i>Hanning Zhao, Bilhanan Silverajan</i>	
MARTEN: Measurement-Based Trustcheck for Constrained Networks.....	535
<i>Corinna Schmitt, Philipp Pfefferkorn</i>	
Coverage Study of a Sustainable IoT System for Industrial Applications.....	541
<i>Jesus Lopez-Ballester, Sandra Roger, Carmen Botella-Mascarell, Juan J. Perez-Solano</i>	
MIPS and RISC-V: Evaluating Virtualization Trade-Off for Edge Devices.....	547
<i>Carlos Moratelli, Ramão Tiburski, Sérgio F. Johann, Emanuel Moura, Everton De Matos, Fabiano Hessel</i>	
An Evolutionary Risk-Based Access Control Framework for Enterprise File Systems	553
<i>Shi-Cho Cha, Yi-Hsuan Hsuan, Kuo-Hui Yeh, Takeshi Ishihara, Ohba Yoshihiro, Wei-Nin Chen</i>	
MetaFi: Device-Free Pose Estimation Via Commodity WiFi for Metaverse Avatar Simulation.....	559
<i>Jianfei Yang, Yunjiao Zhou, He Huang, Han Zou, Lihua Xie</i>	

Efficient RDF Streaming for the Edge-Cloud Continuum	565
<i>Piotr Sowinski, Katarzyna Wasielewska-Michniewska, Maria Ganzha, Wieslaw Pawlowski, Pawel Szmeja, Marcin Paprzycki</i>	
TinyHAR: Benchmarking Human Activity Recognition Systems in Resource Constrained Devices.....	573
<i>Sheikh Nooruddin, Md. Milon Islam, Fakhri Karray</i>	
Enhancing UAV Flight Safety Through Sensor-Based Runtime Risk Assessment	581
<i>Yong Zhi Lim, Xin Xin, Teck Ping Khoo</i>	
Data Augmentation for Edge-AI On-Chip Learning	586
<i>Naoto Yoshida, Hina Miura, Takashi Matsutani, Hideto Motomura</i>	
Construction of a Pre-Frailty Detection System Based on Walking Speed and Heat Maps Using PIR Sensors	592
<i>Tomihiro Utsumi, Masashi Hashimoto</i>	
A Robust Deep Learning Architecture for FireFighter PPEs Detection	598
<i>Achilleas Sesis, Ilias Sinosoglou, Yannis Spyridis, Georgios Efstathopoulos, Thomas Lagkas, Vasileios Argyriou, Panagiotis Sarigiannidis</i>	
Can We Put the “S” into IoT?.....	604
<i>Gernot Heiser, Lucy Parker, Peter Chubb, Ivan Velickovic, Ben Leslie</i>	
LSTM-ACB-Based Random Access for Mixed Traffic IoT Networks.....	610
<i>Herman Lucas Dos Santos, João Henrique Inacio De Souza, José Carlos Marinello Filho, Taufik Abrão</i>	
Optimization of Polling-Based MAC Schedule Considering Data Aggregation for In-Vehicle UWB Wireless Networks.....	616
<i>Hajime Migita, Taiyo Tanaka, Shuji Yamaguchi, Makoto Takenaka, Patrick Finnerty, Tomio Kamada, Chikara Ohta</i>	
Bao-Enclave: Virtualization-Based Enclaves for Arm	622
<i>Samuel Pereira, João Sousa, Sandro Pinto, José Martins, David Cerdeira</i>	
MoRSE: Deep Learning-Based Arm Gesture Recognition for Search and Rescue Operations	628
<i>Panagiotis Kasnesis, Christos Chatzigeorgiou, Dimitrios G. Kogias, Charalampos Z. Patrikakis, Harris V. Georgiou, Aspasia Tzeletopoulou</i>	
A Model-Driven Approach to Design User Interaction on Smart Speakers	634
<i>Roberto Vergallo, Matteo Conte</i>	
On the Feasibility of Homomorphic Encryption for Internet of Things	640
<i>H Manohar Reddy, Sajimon P C, Sriram Sankaran</i>	
Synergized Ultra-Wideband Ranging and Sensing for Realizing Nuanced Use Cases	646
<i>Ankur Bansal, Aniruddh Rao Kabbinal, Karthik Srinivasa Gopalan</i>	
Quality Traceability for User-Centric Context-Aware Systems in Intelligent Environment.....	652
<i>Nawa Sakanga, Juan C. Augusto, Lindsey Brodie, Lisa Marzano</i>	
User Behaviour Risk Evaluation in Zero Trust Architecture Environment	660
<i>Wawan Yunanto, Hsing-Kuo Pao</i>	
Development of a Digital Twin for Smart Building Over Edge-Cloud Continuum	666
<i>Prapaporn Rattanatamrong, Jarunchai Srisawat, Thapana Boonchoo, Jason Haga</i>	

Timely Anomalous Behavior Detection in Fog-IoT Systems Using Unsupervised Federated Learning	672
<i>Franklin Magalhães Ribeiro, Carlos Alberto Kamienski</i>	
Performance Analysis of Blockchain Networks Through Smart Contracts.....	678
<i>Tamas Pflanzner, Peter Lajos Bodnar, Attila Kertesz</i>	
WoT on the Extreme Edge (WoTTEE): Enabling W3C Web of Things for Micro-Controllers	684
<i>Luca Sciullo, Cristian Castiglione, Angelo Trotta, Marco Di Felice</i>	
Re-Identification Attack Based on Few-Hints Dataset Enrichment for Ubiquitous Applications	690
<i>Andrea Artioli, Luca Bedogni, Mauro Leoncini</i>	
Decentralising Access Control for IoT Environment.....	696
<i>Charalampos Savvaidis, Christos Patsonakis, Georgios Stavropoulos, Anastasia Kassiani Blitsi, Iordanis Papoutsoglou, Konstantinos Votis, Dimitrios Tzovaras</i>	
Improving Drone Mission Continuity in Rescue Operations with Secure and Efficient Task Migration.....	702
<i>Kyusuk Han, Shamma Al Blooshi, Noura Alnuaimi, Eiman Al Nuaimi, Everton De Matos, Rafail Psiakis</i>	
Agri-Food Traceability Using Blockchain Technology to Ensure Value Chain Management and Fair Pricing in Bangladesh.....	708
<i>Syeda Tasnia Tasnim, Md Ariful Islam, Rawnak Jahan Taifa, Sraboni Mahbub, Mohammad Rifat Ahmmad Rashid</i>	
A Multi Layer Data Platform Architecture for Smart Cities Using oneM2M and IUDX.....	714
<i>Shubham Mante, Svsln Surya Suhas Vaddhiparty, Muppala Ruthwik, Deepak Gangadharan, Aftab M. Hussain, Anuradha Vattem</i>	
IoT and ML-Based AQI Estimation Using Real-Time Traffic Data	720
<i>Nitin Nilesh, Jayati Narang, Ayu Parmar, Sachin Chaudhari</i>	
Real-Time Human Detection Behind Obstacles Based on a Low-Cost UWB Radar Sensor	726
<i>Dimitris Uzunidis, Panagiotis Kasnesis, Evangelos Margaritis, Michalis Feidakis, Charalampos Z. Patrikakis, Stelios A. Mitilineos</i>	
E-IoT: Emulator to Develop and Test IoT Application.....	732
<i>Ahmed E. Khaled, Mohammed Ashfaq, Sebin Puthenthara Suresh</i>	
Identification of Local Neighbourhoods in a Network for Graph-Based Signal Reconstruction	738
<i>Loay Rashid, Santosh Nannuru</i>	
Introducing Federated Learning into Internet of Things Ecosystems – Preliminary Considerations	744
<i>Karolina Bogacka, Katarzyna Wasielewska-Michniewska, Marcin Paprzycki, Maria Ganza, Anastasiya Danilenka, Lambis Tassakos, Eduardo Garro</i>	
Cross-Stitched Multi-Task Dual Recursive Networks for Unified Single Image Deraining and Desnowing.....	751
<i>Sotiris Karavarsamis, Alexandros Doumanoglou, Konstantinos Konstantoudakis, Dimitrios Zarpalas</i>	
Benchmarking of Emulated Wireless Edge Cloud Connectivity for Maritime Environments	757
<i>Antti Kolehmainen, Miika Komu, Sepehr Javid, Jimmy Kjällman, Tero Kauppinen, Fayezeh Ghavimi, Bilhanan Silverajan</i>	

An Upward Routing Method with Adaptive Transmission Power Control in Wi-SUN FAN.....	763
<i>Naoki Ishibashi, Keiichi Mizutani, Hiroshi Harada</i>	
Exposing Adaptive Cruise Control in Advanced Driving Assistance Systems.....	765
<i>Mohammad Aminul Hoque, Ragib Hasan</i>	
Pedometers for Smartphones: Analysis and Comparison of Real-Time Algorithms	771
<i>Giacomo Neri, Federico Montori, Lorenzo Gigli, Luca Bedogni, Marco Di Felice, Luciano Bononi</i>	
Topological Twin for Mobility Support Robots.....	777
<i>Fernando Ardilla, Azhar Aulia Saputra, Adnan Rachmat Anom Besari, Doteguchi Naoki, Oshio Kohei, Takenori Obo, Naoyuki Kubota</i>	
Things Data Interoperability: Linking Annotated Entities in oneM2M.....	783
<i>Sunil Kumar, Seungmyeong Jeong, Seongyun Kim</i>	
TSN-Based Industrial Network Performance Analysis	789
<i>Mohamed Seliem, Ahmed Zahran, Dirk Pesch</i>	
Autonomous Driving Security: A Comprehensive Threat Model of Attacks and Mitigation Strategies	796
<i>Mohammad Aminul Hoque, Ragib Hasan</i>	
Towards a Threat Model and Security Analysis for Contact Tracing Applications	802
<i>Raiful Hasan, Mohammad Aminul Hoque, Ragib Hasan</i>	
A Decentralized Secured Data Sharing Framework for IoT Networks.....	808
<i>Georgios Siachamis, Charilaos Kaliakatsos, Georgios Stavropoulos, Konstantinos Votis, Dimosthenis Ioannidis, Dimitrios Tzovaras</i>	
A Fuzzy Knowledge-Based System for UV Exposure Management.....	814
<i>Charalampos S. Kouzinopoulos, Anastasia Kassiani Blitsi, Georgios Stavropoulos, Konstantinos Votis, Dimitrios Tzovaras</i>	
MC-Multi PUF Based Lightweight Authentication Framework for Internet of Medical Things	820
<i>Pintu Kumar Sadhu, Venkata P. Yanambaka, Ahmed Abdelgawad</i>	
Snowball: An Asynchronous Probabilistic Protocol for Neighbour Discovery in Mobile BLE Network.....	826
<i>Clément Rup, Eddy Bajic, Kais Mekki</i>	
Service Point Searching for Disabled People Using Wheelchair Based Robotic Path Planning and ArUco Markers.....	834
<i>Raihan Kabir, Yutaka Watanobe, Md Rashedul Islam, Keitaro Naruse</i>	
Trusted IP Solution in Multi-Tenant Cloud FPGA Platform.....	841
<i>Muhammed Kawser Ahmed, Sujan Kumar Saha, Christophe Bobda</i>	
Security Dashboard Design for Non-Experts in Sigfox-Based Smart Spaces	847
<i>Hanning Zhao, Tiina Schafeitel-Tähtinen, Harri Verkkosaari, Marko Helenius, Bilhanan Silverajan</i>	
On Latency Bounds for ROS Messaging in Cloud-Enabled Mobile Robots.....	853
<i>Víctor M. G. Martínez, David A. Do Nascimento, Divanilson R. Campelo, Ricardo C. Mello, Moisés R. N. Ribeiro</i>	

Facial Landmark Predictions with Applications to Metaverse	859
<i>Qiao Han, Jun Zhao, Kwok-Yan Lam</i>	
Boundary Adherence and Exploration in High Dimensions for Validation of Black-Box Systems	865
<i>John M. Thompson, Quentin Goss, Mustafa Ilhan Akbas</i>	
Enhanced Zero-Knowledge and Identity-Based Authentication with Integrated Key Exchange for Internet of Things	871
<i>Irfan Simsek</i>	
Mobile Edge Computing, Metaverse, 6G Wireless Communications, Artificial Intelligence, and Blockchain: Survey and Their Convergence	878
<i>Yitong Wang, Jun Zhao</i>	
A Decentralized Node Placement Algorithm for WSNs and IoT Networks	886
<i>Natalie Temene, Andreas Naoum, Charalampos Sergiou, Chryssis Georgiou, Vasos Vassiliou</i>	
FIWARE: Standard-Based Open Source Components for Cross-Domain IoT Platforms	892
<i>Martin Bauer</i>	
A Deep Analysis of Hybrid-Multikey-PUF	898
<i>Md Ishtyaq Mahmud, Ahmed Abdalgawad, Venkata P. Yanambaka</i>	
Distance-Aware Hierarchical Data-Collecting Path Selection for Mobile Sink in Sparse WSNs	904
<i>Gauransh Kalla, Arka Prokash Mazumdar, Dinesh Kumar Tyagi, Abhishek Narwaria</i>	
SLA- Ga: The Next Generation of SLAs for IoT	910
<i>Kashif Rabbani, Adrian Moore, Joseph Rafferty</i>	
Vehicle Routing to Minimize the Average Delay for Collecting the Disaster Damage Information	918
<i>Sanjukta Khwairakpam, Masahiro Shibata, Masato Tsuru</i>	
RoadNote: Automated Road Closure Detection Using Urban Sensing	920
<i>Raiful Hasan, Ragib Hasan</i>	
Feature-Sniffer: Enabling IoT Forensics in OpenWrt Based Wi-Fi Access Points.....	926
<i>Fabio Palmese, Alessandro E. C. Redondi, Matteo Cesana</i>	
IoT Standardization Strategies in ISO/IEC JTC 1/SC 41	932
<i>François Coallier</i>	
Workshop: Converge of Edge Intelligence in IoT (EdgeA-IoT 2022).....	938
<i>Christos Anagnostopoulos, Fani Deligianni, Kostas Kolomvatsos, Jordi Mateo Fornés</i>	
IoT Platform: Technology, Use Cases, and Standardization.....	940
<i>Tetsuya Yokotani, Stefano Giordano</i>	
Workshop: Internet of Things (IoT) for Intelligent Mobility and Dynamics: Interconnecting Air, Ground and Human	942
<i>Yun Jia Wang, Kegen Yu, Chee Kiat Seow, Henrik Hesse, Victor Wang</i>	
Mobility IoT -Cars that Think and Communicate-	944
<i>Yoshiaki Sakagami, Toshiya Arakawa, Naoyuki Kubota, Yuichiro Toda</i>	
Digital Innovation for People Well-Being: Healthcare and Agriculture Perspectives	946
<i>Teodoro Montanaro, Yung Wey Chong, Ilaria Sergi</i>	

The 1st International Workshop on the Internet of Time-Critical Things (IoTime 2022).....	948
<i>Carlos Kamienski, Dave Cavalcanti, Daniel Batista, Ivan Zyrianoff, Antonio Virdis</i>	
Study of Resource-Saving Secure Communication Protocols for IoT Devices.....	950
<i>Prapaporn Rattanatamrong, Jarunchai Srisawat, Thapana Boonchoo, Jason Haga</i>	

Author Index