

# **2018 32nd International Conference on Advanced Information Networking and Applications Workshops (WAINA 2018)**

**Krakow, Poland  
16-18 May 2018**



**IEEE Catalog Number: CFP1881D-POD  
ISBN: 978-1-5386-5396-8**

**Copyright © 2018 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:	CFP1881D-POD
ISBN (Print-On-Demand):	978-1-5386-5396-8
ISBN (Online):	978-1-5386-5395-1

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# **2018 32nd International Conference on Advanced Information Networking and Applications Workshops WAINA 2018**

## **Table of Contents**

**Message from IEEE AINA 2018 Steering Committee Co-Chairs**  
**Message from IEEE AINA 2018 General Co-Chairs**  
**Message from IEEE AINA 2018 Program Committee Co-Chairs**  
**Message from IEEE AINA 2018 Workshops Co-Chairs**  
**Welcome Message from the FINA 2018 Symposium Co-Chairs**  
**FINA 2018 Organizing Committee**  
**FINA 2018 Reviewers**  
**Welcome Message from the HWISE 2018 Workshop Co-Chairs**  
**HWISE 2018 Organizing Committee**  
**HWISE 2018 Reviewers**  
**Welcome Message from the PAEWN 2018 Workshop Co-Chairs**  
**PAEWN 2018 Organizing Committee**  
**PAEWN 2018 Reviewers**  
**Welcome Message from the MAW 2018 Symposium Co-Chairs**  
**MAW 2018 Organizing Committee**  
**MAW 2018 Reviewers**  
**Welcome Message from the BICom 2018 Workshop Co-Chairs**  
**BICom 2018 Organizing Committee**  
**BICom 2018 Reviewers**  
**Welcome Message from the TeNAS 2018 Workshop Organizers**  
**TeNAS 2018 Organizing Committee**  
**TeNAS 2018 Reviewers**  
**Welcome Message from the COLLABES 2018 Workshop Organizer**  
**COLLABES 2018 Organizing Committee**  
**COLLABES 2018 Reviewers**  
**Welcome Message from the CCPI 2018 Workshop Chair**  
**CCPI 2018 Organizing Committee**  
**CCPI 2018 Reviewers**  
**Welcome Message from the NetSMM 2018 Workshop Co-Chairs**  
**NetSMM 2018 Organizing Committee**  
**NetSMM 2018 Reviewers**  
**Welcome Message from the INTRICATE-SEC 2018 Workshop Chair**  
**INTRICATE-SEC 2018 Organizing Committee**  
**INTRICATE-SEC 2018 Reviewers**  
**Welcome Message from the EASyCoSe 2018 Workshop Co-Chairs**  
**EASyCoSe 2018 Organizing Committee**

**EASyCoSe 2018 Reviewers**  
**Welcome Message from the E3WSN 2018 Workshop Co-Chairs**  
**E3WSN 2018 Organizing Committee**  
**E3WSN 2018 Reviewers**  
**Welcome Message from the WITIN 2018 Workshop Organizers**  
**WITIN 2018 Organizing Committee**  
**WITIN 2018 Reviewers**  
**Welcome Message from the BOSON 2018 Workshop Organizers**  
**BOSON 2018 Organizing Committee**  
**BOSON 2018 Reviewers**  
**Welcome Message from the IOEMLA 2018 Workshop Co-Chairs**  
**IOEMLA 2018 Organizing Committee**  
**IOEMLA 2018 Reviewers**

## **The 14th International Symposium on Frontiers of Information Systems and Network Applications (FINA-2018)**

### **Session 1: Multimedia and Network-Based Applications**

Using Postal Mail System to Teach Packet Switching in Computer Networks .....	1
<i>Jianhua Yang (Columbus State University) and Yongzhong Zhang (Shanghai Open University)</i>	
Characterizing Students' Behavior Based on their Participation in Property Course in New Zealand .....	6
<i>Shadi Esnashari (University of Auckland), Lesley Gardner (University of Auckland), and Michael Rehm (University of Auckland)</i>	
Analysis and Forecasting of Web Content Dynamics .....	12
<i>Maria Carla Calzarossa (Università di Pavia) and Daniele Tessera (Università Cattolica del Sacro Cuore)</i>	
Early Detection of Network Incident Using Open Security Information .....	18
<i>Hiroki Kuzuno (SECOM) and Shintaro Otsuka (LAC)</i>	
Rules to Transform Specific Description Language Diagram Into Coloured Petri Nets .....	24
<i>Hana Mejdi (University of Tunis El Manar), Oussama Kallel (University of Tunis El Manar), and Salem Hasnaoui (University of Carthage)</i>	

### **Session 2: Distributed and Parallel Computing**

Sheaf Theory as a Mathematical Foundation for Distributed Applications Involving Heterogeneous Data Sets .....	28
<i>Seyed M-H Mansourbeigi (Utah State University)</i>	
Implementing Distributed Lamda-Calculus Interpreter .....	34
<i>Alexandr Basov (Innopolis University), Daniel de Carvalho (Innopolis University), and Manuel Mazzara (Innopolis University)</i>	
A Parallel Calculation Method on Web Browser for Contents Categorization .....	40
<i>Masaki Kohana (Ibaraki University), Hiroki Sakaji (The University of Tokyo), Akio Kobayashi (RIKEN), and Shusuke Okamoto (Seikei University)</i>	

Open Source Platform Digital Personal Assistant .....	45
<i>Azat Khusnutdinov (Innopolis University), Denis Usachev (Innopolis University), Manuel Mazzara (Innopolis University), Adil Khan (Innopolis University), and Ivan Panchenko (Innopolis University)</i>	

### **Session 3: Cloud and Grid Computing**

Appliance Scheduling in Smart Homes with Harmony Search Algorithm for Different Operation Time Intervals .....	51
<i>Syed Muhammad Mohsin (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Sajjad Ahmad Madani, Syed Kashif Abbas, Syed Muhammad Abrar Akber, and Zahoor Ali Khan</i>	
Virtualized SDN-Based End-to-End Reference Architecture for Fog Networking .....	61
<i>Pooyan Habibi (Amirkabir University of Technology), Soroush Baharlooei (Iran University of Science and Technology), Mohammad Farhoudi (Amirkabir University of Technology), Sepehr Kazemian (Amirkabir University of Technology), and Siavash Khorsandi (Amirkabir University of Technology)</i>	
The Evolution of the Hadoop Distributed File System .....	67
<i>Stathis Maneas (University of Toronto) and Bianca Schroeder (University of Toronto)</i>	
Reliability Modeling and Analysis for Deadline-Constrained Grid Service .....	75
<i>Dharmendra Prasad Mahato (Indian Institute of Technology (BHU)) and Ravi Shankar Singh (Indian Institute of Technology (BHU))</i>	

## **The 14th International Workshop on Heterogeneous Wireless Networks (HWISE-2018)**

### **Session 1: Mobile Communication Systems and Networking**

Dijkstra Algorithm Based Ray Tracing: A Case Study for Tunnel Structures .....	82
<i>Kazunori Uchida (Fukuoka Institute of Technology) and Leonald Barolli (Fukuoka Institute of Technology)</i>	
Towards a Secured Clustering Mechanism for Messages Exchange in VANET .....	88
<i>Amira Kchaou (University of Carthage), Ryma Abassi (University of Carthage), and Sihem Guemara (University of Carthage)</i>	
Design of a Small Metamaterial Antenna for Millimetric Wave Applications .....	94
<i>Bouthaina Smari (InnovCom Research Laboratory), Mondher Labidi (Innovcom Research Laboratory), and Fethi Choubani (InnovCom Research Laboratory)</i>	
A Miniaturized Invasive Antenna Study for a Better Performance in Medical Application .....	98
<i>Amal Bouazizi (National Engineering School of Sfax), Ghada Zaibi (National Engineering School of Sfax), Mounir Samet (National Engineering School of Sfax), and Abdennaceur Kachouri (National Engineering School of Sfax)</i>	

## Session 2: Next Generation Networks

TBEENISH: Threshold Balanced Energy Efficient Network Integrated Super Heterogeneous Protocol for WSNs .....	104
<i>Aqdas Naz (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Muhammad Mudassar Iqbal, Mujahid Ali, Muhammad Imran, and Zahoor Ali Khan</i>	
Proposal of Static Body Object Detection Methods with the DTN Routing for Life Safety Information Systems .....	112
<i>Noriki Uchida (Fukuoka Institute of Technology), Takahiro Shingai (Fukuoka Institute of Technology), Takato Shigetome (Fukuoka Institute of Technology), Tomoyuki Ishida (Ibaraki University), and Yoshitaka Shibata (Iwate Prefectural University)</i>	
A Filtered RSSI Model Based on Hardware Characteristic for Localization Algorithm in Wireless Sensor Networks .....	118
<i>Dhouha El Houssaini (Technische Universität Chemnitz), Zina Mohamed (National School of Engineer of Sfax), Sabrine Khriji (Technische Universität Chemnitz), Kamel Besbes (Centre for Reaserch on Microelectronics and Nanotechnolgy), and Olfa Kanoun (Technische Universität Chemnitz)</i>	
A Novel Multi Verifier Device Attestation Scheme for Swarm of Devices .....	124
<i>Shivraj VL (TCS Research and Innovation), Meena Singh Dilip Thakur (TCS Research and Innovation), and Rajan Ma (TCS Research and Innovation)</i>	
A Recovery Method for Reducing Storage Usage Considering Number of Neighboring Nodes in VANETs .....	130
<i>Shogo Nakasaki (Fukuoka Institute of Technology), Yu Yoshino (Fukuoka Institute of Technology), Makoto Ikeda (Fukuoka Institute of Technology), and Leonard Barolli (Fukuoka Institute of Technology)</i>	

## The 13th International Workshop on the Performance Analysis and Enhancement of Wireless Networks (PAEWN-2018)

### Session 1: Network Performance Analysis and Enhancement

Multihop Transmission Strategy to Improve Energy Efficiency in WSNs .....	136
<i>Maha Abderrahim (University of Carthage), Hela Hakim (Digital Research Center), Hatem Boujemaa (University of Carthage), and Raed al Hamad (Saudi Electronic University)</i>	
Residual Energy and Density Control Aware Cluster Head Election in Wireless Sensor Network .....	141
<i>Meriem Meddah (Innov'Com), Rim Haddad (Innov'Com), and Tahar Ezzedine (SysCom)</i>	
How Modeling QoE Requirements Using Game Theory .....	147
<i>Tasnim Abar (Supcom), Asma Ben Letaifa (Supcom), and Sadok El Asmi (Supcom)</i>	
Content Based Algorithm Aiming to Improve the WEB_QoE Over SDN Networks .....	153
<i>Nawres Abdelwahed (SUPCOM), Asma Ben Letaifa (SUPCOM), and Sadok El Asmi (SUPCOM)</i>	

An Integrated Message Suppression Controller with Epidemic and MaxProp Protocols: Performance Evaluation for VDTNs .....	159
<i>Yu Yoshino (Fukuoka Institute of Technology), Shogo Nakasaki (Fukuoka Institute of Technology), Makoto Ikeda (Fukuoka Institute of Technology), and Leonard Barolli (Fukuoka Institute of Technology)</i>	
Ameliorating the Web QoE Using SPA .....	164
<i>Nawres Abdelwahed (SUPCOM), Asma Ben Letaifa (SUPCOM), and Sadok El Asmi (SUPCOM)</i>	

## The 11th International Symposium on Mining and Web (MAW-2018)

### Session 1: Collaborative and Secure Systems

Experimental Study of Characterizing Frequent Itemsets Using Representation Learning .....	170
<i>Saki Kawanobe (Nihon University) and Tomonobu Ozaki (Nihon University)</i>	
Detecting Network Intrusions Using a Confidence-Based Reward System .....	175
<i>Kole Nunley (Keene State College) and Wei Lu (Keene State College)</i>	
An Estimation Method of User Roles Based on Online Technical Communication Activities .....	181
<i>Hayato Tsukiji (Kanagawa Institute of Technology) and Kosuke Takano (Kanagawa Institute of Technology)</i>	
Network Event Classification for Security of IT Infrastructure .....	187
<i>Deepali Arora (University of Victoria), Panajotis Agathoklis (University of Victoria), and Alex Loffler (TELUS Communications Inc.)</i>	
Education Analytics: Challenges and Approaches .....	193
<i>Linlin Zhang (University of Victoria) and Kin Fun Li (University of Victoria)</i>	
Improvement of Image Processing for a Collaborative Security Flight Control System with Multiple Drones .....	199
<i>Noriyasu Yamamoto (Fukuoka Institute of Technology) and Noriki Uchida (Fukuoka Institute of Technology)</i>	

## The 12th International Workshop on Bio and Intelligent Computing (BICom-2018)

### Session 1: Intelligent Systems and Algorithms

Implementation of an IoT-Based E-Learning Testbed: Performance Evaluation Using Mean-Shift Clustering Approach Considering Four Types of BrainWaves .....	203
<i>Keita Matsuo (Fukuoka Institute of Technology (FIT)), Masafumi Yamada (Fukuoka Institute of Technology (FIT)), Kevin Bylykbashi (Polytechnic University of Tirana), Miralda Cuka (Fukuoka Institute of Technology (FIT)), Yi Liu (Fukuoka Institute of Technology (FIT)), and Leonard Barolli (Fukuoka Institute of Technology (FIT))</i>	

Appliances Scheduling Using Hybrid Scheme of Genetic Algorithm and Elephant Herd Optimization for Residential Demand Response .....	210
<i>Rasool Bukhsh (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Zafar Iqbal (PMAS Agriculture University), Usman Ahmed (NFC Institute of Engineering and Fertilizer Research), Zeeshan Ahmad (NFC Institute of Engineering and Fertilizer Research), and Muhammad Nadeem Iqbal (COMSATS Institute of Information and Technology)</i>	
EDHBPSSO: Enhanced Differential Harmony Binary Particle Swarm Optimization for Demand Side Management in Smart Grid .....	218
<i>Aqdas Naz (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Talha Naeem Qureshi (COMSATS Institute of Information and Technology), Muhammad Imran (National University of Science and Technology), Mujahid Ali (Air University), and Zahoor Ali Khan (Higher Colleges of Technology)</i>	
An Approach Towards Efficient Scheduling of Home Energy Management System Using Backtracking Search Optimization and Tabu Search .....	226
<i>Sundas Shafiq (COMSATS Institute of Information Technology), Sikander Asif (COMSATS Institute of Information Technology), Iqra Fatima (COMSATS Institute of Information Technology), Kubra Yousaf (Bahria University), Wajiha Safat (COMSATS Institute of Information Technology), and Nadeem Javaid (COMSATS Institute of Information Technology)</i>	

## **Session 2: Bio-Computing and Machine Learning**

Gene Expression for Simulation of Biological Tissue .....	232
<i>Sadyk Sayfullin (Innopolis University), Fedor Akhmetov (National Research Nuclear University MEPh), Manuel Mazzara (Innopolis University), Ruslan Mustafin (Innopolis University), and Victor Rivera (Innopolis University)</i>	
Implementing Elephant Herding Optimization Algorithm with different Operation Time Intervals for Appliance Scheduling in Smart Grid .....	240
<i>Syed Muhammad Mohsin (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Sajjad Ahmad Madani (COMSATS Institute of Information Technology), Syed Muhammad Abrar Akber (Huazhong University of Science and Technology), Sohaib Manzoor (Huazhong University of Science and Technology), and Javed Ahmad (Virtual University of Pakistan)</i>	
Bio-Inspired Optimization Techniques for Home Energy Management in Smart Grid .....	250
<i>Abdul Mateen (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Muhammad Awais (COMSATS Institute of Information Technology), Nasir Khan (COMSATS Institute of Information Technology), Urva Latif (COMSATS Institute of Information Technology), and Ihtisham Ullah (COMSATS Institute of Information Technology)</i>	
Enhancing QoE Based on Machine Learning and DASH in SDN Networks .....	258
<i>Tasnim Abar (Supcom), Asma Ben Letaifa (Supcom), and Sadok Elasmri (Supcom)</i>	



# The 12th International Workshop on Telecommunication Networking, Applications and Systems (TeNAS-2018)

## Session 1: Wireless and Mobile Technology

M-SPOT: A Hybrid Multiobjective Evolutionary Algorithm for Node Placement in Wireless Sensor Networks ..... <i>Alfredo J. Perez (Columbus State University)</i>	264
Mobility Management Architecture in Different RATs Based Network Slicing ..... <i>Ali Alfoudi (Liverpool John Moores University), Mohammed Dighriri (Liverpool John Moores University), Abayomi Otebolaku (Liverpool John Moores University), Rubem Pereira (Liverpool John Moores University), and Gyu Lee (Liverpool John Moores University)</i>	270
Resource Allocation Scheme in 5G Network Slices ..... <i>Mohammed Dighriri (Liverpool John Moore University), Ali Saeed Dayem Alfoudi (Liverpool John Moores University), Gyu Myoung Lee (Liverpool John Moores University), Thar Baker (Liverpool John Moores University), and Rubem Pereira (Liverpool John Moore University)</i>	275
A Robust CSI-HARQ MIMO Visible Light Communication Scheme for Wireless Industrial Networking ..... <i>Shih-Hao Chang (Tamkang University) and Teh-Sheng Huang (Tamkang University)</i>	281
An SDN-Based Architecture for Smart Handover to Improve QoE in IEEE 802.11 WLANs ..... <i>Omar Aldhaibani (Liverpool John Moores university), Faycal Bouhafis (Liverpool Johan Moores University), Michael Makay (Liverpool Johan Moores University), and Alessandro Raschellá (Liverpool Johan Moores University)</i>	287
A Simple Algorithm to Select Energy-Efficient Servers for Storage and Computation Processes ..... <i>Atsuhiro Sawada (Hosei University), Dilawaer Duolikun (Hosei University), Ryo Watanabe (Hosei University), Tomoya Enokido (Rissho University), and Makoto Takizawa (Hosei University)</i>	293

# The 6th International Workshop on Collaborative Enterprise Systems (COLLABES-2018)

## Session 1: Collaborative Systems and Applications

An Energy-Efficient Model of Fog and Device Nodes in IoT ..... <i>Ryuji Oma (Hosei University), Shigenari Nakamura (Hosei University), Tomoya Enokido (Rissho University), and Makoto Takizawa (Hosei University)</i>	301
Cloud-Based Global Monitoring System for Smart Cities ..... <i>Yosra Ben Dhief (University of Carthage), Yacine Djemaïel (University of Carthage), Slim Rekhis (University of Carthage), and Nouredine Boudriga (University of Carthage)</i>	307

Clustering Student Participation: Implications for Education .....	313
<i>Shadi Esnashari (University of Auckland), Lesley Gardner (University of Auckland), and Paul Watters (University of Auckland)</i>	
Blended Learning Technologies in the Automotive Industry Specialists' Training .....	319
<i>Irina Makarova (Kazan Federal University), Anton Pashkevich (Cracow University of Technology), and Ksenia Shubenkova (Kazan Federal University)</i>	
Real Time Automation of Agriculture Land, by automatically Detecting Plant Leaf Diseases and Auto Medicine .....	325
<i>Channamallikarjuna Mattihalli (Bahir Dar University), Edemialem Gedefaye (Bahir Dar University), Fasil Endalamaw (Bahir Dar University), and Adugna Necho (Bahir Dar University)</i>	
A Semantic Model for Document Management in Business Processes .....	331
<i>Allani Imen (SUPCOM) and Zouari Belhassen (SUP'COM)</i>	

## **The International Workshop on Cloud Computing Project and Initiatives (CCPI-2018)**

### **Session 1: Smart Platforms I**

How Cloud Computing, IoT and Multicore Systems Affect Software Engineering Principles .....	337
<i>Lutz Schubert (University of Ulm), Athanasios Tsitsipas (University of Ulm), and Keith Jeffery (Keith G. Jeffery Consultants)</i>	
Building a Smart City Service Platform in Messina with the #SmartME Project .....	343
<i>Dario Bruneo (University of Messina), Sebastiano Chillari (Meridionale Impianti SPA), Salvatore Distefano (University of Messina), Maurizio Giacobbe (University of Messina), Antonino Longo Minnolo (University of Messina), Francesco Longo (University of Messina), Giovanni Merlino (University of Messina), Davide Mulfari (University of Messina), Alfonso Panarello (University of Messina), Giuseppe Patanè (Park Smart Srl), Antonio Puliafito (University of Messina), Carlo Puliafito (University of Pisa), Marco Scarpa (University of Messina), Nachiket Tapas (University of Messina), and Giancarlo Visalli (Arkimede Srl)</i>	
Edge Computing-Enabled Body Area Networks .....	349
<i>Gianluca Aloï (University of Calabria), Giancarlo Fortino (University of Calabria), Raffaele Gravina (University of Calabria), Pasquale Pace (University of Calabria), and Giuseppe Caliciuri (University of Calabria)</i>	
A Cloud-Based Approach to Assess the Quality of Local Transportation Services in Apulia Region .....	354
<i>Antonella Longo (University of Salento), Mario A. Bochicchio (University of Salento), and Marco Zappatore (University of Salento)</i>	
MELODIC: Utility Based Cross Cloud Deployment Optimisation .....	360
<i>Geir Horn (University of Oslo) and Pawel Skrzypek (7Bulls)</i>	

## Session 2: Smart Platforms II

Coordination Pattern-Based Approach for Auto-Scaling in Multi-clouds .....	368
<i>Eva Kühn (TU Wien) and Stefan Craß (TU Wien)</i>	
BYOS: Bring Your Own Security in Clouds and Service Oriented Infrastructures .....	374
<i>Dimosthenis Kyriazis (University of Piraeus)</i>	
An Application of Semantic Techniques for Forensic Analysis .....	380
<i>Flora Amato (Univ. of Naples Federico II), Giovanni Cozzolino (Univ. of Naples Federico II), Antonino Mazzeo (Univ. of Naples Federico II), and Francesco Moscato (Univ. of Campania "Luigi Vanvitelli")</i>	
Declarative Modeling for Deploying a Container Platform .....	386
<i>Giuseppe Attardi (Consortium GARR), Alex Barchiesi (Consortium GARR), Alberto Colla (Consortium GARR), Roberto Di Lallo (Consortium GARR), and Fulvio Galeazzi (Consortium GARR)</i>	
A Game Theory-Based Effective Network Management in SDN Networks .....	390
<i>Marwa Abderrahim (MEDIATRON LAB), Asma Ben Letaifa (MEDIATRON LAB), Amel Haji (MEDIATRON LAB), and Sami Tabbane (MEDIATRON LAB)</i>	

## Session 3: Cloud Federations, Big Data, Edge and IoT

Parallel Primitives for Vendor-Agnostic Implementation of Big Data Mining Algorithms .....	396
<i>Cesare Bandirali (University of Bologna), Stefano Lodi (University of Bologna), Gianluca Moro (University of Bologna), Andrea Pagliarani (University of Bologna), and Claudio Sartori (University of Bologna)</i>	
ROCK Algorithm Parallelization with TOREADOR Primitives .....	402
<i>Beniamino Di Martino (Università degli studi della Campania "Luigi Vanvitelli"), Salvatore D'Angelo (Università degli studi della Campania "Luigi Vanvitelli"), Antonio Esposito (Università degli studi della Campania "Luigi Vanvitelli"), Riccardo Cappuzzo (SAP Security Research), and Anderson Santana de Oliveira (SAP Security Research)</i>	
Parallelization and Deployment of Big Data Algorithms: The TOREADOR Approach .....	408
<i>Ivan Martinez (ATOS Spain), Jorge Montero (ATOS Spain), Tomas Pariente (ATOS Spain), Beniamino Di Martino (Seconda Università di Napoli), Salvatore D'Angelo (Università degli Studi della Campania Luigi Vanvitelli), and Antonio Esposito (Università degli Studi della Campania Luigi Vanvitelli)</i>	
Using Federated Cloud Platform to Implement Academia Services for Research and Administration .....	413
<i>Giuseppe Attardi (Consortium Garr - Italian Research and Education Network), Beniamino Di Martino (Università degli studi della Campania "Luigi Vanvitelli"), Antonio Esposito (Università degli studi della Campania "Luigi Vanvitelli"), and Michele Mastroianni (Università degli studi della Campania "Luigi Vanvitelli")</i>	
From the Cloud to Edge and IoT: a Smart Orchestration Architecture for Enabling Osmotic Computing .....	419
<i>Lorenzo Carnevale (University of Messina), Antonio Celesti (University of Messina), Antonino Galletta (University of Messina), Schahram Dustdar (Distributed Systems Group TU Wien), and Massimo Villari (University of Messina)</i>	

## Session 4: Cloud Management

Elastic Architecture Based NFV and OpenStack to Deploy VA Service .....	425
<i>Amel Haji (Carthage University), Asma Ben Letaifa (Carthage University), and Sami Tabbane (Carthage University)</i>	
The Impact of Data Residency on Cloud Computing .....	430
<i>Claude R. Baudoin (Object Management Group and cébé IT &amp; Knowledge Management)</i>	
Cloud Services Categories Identification from Requirements Specifications .....	436
<i>Beniamino Di Martino (Università degli Studi della Campania "Luigi Vanvitelli"), Jessica Pascarella (Università degli Studi della Campania "Luigi Vanvitelli"), Stefania Nacchia (Università degli Studi della Campania "Luigi Vanvitelli"), Salvatore Augusto Maisto (Università degli Studi della Campania "Luigi Vanvitelli"), Pietro Iannucci (IBM), and Fabio Cerri (IBM)</i>	
How to use MEC and ML to Improve Resources Allocation in SDN Networks ? .....	442
<i>Marwa Abderrahim (MEDIATRON LAB), Asma Ben Letaifa (MEDIATRON LAB), Amel Haji (MEDIATRON LAB), and Sami Tabbane (MEDIATRON LAB)</i>	

## The 6th International Workshop on Network and System Management and Monitoring (NetSMM-2018)

### Session 1: Network Monitoring and Management

Concept of User Authentication Method for the Cloud Type Virtual Policy Based Network Management Scheme for the Specific Domain .....	448
<i>Kazuya Odagiri (Sugiyama Jogakuen University), Shimizu Shogo (Gakushuin Women's College), Naohiro Ishii (Aichi Institute of Technology), and Makoto Takizawa (Hosei University)</i>	
A Novel Meta-Heuristic Hybrid Enhanced Differential Harmony Wind Driven (EDHWDO) Optimization Technique for Demand Side Management in Smart Grid .....	454
<i>Talha Naeem Qureshi (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Aqdas Naz (COMSATS Institute of Information Technology), Waseem Ahmad (Air University), Muhammad Imran (National University of Science and Technology), and Zahoor Ali Khan (Higher Colleges of Technology)</i>	
Hikester - The Event Management Application .....	462
<i>Rinat Khatipov (Innopolis University), Aydar Negimatshanov (Innopolis University), Ilgiz Zamaleev (Innopolis University), Anvar Zakirov (Innopolis University), Manuel Mazzara (Innopolis University), and Victor Rivera (Innopolis University)</i>	
SLAs in 5G: A Complete Framework Facilitating VNF- and NS- Tailored SLAs Management .....	469
<i>Evgenia Kapassa (University of Piraeus), Marios Touloupou (University of Piraeus), and Dimosthenis Kyriazis (University of Piraeus)</i>	

Security Analysis of Open Source Network Access Control in Virtual Networks .....	475
<i>Mohammed Suhel Inamdar (SUNY Polytechnic Institute) and Ali Tekeoglu (SUNY Polytechnic Institute)</i>	
MANETs Interoperability: Current Trends and Open Research .....	481
<i>Jose Alfredo Alvarez Aldana (Telecom SudParis), Stephane Maag (Telecom SudParis), and Fatiha Zaïdi (Universite Paris-Sud)</i>	

## **The 5th International Workshop on Security Intricacies in Cyber-Physical Systems and Services (INTRICATE-SEC-2018)**

### **Session 1: Authentication and Cryptography**

Symmetric Key-Based Lightweight Authentication Protocols for RFID Security .....	488
<i>Rajaguru K (Indian Institute of Science) and R.C. Hansdah (Indian Institute of Science)</i>	
Towards the Formal Validation of a Ticket-Based Authentication Scheme for VANETs .....	496
<i>Ons Chikhaoui (SUP'Com), Aida Ben Chehida Douss (SUP'Com), Ryma Abassi (SUP'Com), and Sihem Guemara El Fatmi (SUP'Com)</i>	
Study on Sensitive Data Protection Based on SEAndroid .....	502
<i>Zijian Li (Beijing University of Posts and Telecommunications), Jun Yang (Beijing University of Posts and Telecommunications), and Baojiang Cui (Beijing University of Posts and Telecommunications)</i>	

### **Session 2: Security and Privacy**

Security-Aware Network Analysis for Network Controllability .....	508
<i>Shuo Zhang (Royal Holloway University of London) and Stephen D. Wolthusen (Royal Holloway University of London)</i>	
Sniffing and Chaffing Network Traffic in Stepping-Stone Intrusion Detection .....	515
<i>Jianhua Yang (Columbus State University), Yongzhong Zhang (Shanghai Open University), Robert King (Columbus State University), and Tim Tolbert (Columbus State University)</i>	
Improved Secure ZigBee Light Link Touchlink Commissioning Protocol Design .....	521
<i>Ruiqing Liu (Beijing University of Posts and Telecommunications), Jun Yang (Beijing University of Posts and Telecommunications), and Baojiang Cui (Beijing University of Posts and Telecommunications)</i>	
Privacy Risks in Resource Constrained Smart Micro-Grids .....	527
<i>Pacome Landry Ambassa (University of Cape Town), Anne V.D.M. Kayem (Hasso-Plattner-Institute), Stephen D. Wolthusen (Norwegian University of Science and Technology), and Christoph Meinel (Hasso-Plattner-Institute)</i>	

# The 5th International Workshop on Energy-Aware Systems, Communications and Security (EASyCoSe-2018)

## Session 1: Green Distributed Organizations and Monitoring Solutions

Unicast Routing Protocols to Reduce Electric Energy Consumption in Wireless Ad-Hoc Networks .....	533
<i>Emi Ogawa (Hosei University), Shigenari Nakamura (Hosei University), Tomoya Enokido (Rissho University), and Makoto Takizawa (Hosei University)</i>	
Reducing Power Consumption in HetNet Network Using Power Adjustment and Coordinated Multipoint Technique .....	539
<i>Narjes Lassoued (University of Carthage), Noureddine Boujnah (FSG), and Ridha Bouallegue (University of Carthage)</i>	
Energy-Efficient Transmission Strategy with Cluster Organization Phase to improve Energy Saving in WSNs .....	545
<i>Maha Abderrahim ( University of Carthage), Hela Hakim (University of Sfax), and Hatem Boujema (COSIM Lab.)</i>	
A Hybrid Bacterial Foraging Tabu Search Heuristic Optimization for Demand Side Management in Smart Grid .....	550
<i>Ahmad Jaffar Khan (COMSATS Institute of Information Technology), Nadeem Javaid (COMSATS Institute of Information Technology), Zafar Iqbal (PMAS Arid Agriculture University), Naveed Anwar (University of Wah), Abdul Saboor (COMSATS Institute of Information Technology), Inzimam ul-Haq (COMSATS Institute of Information Technology), and Umar Qasim (Cameron Library University of Alberta)</i>	

## Session 2: Security Issues in the Internet of Things and Smart Solutions

Covert Channels in IoT Deployments Through Data Hiding Techniques .....	559
<i>Luca Caviglione (Consiglio Nazionale delle Ricerche), Alessio Merlo (Universita' degli studi di Genova), and Mauro Migliardi (Universita' degli studi di Padova)</i>	
An Adaptive Typing Biometric System with Varying users Model .....	564
<i>Carlo Ferrari (The University of Padova), Daniele Marini (The University of Padova), and Michele Moro (The University of Padova)</i>	
Supporting Privacy in a Cloud-Based Health Information System by Means of Fuzzy Conditional Identity-Based Proxy Re-encryption (FCI-PRE) .....	569
<i>Gianluca Fimiani (University of Salerno)</i>	
How to Protect Public Administration from Cybersecurity Threats: The COMPACT Project .....	573
<i>Luigi Coppolino (University of Naples Parthenope), Salvatore D'Antonio (University of Naples Parthenope), Giovanni Mazzeo (University of Naples Parthenope), Luigi Romano (University of Naples Parthenope), and Luigi Sgaglione (University of Naples Parthenope)</i>	

## The 4th Workshop on Engineering Energy Efficient Internet Worked Smart seNsor (E3WSN-2018)

### Session 1: IoT, Multi-Agents and Wireless Networks

Formal Semantics of an IoT-Specific Language .....	579
<i>Diletta Romana Cacciagrano (University of Camerino) and Rosario Culmone (University of Camerino)</i>	
Multi-agent Based Simulations of Block-Free Distributed Ledgers .....	585
<i>Michele Bottone (Middlesex University), Franco Raimondi (Middlesex University), and Giuseppe Primiero (Middlesex University)</i>	
Energy Saving and Collision-Free Motion Planning for Oblivious Robots .....	591
<i>Alfredo Navarra (University of Perugia) and Diletta Cacciagrano (University of Camerino)</i>	
An Intelligent Car Park Management System : Hierarchical Placement Algorithm Based on Nearest Location .....	597
<i>Burak Kizilkaya (Middle East Technical University), Mehmet Caglar (Middle East Technical University), Fadi Al-Turjman (Middle East Technical University), and Enver Ever (Middle East Technical University)</i>	
Performance of IEEE802.15.4e TSCH Protocol for Multi-hop Wireless Sensor Networks .....	603
<i>Hosni Ines (University of Tunis El Manar)</i>	

## The 3rd International Workshop on Innovative Technologies in Informatics and Networking (WITIN-2018)

### Session 1: Image Recognition and Object Detection

Real-Time Face Detection Using a Moving Camera .....	609
<i>Deng-Yuan Huang (Da-Yeh University), Chao-Ho Chen (National Kaohsiung University of Applied Sciences), Tsong-Yi Chen (National Kaohsiung University of Applied Sciences), Jian-He Wu (National Kaohsiung University of Applied Sciences), and Chien-Chuan Ko (National Chiayi University)</i>	
Stereo-Based 3D Space Handwriting Recognition .....	615
<i>Ying-Nong Chen (National Central University), Chi-Hung Chuan (Fo Guang University), and Kuo-Chin Fan (National Central University)</i>	
Drone-Based Vacant Parking Space Detection .....	618
<i>Cheng-Fang Peng (National Taiwan Ocean University), Jun-Wei Hsieh (National Taiwan Ocean University), Shao-Wei Leu (National Taiwan Ocean University), and Chi-Hung Chuang (Fo Guang University)</i>	
Toward an Improvement of UAV-Aerial Image Using Non-linear Image Enhancement .....	623
<i>Lung-Jen Wang (National Pingtung University) and Wen-Shyong Hsieh (SHU-TE University)</i>	

Real-Time Static and Dynamic Gesture Recognition Using Mixed Space Features for 3D Virtual World's Interactions .....	627
<i>S. P. Kasthuri Arachchi (National Central University), Noorkholis Luthfil Hakim (National Central University), Hui-Huang Hsu (Tamkang University), Stanislav Vladimirovich Klimenko (Moscow Institute of Physics and Technology), and Timothy K. Shih (National Central University)</i>	

## Session 2: Multimedia Data Analysis

Application of Deep Learning for Infant Vomiting and Crying Detection .....	633
<i>Chuan-Yu Chang (National Yunlin University of Science and Technology) and Fu Ren Chen (National Yunlin University of Science and Technology)</i>	
Apply Scikit-Learn in Python to Analyze Driver Behavior Based on OBD Data .....	636
<i>Chi-pan Hwang (National Changhua University of Education), Mu-Song Chen (Da-Yeh University), Chih-Min Shih (Institute of Information Industry), Hsing-Yu Chen (Institute of Information Industry), and Wen Kai Liu (Institute of Information Industry)</i>	
An Improved Steganographic Scheme Implemented on the Compression Domain of Image Using BTC and Histogram Modification .....	640
<i>Shih-Chieh Shie (National Formosa University), Ji-Han Jiang (National Formosa University), Yi-Jen Su (Shu-Te University), and Wei-Yan Chang (National Formosa University)</i>	
Secure OTT Service Scheme Based on Blockchain Technology .....	645
<i>Hsing-Chung Chen (Asia University, Taiwan), Shyi-Shiun Kuo (Asia University, Taiwan), and Han-Mi Chen (Asia University, Taiwan)</i>	

## The 3rd International Workshop on Big Data Processing in Online Social Network (BOSON-2018)

### Session 1: Distributed Computing Methods and Applications

A Subword-Based Deep Learning Approach for Sentiment Analysis of Political Tweets .....	651
<i>Marco Pota (Institute for High Performance Computing and Networking - National Research Council of Italy), Massimo Esposito (Institute for High Performance Computing and Networking - National Research Council of Italy), Marco A. Palomino (Univeristy of Plymouth), and Giovanni L. Masala (Univeristy of Plymouth)</i>	
Text Analysis on User Generated Content: The Rap Lyrics Challenge .....	657
<i>Alessandro Maisto (University of Salerno), Serena Pelosi (University of Salerno), Raffaele Guarasci (University of Salerno), and Pierluigi Vitale (University of Salerno)</i>	



Towards a Virtual Reality Cognitive Training System for Mild Cognitive Impairment and Alzheimer's Disease Patients .....	663
<i>Giuseppe Caggianese (National Research Council of Italy), Andrea Chirico ("La Sapienza" University of Rome), Giuseppe De Pietro (National Research Council of Italy), Luigi Gallo (National Research Council of Italy), Antonio Giordano (Temple University), Marco Predazzi (Fondazione Il Melo Onlus - Luigi Figini), and Pietro Neroni (National Research Council of Italy)</i>	
Open Information Extraction for Italian Sentences .....	668
<i>Emanuele Damiano (National Research Council of Italy), Aniello Minutolo (National Research Council of Italy), and Massimo Esposito (National Research Council of Italy)</i>	

## **Session 2: Modeling and Simulation of Big Data Processing**

Smart Priority Park Framework Based on DDGP3 .....	674
<i>Walter Balzano (Università di Napoli), Vinicio Barbieri (Università di Napoli), and Giovanni Riccardi (Università di Napoli)</i>	
Strategies for Social Networks Modeling .....	681
<i>Flora Amato (University of Naples "Federico II"), Leonard Barolli (Fukuoka Institute of Technology (FIT).), Vincenzo Moscato (University of Naples "Federico II"), Antonio Picariello (University of Naples "Federico II"), and Giancarlo Sperli (University of Naples "Federico II")</i>	
Enabling IoT Stream Management in Multi-cloud Environment by Orchestration .....	687
<i>Flora Amato (Univ. of Naples Federico II), Francesco Moscato (Univ. of Campania "Luigi Vanvitelli"), and Fatos Xhafa (Universitat Politecnica de Catalunya)</i>	

## **The First International Workshop on Internet of Everything and Machine Learning Applications (IOEMLA-2018)**

### **Session 1: Machine Learning**

Impact of Web 2.0 Technology on Students with Learning Difficulties: A State-of-the-Art and Future Challenges .....	693
<i>Mohammad Alhabashneh (Curtin University), Bilal Abu-Salih (Curtin University), and Shirlee-ann Knight (Curtin University)</i>	
Extending a Conventional Chatbot Knowledge Base to External Knowledge Source and Introducing User Based Sessions for Diabetes Education .....	698
<i>Shafquat Hussain (Western Sydney University) and Ginige Athula (Western Sydney University)</i>	
Internet of Everything and Machine Learning Applications: Issues and Challenges .....	704
<i>Omid Ameri Sianaki (Victoria University), Ashkan Yousefi (UC Berkeley), Azadeh Rajabian Tabesh (Curtin University), and Mehregan Mahdavi (Victoria University)</i>	

A Deep Learning Framework to Enhance Software Defined Networks Security ..... 709  
*Ahmed Dawoud (Western Sydney University), Seyed Shahrستاني (Western Sydney University), and Chun Raun (Western Sydney University)*

**Session 2: Internet of Everything**

Analysis of Scientific Production of IoE Big Data Research ..... 715  
*Jaswinder Kaur (Curtin University), Pornpit Wongthongtham (Curtin University), Bilal Abu-Salih (Curtin University), and Sogand Fathy (Victoria University)*

A Decision Support System for Selecting Sustainable Materials in Construction Projects ..... 721  
*Muhammad Rashid Minhas (Curtin University), Vidyasagar Potdar (Curtin University), and Omid Ameri Sianaki (Victoria University)*

Data Provenance in the Internet of Things ..... 727  
*Mahmoud Elkhodr (Victoria University), Belal Alsinglawi (Western Sydney University), and Mohammad Alshehri (UTS)*

**Author Index** ..... 733