

Contents – Part I

SaSeIoT

Innovative TLS/DTLS Security Modules for IoT Applications: Concepts and Experiments	3
<i>Pascal Urien</i>	
Controlled Android Application Execution for the IoT Infrastructure	16
<i>Michael N. Johnstone, Zubair Baig, Peter Hannay, Clinton Carpena, and Malik Feroze</i>	
Combined Danger Signal and Anomaly-Based Threat Detection in Cyber-Physical Systems	27
<i>Viktoriya Degeler, Richard French, and Kevin Jones</i>	
Performance Evaluation of Searchable Symmetric Encryption in Wireless Sensor Networks	40
<i>Cristina Muñoz, Lucas Rocci, Eduardo Solana, and Pierre Leone</i>	
Secure Data Exchange Based on Social Networks Public Key Distribution . . .	52
<i>Krzysztof Podlaski, Artur Hłobaż, and Piotr Milczarski</i>	

CYCLONE

An SDN and CPS Based Opportunistic Upload Splitting for Mobile Users . . .	67
<i>Maurizio Casoni, Carlo Augusto Grazia, and Martin Klapez</i>	
A Cloud-Based Platform of the Social Internet of Things	77
<i>Roberto Girau, Salvatore Martis, and Luigi Atzori</i>	
Stand-Alone Smart Wireless Sensor Nodes Providing Dynamic Routing by Means of Adaptive Beamforming	89
<i>Roberto Caso, Rosario Garroppo, Stefano Giordano, Giuliano Manara, Andrea Michel, Paolo Nepa, Luca Tavanti, Marco Magnaros, and Guido Nenna</i>	
A Centrality-Based ACK Forwarding Mechanism for Efficient Routing in Infrastructureless Opportunistic Networks	99
<i>Sanjay K. Dhurandher, Isaac Woungang, Anshu Rajendra, Piyush Ghai, and Periklis Chatzimisios</i>	
Zone-Based Living Activity Recognition Scheme Using Markov Logic Networks	109
<i>Asaad Ahmed, Hirohiko Suwa, and Keiichi Yasumoto</i>	

Acumen: An Open-Source Testbed for Cyber-Physical Systems Research . . .	118
<i>Walid Taha, Adam Duracz, Yingfu Zeng, Kevin Atkinson, Ferenc A. Bartha, Paul Brauner, Jan Duracz, Fei Xu, Robert Cartwright, Michal Konečný, Eugenio Moggi, Jawad Masood, Pererik Andreasson, Jun Inoue, Anita Sant’Anna, Roland Philippsen, Alexandre Chapoutot, Marcia O’Malley, Aaron Ames, Veronica Gaspes, Lise Hvatum, Shyam Mehta, Henrik Eriksson, and Christian Grante</i>	
Spatial Reuse Based Resource Allocation in Device-to-Device Communications	131
<i>Tiansheng Sun, Li Wang, Zilong Wu, and Tommy Svensson</i>	
Wireless M-BUS: An Attractive M2M Technology for 5G-Grade Home Automation.	144
<i>Pavel Masek, Krystof Zeman, Zenon Kuder, Jiri Hosek, Sergey Andreev, Radek Fujdiak, and Franz Kropfl</i>	
Carpooling in Urban Areas: A Real-Time Service Case-Study	157
<i>Matteo Mallus, Giuseppe Colistra, Luigi Atzori, and Maurizio Murrone</i>	
Spectrum Sharing Approaches for Machine-Type Communications over LTE Heterogeneous Networks	167
<i>Antonino Orsino, Massimo Condoluci, and Giuseppe Araniti</i>	
Softwarization and Virtualization in 5G Networks for Smart Cities	179
<i>Massimo Condoluci, Fragkiskos Sardis, and Toktam Mahmoodi</i>	
Feasibility of Signaling Storms in 3G/UMTS Operational Networks	187
<i>Frederic Francois, Omer H. Abdelrahman, and Erol Gelenbe</i>	
Countering Mobile Signaling Storms with Counters.	199
<i>Erol Gelenbe and Omer H. Abdelrahman</i>	
A Data Plane Approach for Detecting Control Plane Anomalies in Mobile Networks.	210
<i>Omer H. Abdelrahman and Erol Gelenbe</i>	
Demonstrating the Versatility of a Low Cost Measurement Testbed for Wireless Sensor Networks with a Case Study on Radio Duty Cycling Protocols	222
<i>Maite Bezunartea, Marie-Paule Uwase, Jacques Tiberghien, Jean-Michel Dricot, and Kris Steenhaut</i>	
GOODTECHS	
Technology, Citizens and Social Change in the Framework of European Research and Innovation Programmes: Towards a Paradigm Shift	233
<i>Marta Arniani</i>	

Understanding the City to Make It Smart	239
<i>Roberta De Michele and Marco Furini</i>	
MobilitApp: Analysing Mobility Data of Citizens in the Metropolitan Area of Barcelona	245
<i>Silvia Puglisi, Ángel Torres Moreira, Gerard Marrugat Torregrosa, Mónica Aguilar Igartua, and Jordi Forné</i>	
Calibrating Low-End Sensors for Ozone Monitoring	251
<i>Óscar Alvear, Carlos Tavares Calafate, Juan-Carlos Cano, and Pietro Manzoni</i>	
Evaluation of TSCH/IEEE 802.15.4e in a Domestic Network Environment . .	257
<i>Luis Pacheco, Tom Vermeulen, Sofie Pollin, and Priscila Solis</i>	
A Stochastic Optimization Model for the Placement of Road Site Units	263
<i>Luis Urquiza-Aguilar, Carolina Tripp-Barba, and Mónica Aguilar Igartua</i>	
Can a Game Improve People’s Lives? The Case of <i>Serious Games</i>	270
<i>Armır Bujari, Matteo Ciman, Ombretta Gaggi, and Claudio E. Palazzi</i>	
About Game Engines and Their Future	276
<i>Dario Maggiorini, Laura Anna Ripamonti, and Giacomo Cappellini</i>	
Smart Cart: When Food Enters the IoT Scenario	284
<i>Marco Furini and Claudia Pitzalis</i>	
Towards Autonomic Middleware-Level Management of QoS for IoT Applications	290
<i>Yassine Banouar, Saad Reddad, Codé Diop, and Christophe Chassot</i>	
Safe Bicycle Parking Platform Based on RFID Technology	297
<i>Víctor Juan Expósito Jiménez, Florian Salmhofer, Reinhold Frosch, Herwig Zeiner, and Werner Haas</i>	

CN4IoT

Opportunistic Collaborative Service Networks: The Facilitator for Efficient Data and Services Exchange	307
<i>Dimosthenis Kyriazis, George Kousiouris, Alexandros Psychas, Andreas Menychtas, and Theodora Varvarigou</i>	
A Case for Understanding End-to-End Performance of Topic Detection and Tracking Based Big Data Applications in the Cloud	315
<i>Meisong Wang, Rajiv Ranjan, Prem Prakash Jayaraman, Peter Strazdins, Pete Burnap, Omer Rana, and Dimitrios Georgakopoulos</i>	

On Security SLA-Based Monitoring as a Service	326
<i>Dana Petcu, Silviu Panica, Bogdan Irimie, and Georgiana Macariu</i>	
Security and IoT Cloud Federation: Design of Authentication Schemes	337
<i>Luciano Barreto, Antonio Celesti, Massimo Villari, Maria Fazio, and Antonio Puliafito</i>	
When the Cloud Goes Pervasive: Approaches for IoT PaaS on a Mobiquitous World	347
<i>Luiz Angelo Steffemel and Manuele Kirsch Pinheiro</i>	
Coordinating Data Analysis and Management in Multi-layered Clouds.	357
<i>Ioan Petri, Javier Diaz-Montes, Omer Rana, Yacine Rezgui, Manish Parashar, and Luiz F. Bittencourt</i>	
Foundations for Simulating IoT Control Mechanisms with a Chemical Analogy.	367
<i>Gabor Kecskemeti and Zsolt Nemeth</i>	
Towards Urban Mobile Sensing as a Service: An Experience from Southern Italy	377
<i>Marco Zappatore, Antonella Longo, Mario A. Bochicchio, Daniele Zappatore, Alessandro A. Morrone, and Gianluca De Mitri</i>	
On the Minimization of the Energy Consumption in Federated Data Centers.	388
<i>Alexis I. Aravanis, Panagiotis Karkazis, Artemis Voulkidis, and Theodore Zahariadis</i>	
Towards Enabling Scientific Workflows for the Future Internet of Things . . .	399
<i>Attila Kertesz and Tamas Pflanzner</i>	
Cloud Computing-Based Marketplace for Collaborative Design and Manufacturing	409
<i>Ashis Gopal Banerjee, Benjamin Beckmann, John Carbone, Lynn DeRose, Annarita Giani, Peter Koudal, Patricia Mackenzie, Joseph Salvo, Dan Yang, and Walter Yund</i>	
Towards Defining Families of Systems in IoT: Logical Architectures with Variation Points.	419
<i>Simone Di Cola, Kung-Kiu Lau, Cuong Tran, and Chen Qian</i>	
HealthyIoT	
An Overview on the Internet of Things for Health Monitoring Systems	429
<i>Mobyen Uddin Ahmed, Mats Björkman, Aida Čaušević, Hossein Fotouhi, and Maria Lindén</i>	

An Adaptive QoE-Based Network Interface Selection for Multi-homed eHealth Devices	437
<i>Sami Souihi, Mohamed Souidi, and Abdelhamid Mellouk</i>	
An Internet-Based Tool for Pediatric Cardiac Disease Diagnosis Using Intelligent Phonocardiography	443
<i>Arash Gharehbaghi and Maria Lindén</i>	
Non-contact Physiological Parameters Extraction Using Camera	448
<i>Hamidur Rahman, Mobyen Uddin Ahmed, and Shahina Begum</i>	
Security Analysis of an IoT Architecture for Healthcare.	454
<i>M. Teresa Villalba, Manuel de Buenaga, Diego Gachet, and Fernando Aparicio</i>	
A Cooperative Decision Support System for Children's Neurodevelopment Monitoring	461
<i>María-Luisa Martín-Ruiz, Miguel-Angel Valero, Ana Gómez, and Carmen Torcal</i>	
Can the Regression Trees Be Used to Model Relation Between ECG Leads? . . .	467
<i>Ivan Tomasic, Roman Trobec, and Maria Lindén</i>	
Elderly Monitoring System with Sleep and Fall Detector	473
<i>Abdulakeem Odunmbaku, Amir-Mohammad Rahmani, Pasi Liljeberg, and Hannu Tenhunen</i>	
Health Sensors Information Processing and Analytics Using Big Data Approaches.	481
<i>D. Gachet Páez, M.L. Morales Botello, E. Puertas, and M. de Buenaga</i>	
Leveraging IoT Device Data for Emotional Health	487
<i>Hariprasad Anumala, Shiva Murthy Busetty, and Vishal Bharti</i>	
SMARTA: Smart Ambiente and Wearable Home Monitoring for Elderly. . . .	502
<i>Paolo Perego, Marco Tarabini, Marco Bocciolone, and Giuseppe Andreoni</i>	
A Labview Based Ubiquitous Telehealth System for the Elderly.	508
<i>M.W. Raad and Tarek Sheltami</i>	
Context-Aware Early Warning System for In-Home Healthcare Using Internet-of-Things	517
<i>Arman Anzanpour, Amir-Mohammad Rahmani, Pasi Liljeberg, and Hannu Tenhunen</i>	
On Evaluating Blood Pressure Through Photoplethysmography.	523
<i>Giovanna Sannino, Ivanoe De Falco, and Giuseppe De Pietro</i>	

An Inhaler Dose Recording Service Designed for Patients Who Need Chronic Respiratory Disease Control	530
<i>Shu-Hui Hung, Hsin-Hung Lin, Chin-Shian Wong, Ian Kuo, and James Pang</i>	
A Novel Approach to Unify Robotics, Sensors, and Cloud Computing Through IoT for a Smarter Healthcare Solution for Routine Checks and Fighting Epidemics	536
<i>Arijit Sinharay, Arpan Pal, Snehasis Banerjee, Rohan Banerjee, Soma Bandyopadhyay, Parijat Deshpande, and Ranjan Dasgupta</i>	
Author Index	543

Contents – Part II

IoTaaS

Managing Connected Smart Objects	3
<i>Alan McGibney, Alejandro Esquivia Rodriguez, Oliva Brickley, and Susan Rea</i>	
Configurable Role Based Concrete Architecture Layers: Constituting Business Process Aware Internet-of-Things Services' Reference Architecture	10
<i>Vikas S. Shah</i>	
Lightweight Device Task Actuation Framework as IoT Test Platform	20
<i>Dhiman Chattopadhyay, Abinash Samantaray, and Hari Raghav</i>	
Networked Smart Objects: Moving Data Processing Closer to the Source.	28
<i>Alessandra Rizzardi, Daniele Miorandi, Sabrina Sicari, Cinzia Cappiello, and Alberto Coen-Porisini</i>	
Automated Workflow Formation for IoT Analytics: A Case Study	36
<i>Tanushyam Chattopadhyay, Avik Ghose, Arijit Mukherjee, Santa Maiti, and Arpan Pal</i>	
On Integrating Heterogeneous Locating Services	44
<i>Hiroki Takatsuka, Sachio Saiki, Shinsuke Matsumoto, and Masahide Nakamura</i>	
A Semantic Algorithm Repository and Workflow Designer Tool: Signal Processing Use Case	53
<i>Sounak Dey, Dibyanshu Jaiswal, Himadri Sekhar Paul, and Arijit Mukherjee</i>	
Biotelemetry System for Remote Monitoring of Cardiac Signals and Temperature Using Social Networks	62
<i>Melissa Montalvo, Andrea García, Julio Montesdeoca, and René Ávila</i>	
IoT Testing - The Big Challenge Why, What and How	70
<i>Benny Sand</i>	
Data-Centric Security for the IoT	77
<i>Daniel Schreckling, Juan David Parra, Charalampos Doukas, and Joachim Posegga</i>	

Privacy Aware on-Demand Resource Provisioning for IoT Data Processing . . .	87
<i>Tom Kirkham, Arnab Sinha, Nikos Parlavantzas, Bartosz Kryza, Paul Fremantle, Kyriakos Kritikos, and Benjamin Aziz</i>	

Mobility IoT

Internet of Things as Advanced Technology to Support Mobility and Intelligent Transport	99
<i>Milan Dado, Aleš Janota, Juraj Spalek, Peter Holečko, Rastislav Pirmík, and Karl E. Ambrosch</i>	

Multimodal Interactions: Embedding New Meanings to Known Forms and Objects	107
<i>Predrag K. Nikolic</i>	

Mobility of 65 + Society – Needs and Expectations of Third Age University Students	122
<i>Janusz Grabara, Katarzyna Grondys, and Sebastian Kot</i>	

The Use of E-communication in Promoting Selected Religious, Cultural and Historical Monuments in Presov in the East of Slovakia	129
<i>Martina Ferencová, Beata Ślusarczyk, Sebastian Kot, and Veronika Mišenčíková</i>	

The International New Ventures: Applicability of the Theory on the Slovak Innovative Start-Ups	136
<i>Sonia Ferencikova Sr. and Sonia Ferencikova Jr.</i>	

Smart Infrastructure in Bratislava	142
<i>Julius Golej, Miroslav Panik, and Andrej Adamuscin</i>	

Economic Aspects of Land Grabbing in the Connection with Development Projects	150
<i>Daniela Spirkova, Dagmar Cagánová, and Manan Bawa</i>	

An IoT Approach for the Connected Vehicle	158
<i>Andrea Parodi, Massimo Maresca, Michele Provera, and Pierpaolo Baglietto</i>	

A Study on the Detection of Abnormal Behavior and Vulnerability Analysis in BYOD	162
<i>Taeun Kim</i>	

Mobile App for Public Transport: A Usability and User Experience Perspective	168
<i>Anaïs Luisa Habermann, Kai Kasugai, and Martina Ziegle</i>	

Open Platform Within the Smart Health Framework to Support the Development of Recreational Bike Path Applications: Smart Bike Path in the Context of the VAS Strategy in Colombia	175
<i>Mónica Trujillo and Dario Correal</i>	

Heterogeneous Travel Information Exchange	181
<i>Markus C. Beutel, Sevket Gökay, Wolfgang Kluth, Karl-Heinz Krempels, Christian Samsel, Christoph Terwelp, and Maximilian Wiederhold</i>	

S-CUBE

Strain Calibration of Substrate-Free FBG Sensors at Cryogenic Temperature	191
<i>Venkataraman Narayanan Venkatesan, Klaus-Peter Weiss, Ram Prakash Bharti, Holger Neumann, and Rajinikumar Ramalingam</i>	

Fabrication and Application of Low Cost Flexible Film-Based Sensors to Environmental and Biomedical Monitoring Scenarios.	203
<i>Vladimir Laukhin, Victor Lebedev, Elena Laukhina, Andrey Somov, Alexander Baranov, Concepcio Rovira, and Jaume Veciana</i>	

Hazardous Gases Sensing: Influence of Ionizing Radiation on Hydrogen Sensors.	217
<i>Boris Podlepetsky and Nikolay Samotaev</i>	

Approach to Engineering the Temperature Sensing E-textile: A Lightweight Thermistor as an Active Sensing Element	223
<i>Victor Lebedev, Elena Laukhina, Vladimir Laukhin, Andrey Somov, Alexander Baranov, Concepcio Rovira, and Jaume Veciana</i>	

exIMUs: An Experimental Inertial Measurement Unit for Shock and Impact Detection in Sport Applications	235
<i>Ivan Minakov and Roberto Passerone</i>	

Towards Generic Intelligent WSN Platform for Hazardous Gases Detection . . .	250
<i>Nikolay Samotaev, Anastasia Ivanova, Konstantin Oblov, Pavel Laguzov, and Andrey Sokolov</i>	

Management of Ionization Source Based on a Pulsed Corona Discharge	260
<i>Vladimir Belyakov, Anatoliy Golovin, Viacheslav Pershenkov, Yulia Shaltaeva, Valeriy Vasilyev, Nikolay Samotaev, Evgeniy Malkin, Evgeniy Gromov, Vladimir Shurenkov, Igor Ivanov, Maxim Matusko, and Dmitry Yakovlev</i>	

Dynamic Reconfiguration of Network Protocols for Constrained Internet-of-Things Devices	269
<i>Peter Ruckebusch, Jo Van Damme, Eli De Poorter, and Ingrid Moerman</i>	

Surveying Indexing Methods for the Internet of Things	282
<i>Victor Kardeby, Ulf Jennehag, and Mikael Gidlund</i>	
Towards Precision Control in Constrained Wireless Cyber-Physical Systems	292
<i>David Boyle, Roman Kolcun, and Eric Yeatman</i>	
DESAL ^β : A Framework For Implementing Self-stabilizing Embedded Network Applications	307
<i>Yangyang He, Yuheng Du, Shiree Hughes, Jiannan Zhai, Jason O. Hallstrom, and Nigamanth Sridhar</i>	
Automatically Quantitative Analysis and Code Generator for Sensor Systems: The Example of Great Lakes Water Quality Monitoring	313
<i>Bojan Nokovic and Emil Sekerinski</i>	
Software Architecture for Remote Monitoring Systems of Surface Contamination by Alpha Radioactive Isotopes	320
<i>Boris Gurkovskiy, Evgeny Onishchenko, Vladimir Miroshnichenko, Andrey Simakov, and Nikolay Samotaev</i>	
DriverGen: Automating the Generation of Serial Device Drivers	325
<i>Jiannan Zhai, Yuheng Du, Shiree Hughes, and Jason O. Hallstrom</i>	
Ultra-Low Power Context Recognition Fusing Sensor Data from an Energy-Neutral Smart Watch	331
<i>Michele Magno, Lukas Cavigelli, Renzo Andri, and Luca Benini</i>	
Adaptive Methods for Managing Heterogeneity in Smart Spaces	344
<i>Mikko Asikainen, Lauri Väättäinen, Aleksu Suomalainen, Miika Toivanen, Keijo Haataja, and Pekka Toivanen</i>	
An Evaluation of Link Estimation Algorithms for RPL in Dynamic Wireless Sensor Networks	349
<i>Peter Ruckebusch, Jens Devloo, David Carels, Eli De Poorter, and Ingrid Moerman</i>	
A Mobile Camera-Based Evaluation Method of Inertial Measurement Units on Smartphones	362
<i>Lars Middendorf, Rainer Dorsch, Rudolf Bichler, Christina Strohrmann, and Christian Haubelt</i>	
Fast Phase Analysis of SAW Delay Lines	373
<i>Christian Gruber, Alfred Binder, and Martin Lenzhofer</i>	

InterIoT

Cross-Platform Scenario Module for Internet of Things Testing Architecture	385
<i>Osama Abu Oun, Christelle Bloch, and François Spies</i>	
Semantic Metastandards Will Unlock IoT Interoperability	396
<i>David P. Janes</i>	
Internet of Things and Crowdsourcing – Towards a Multiple Integrating Model Based on the IoT Lab European Research Project	403
<i>Sébastien Ziegler</i>	
Lessons Learned from the 6TiSCH Plugtests	415
<i>Maria Rita Palattella, Xavier Vilajosana, Tengfei Chang, Miguel Angel Reina Ortega, and Thomas Watteyne</i>	
BLE and IEEE 802.15.4 in the IoT: Evaluation and Interoperability Considerations	427
<i>PrithviRaj Narendra, Simon Duquennoy, and Thiemo Voigt</i>	
Visual Development Environment for Semantically Interoperable Smart Cities Applications	439
<i>Aikaterini Roukounaki, John Soldatos, Riccardo Petrolo, Valeria Loscri, Nathalie Mitton, and Martin Serrano</i>	
Remote Management of a Large Set of Heterogeneous Devices Using Existing IoT Interoperability Platforms	450
<i>Heleen Vandaele, Jelle Nelis, Tim Verbelen, and Chris Develder</i>	

SDWNCT

Dynamic Monitoring Dashboards Through Composition of Web and Visualization Services	465
<i>Sofie Van Hoecke, Cynric Huys, Olivier Janssens, Ruben Verborgh, and Rik Van de Walle</i>	
Real-Time Tracking Management System.	475
<i>Jose C. Almeida and Artur M. Arsenio</i>	
Distributed Neural Networks for Internet of Things: The Big-Little Approach	484
<i>Elias De Coninck, Tim Verbelen, Bert Vankeirsbilck, Steven Bohez, Pieter Simoens, Piet Demeester, and Bart Dhoedt</i>	
Learning About Animals and Their Social Behaviors for Smart Livestock Monitoring	493
<i>João Ambrosio, Artur M. Arsenio, and Orlando Remédios</i>	

Personal and Sensitive Data in the e-Health-IoT Universe	504
<i>Fiorella Guadagni, Noemi Scarpato, Ferroni Patrizia, Grazia D'Ottavi, Fernando Boavida, Mario Roselli, Graziano Garrisi, and Andrea Lisi</i>	
A Software Defined Network Solution for Spontaneous Wireless Access Extension	515
<i>Gianluca Aloï, Giancarlo Fortino, and Pasquale Pace</i>	
Towards Adoption of Software Defined Wireless Backhaul Networks	521
<i>Osianoh Glenn Aliu, Senka Hadzic, Christian Niephaus, and Mathias Kretschmer</i>	
USD: A User-Centric Software Defined Platform for 5G Mobile Devices. . . .	530
<i>Kien Nguyen, Kentaro Ishizu, and Fumihide Kojima</i>	
Extending SDN Framework for Communication Networks	539
<i>M. Saravanan, Arud Selvan Sundaramurthy, Divya Sundar, and K. Hiba Sadia</i>	
Author Index	551

Internet of Things. IoT Infrastructures

Second International Summit, IoT 360° 2015, Rome,
Italy, October 27-29, 2015. Revised Selected Papers,
Part I

Mandler, B.; Barja, J.; Mitre Campista, M.E.; Cagáňová,
D.; Chaouchi, H.; Zeadally, S.; Badra, M.; Giordano, S.;
Fazio, M.; Somov, A.; Vieriu, R.-L. (Eds.)

2016, LVIII, 547 p. 203 illus., Softcover

ISBN: 978-3-319-47062-7