Contents

Part I  IoT Resource Management in Application Domains

Towards the Usage of CCN for IoT Networks .............................. 3
Bertrand Mathieu, Cedric Westphal and Patrick Truong

On the Track of 5G Radio Access Network for IoT Wireless
Spectrum Sharing in Device Positioning Applications .................... 25
Jordi Mongay Batalla, Constantinos X. Mavromoustakis,
George Mastorakis and Konrad Sienkiewicz

Millimetre Wave Communication for 5G IoT Applications ............ 37
Turker Yilmaz, Gokce Gokkoca and Ozgur B. Akan

Challenges Implementing Internet of Things (IoT) Using Cognitive
Radio Capabilities in 5G Mobile Networks ............................... 55
Konstantinos Katzis and Hamed Ahmadi

Role Coordination in Large-Scale and Highly-Dense
Internet-of-Things ............................................................. 77
André Riker, Marília Curado and Edmundo Monteiro

Energy Harvesting and Sustainable M2M Communication
in 5G Mobile Technologies .................................................. 99
Deepak Mishra and Swades De

Part II  Applications of IoT in 5G Access Technologies

Green 5G Femtocells for Supporting Indoor Generated IoT
Traffic ................................................................................. 129
Elias Yaacoub

On the Research and Development of Social Internet
of Things .............................................................................. 153
B.K. Tripathy, Deboleena Dutta and Chido Tazivazvino
Microgrid State Estimation Using the IoT with 5G Technology .......................... 175
Md Masud Rana, Li Li and Steven Su

Building IoT Ecosystems from Mobile Clouds at Network Edge .......................... 197
Marat Zhanikeev

Part III Architecture of IoT and Related Technologies

Middleware Platform for Mobile Crowd-Sensing Applications
Using HTML5 APIs and Web Technologies .................................................. 231
Ioannis Vakintis and Spyros Panagiotakis

Identification and Access to Objects and Services in the
IoT Environment .............................................................................. 275
Mariusz Gajewski and Piotr Krawiec

A Generic and Scalable IoT Data Fusion Infrastructure .................................. 299
Vangelis Nomikos, Ioannis Priggouris, George Bismpikis,
Stathes Hadjieffthymiades and Odysseas Sekkas

ONSIDE-SELF: A Selfish Node Detection and Incentive
Mechanism for Opportunistic Dissemination ............................................. 317
Radu-Ioan Ciobanu, Radu-Corneliu Marin, Ciprian Dobre
and Valentin Cristea

Middleware Technology for IoT Systems: Challenges and
Perspectives Toward 5G ....................................................................... 333
Leonardo Albernaz Amaral, Everton de Matos,
Ramão Tiago Tiburski, Fabiano Hessel, Willian Tessaro Lunardi
and Sabrina Marczak

Part IV Security Considerations in IoT Smart Ambient Systems

Security in Smart Grids and Smart Spaces for Smooth IoT
Deployment in 5G ............................................................................. 371
Vasos Hadjioannou, Constandinos X. Mavromoustakis,
George Mastorakis, Jordi Mongay Batalla, Ioannis Kopanakis,
Emmanouil Perarakis and Spiros Panagiotakis

Security Challenges in 5G-Based IoT Middleware Systems ....................... 399
Ramão Tiago Tiburski, Leonardo Albernaz Amaral and Fabiano Hessel

Signal Processing Techniques for Energy Efficiency, Security,
and Reliability in the IoT Domain ....................................................... 419
Alexandros Fragkiadakis, Elias Tragos, Antonis Makrogiannakis,
Stefanos Papadakis, Pavlos Charalampidis and Manolis Surligas
IoT Enablers and Their Security and Privacy Issues ............... 449
Sukirna Roy and B.S. Manoj

Part V IoT Systems for 5G Environments

Data and Traffic Models in 5G Network ......................... 485
Rossitza Goleva, Rumen Stainov, Desislava Wagenknecht-Dimitrova,
Seferin Mirtchev, Dimitar Atamian, Constantinos X. Mavromoustakis,
George Mastorakis, Ciprian Dobre, Alexander Savov
and Plamen Draganov
Internet of Things (IoT) in 5G Mobile Technologies
Mavromoustakis, C.; Mastorakis, G.; Batalla, J.M. (Eds.)
2016, IX, 499 p. 167 illus., 40 illus. in color., Hardcover
ISBN: 978-3-319-30911-8