2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW 2018)

Barcelona, Spain
15 – 18 April 2018
Impact of SON Function Combinations on the KPI Behaviour in Realistic Mobile Network Scenarios
Sören Hahn (Technische Universität Braunschweig & Institut für Nachrichtentechnik, Germany), Michael Schweins (Technische Universität Braunschweig & Institut für Nachrichtentechnik, Germany), Thomas Kürner (Technische Universität Braunschweig, Germany) ................................................................. 1

Polar Code Construction using the Information Bottleneck Method
Maximilian Stark (Hamburg University of Technology, Germany), Syed Aizaz Ali Shah (Hamburg University of Technology, Germany), Gerhard Bauch (Hamburg University of Technology, Germany) ................................................................. 7

SON Function Performance Prediction in a Cognitive SON Management System
Simon Lohmüller (University of Augsburg, Germany), Fabian Rabe (University of Augsburg, Germany), Andrea Fendt (University of Augsburg & Nokia Bell Labs, Germany), Bernhard Bauer (University of Augsburg, Germany), Lars Christoph Schmelz (Nokia, Germany) ................................................................. 13
Networks: Theory and Practice

WS7: Polar Coding for Future Networks: Theory and Practice - Posters

*Improved Successive Cancellation Flip Decoding of Polar Codes Based on Error Distribution*
Carlo Condo (Huawei Technologies Co. Ltd., France), Furkan Ercan (McGill University, Canada), Warren Gross (McGill University, Canada) ........................................... 19

*Randomized chained polar subcodes*
Peter Trifonov (Saint-Petersburg State Polytechnic University, Russia) ...................... 25

IEEE WCNCW IWSON 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): 7th International Workshop on Self-Organizing Networks (IWSON)

WS3: 7th International Workshop on Self-Organizing Networks (IWSON) Part I

*Heuristic approach for forecast scheduling*
Hind Zaaraoui (Orange labs & University of Avignon, France), Zwi Altman (Orange Labs, France), Sana Ben Jemaa (Orange Labs, France), Eitan Altman (INRIA, France), Tania Jimenez (University of Avignon, France) ........................................... 31


WS7: Polar Coding for Future Networks: Theory and Practice - Posters

*Fast List Decoding of Polar Codes: Decoders for Additional Nodes*
Muhammad Hanif (University of Alberta, Canada), Maryam Ardakani (University of Alberta, Canada), Masoud Ardakani (University of Alberta, Canada) .......................................................... 37
Cluster-Based D2D Architecture for Safety Services in Vehicular Ad Hoc Networks
Shashank Kumar Gupta (University of Newcastle, Australia), Jamil Y Khan (The University of Newcastle, Australia), Duy T Ngo (The University of Newcastle, Australia) ................................................................. 43

Flexible IR-HARQ Scheme for Polar-Coded Modulation
Peihong Yuan (Technical University of Munich, Germany), Fabian Steiner (Technische Universität München, Germany), Tobias Prinz (Technische Universität München, Germany), Georg Böcherer (Huawei Technologies, France) ................................................................. 49

A Collision Avoidance Solution for UAVs Following Planned Missions
Francisco Fabra (Universidad Politécnica de Valencia, Spain), Carlos T. Calafate (Universidad Politécnica de Valencia, Spain), Juan-Carlos Cano (Universidad Politécnica de Valencia, Spain), Pietro Manzoni (Universitat Politècnica de València, Spain) ................................................................. 55

WS7: Polar Coding for Future Networks: Theory and Practice - Posters

Polar Codes with Internal Edge Permutations
Valerio Bioglio (France Research Center, Huawei Technologies Co. Ltd., Italy), Ingmar Land (Huawei, Paris Research Center, France) .............................................................. 61


On the impact of communication delays on UAVs flocking behavior
Victor Casas Melo (Ilmenau University of Technology, Germany), Andreas Mitschele-Thiel (Ilmenau University of Technology, Germany) ...................................................... 67


WS7: Polar Coding for Future Networks: Theory and Practice - Posters

Fast-SSC-Flip Decoding of Polar Codes
Pascal Giard (EPFL, Switzerland), Andreas Burg (EPFL, Switzerland) ........................................... 73
IEEE WCNCW EDGE 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Workshop on Intelligent Computing and Caching at the Network Edge

WS5: Workshop on Intelligent Computing and Caching at the Network Edge Part I

Optimal Caching Strategy in Device-to-Device Wireless Networks
Shaoqin Peng (University of Electronic Science and Technology of China, P.R. China), Liying Li (University of Electronic Science and Technology of China, P.R. China), Xianing Tan (University of Electronic Science and Technology of China, P.R. China), Guodong Zhao (University of Electronic Science and Technology of China (UESTC), P.R. China), Zhi Chen (University of Electronic Science and Technology of China, P.R. China) ............................................................... 78

Mobile Social Media Networks Caching with Convolutional Neural Network
Kuo Chun Tsai (University of Houston, USA), Li Wang (Beijing University of Posts and Telecommunications, P.R. China), Zhu Han (University of Houston, USA) ............................................................... 83

Energy-Efficient Design for Latency-tolerant Content Delivery Networks
Thang Xuan Vu (University of Luxembourg, Luxembourg), Lei Lei (University of Luxembourg, Luxembourg), Satyanarayana Vuppala (University of Luxembourg, Luxembourg), Symeon Chatzinotas (University of Luxembourg, Luxembourg), Björn Ottersten (University of Luxembourg, Luxembourg) .................................................. 89

Socially-Aware Content Delivery for Device-to-Device Communications Underlay Cellular Networks
Yun Hu (Xidian University, P.R. China), Zheng Chang (University of Jyväskylä, Finland), Zhenyu Zhou (North China Electric Power University & Waseda University, P.R. China), Chen Xu (North China Electric Power University, P.R. China), Tapani Ristaniemi (University of Jyväskylä, Finland) .................................................. 95

IEEE WCNC FLEXNETs 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Workshop on Flexible and Agile Networks (FlexNets)

WS1: Workshop on Flexible and Agile Networks (FlexNets) Part I

Advancements of QoE Assessment and Optimization in Mobile Networks in the Machine Era
Daniela Laselva (Nokia Bell Labs, Denmark), Troels E. Kolding (Nokia, Denmark), Massimiliano Mattina (Nokia, Italy), Hui Ji (Nokia, Singapore), Lily Liu (Nokia, Singapore), Arne Weber (Nokia, Germany) .................................................. 101

IEEE WCNCW CmMmW5G 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Centimetre and Millimetre Wave based communications for 5G Networks (CmMmW5G)

WS2: Centimetre and Millimetre Wave based communications for 5G Networks
A Mixed Integer Programming Approach to Interference Exploitation in Massive MIMO
Pierluigi Vito Amadori (University College of London, United Kingdom (Great Britain)), Christos Masouros (University College London, United Kingdom (Great Britain)) ......................................................... 107

Robust massive MIMO Equilization for mmWave systems with low resolution ADCs
Kilian Roth (Technische Universität München, Germany), Josef A. Nossek (TU Munich, Germany & Federal University of Ceara, Fortaleza, Brazil) ......................................................... 113

Secure Massive IoT Using Hierarchical Fast Blind Deconvolution
Gerhard Wunder (Freie Universität Berlin & Heisenberg Communications and Information Theory Group, Germany), Ingo Roth (FU Berlin, Germany), Rick Fritschek (Technische Universität Berlin, Germany), Benedikt Groß (FU Berlin, Germany), Jens Eisert (Free University Berlin, Germany) ......................................................... 119

IEEE WCNCW IWSON 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): 7th International Workshop on Self-Organizing Networks (IWSON)

WS3: 7th International Workshop on Self-Organizing Networks (IWSON) Part II

Automatic Neighbor Relations (ANR) in 3GPP NR
Pradeepa Ramachandra (Ericsson Research, Sweden), Kristina Zetterberg (Ericsson Research, Sweden), Fredrik Gunnarsson (Ericsson Research, Sweden), Reza Moosavi (Ericsson Research, Sweden), Sakib Bin Redhwan (Ericsson Research, Sweden), Stefan Engström (Ericsson AB, Sweden) ......................... 125

SON for Mobile Backhaul
Lajos Bajzik (Nokia Bell Labs, Hungary, Hungary), Tamas Karasz (Nokia Bell Labs, Hungary, Hungary), Zoltán Vincze (Nokia Bell Labs, Hungary, Hungary), Csaba Vulkán (Nokia Bell Labs, Hungary, Hungary), Wssal Ben ameur (Orange Labs, France, France), Zwi Altman (Orange Labs, France), Vincent Diascorn (Orange Labs, France, France) ......................................................... 131

Predicting Strongest Cell on Secondary Carrier using Primary Carrier Data
Henrik Rydén (Ericsson Research, Sweden), Joel Berglund (Ericsson Research, Sweden), Martin Isaksson (Ericsson Research, Sweden), Rickard Cöster (Senior Specialist, Sweden), Fredrik Gunnarsson (Ericsson Research, Sweden) .................................................................................. 137

Distributed Energy Saving Management in Multi-Layer 4G/5G Ultra-Dense Networks
Stephen S. Mwanje (Nokia Bell Labs, Germany), Janne Ali-Tolppa (Nokia Bell Labs, Germany) .......................................................................................................................... 143

WS4: TC-CPS: Time-Critical Cyber Physical Systems, Part II: Industrial IoT

An Empirical Study on Using D2D Relaying in 5G for Factory Automation
Hubertus Andreas Munz (Ericsson Research, Germany), Junaid Ansari (Ericsson Research, Germany) ................................................................. 149

An Analytical Model for Deploying Mobile Sinks in Industrial Internet of Things
Maryam Vahabi (Mälardalen University, Sweden), Hamid Reza Faragardi (Mälardalen University, Sweden), Hossein Fotouhi (Mälardalen University, Sweden) ................................................................. 155

Time-Critical Communication in 6TiSCH Networks
Abdulkadir Karaagac (University of Ghent, Belgium), Jetmir Haxhibeqiri (Ghent University, Belgium), Ingrid Moerman (Ghent University - imec, Belgium), Jeroen Hoebeka (Ghent University - imec, Belgium) ................................................................. 161

Analysis of Low Latency TSCH Networks for Physical Event Detection
Alex Yang (University of California, Berkeley, USA), Arvind Sundararajan (University of California, Berkeley, USA), Craig Schindler (University of California, Berkeley, USA), Kris Pister (University of California, Berkeley, USA) ............................................................................................................ 167

Industrial IoT Security Threats and Concerns by Considering CISCO and Microsoft IoT reference Models
Zeynab Bakhshi (RighTel, Iran), Ali Balador (Mälardalen University & RISE SICS Västerås, Sweden), Jawad Mustafa (RISE SICS Västerås, Sweden) ........... 173

IEEE WCNCW EDGE 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Workshop on Intelligent Computing and Caching at the Network Edge

WS5: Workshop on Intelligent Computing and Caching at the Network Edge Part II

Radio Network-aware Edge Caching for Video Delivery in MEC-enabled Cellular Networks
Yiming Tan (Beijing University of Posts and Telecommunications, P.R. China), Ce Han (Beijing University of Posts and Telecommunications, P.R. China), Ming Luo (Beijing University of Posts and Telecommunications, P.R. China), Xiang Zhou (Beijing University of Posts and Telecommunications, P.R. China), Xing Zhang (Beijing University of Posts and Telecommunications, P.R. China) ................................. 179

Creating Value Through Blockchain Powered Resource Configurations: Analysis of 5G Network Slice Brokering Case
Kristiina Valtanen (VTT Technical Research Centre of Finland, Finland), Seppo Yrjölä (Nokia, Finland), Jere Backman (VTT, Finland) .................................................. 185
Energy-efficient Workload Offloading and Power Control in Vehicular Edge Computing
Zhenyu Zhou (North China Electric Power University & Waseda University, P.R. China), Pengju Liu (North China Electric Power University, P.R. China), Zheng Chang (University of Jyväskylä, Finland), Chen Xu (North China Electric Power University, P.R. China), Yan Zhang (University of Oslo, Norway) ................................ 191

Data preprocessing in tandem mass spectra based on SVM
Lan Wang (Shenzhen University, P.R. China), Dandan Xie (Shenzhen University, P.R. China), Shengli Zhang (Shenzhen University, P.R. China), Zhongyu Zhou (TravelSky Technology Limited, P.R. China), Taotao Wang (The Chinese University of Hong Kong, Hong Kong) ........................................... 197

IEEE WCNC FLEXNETs 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Workshop on Flexible and Agile Networks (FlexNets)

WS1: Workshop on Flexible and Agile Networks (FlexNets) Part II

Siren: A Platform for deploying Virtual Network Services in the Cloud to Fog Continuum
Lyndon Fawcett (Lancaster University, United Kingdom (Great Britain)), Matthew Broadbent (Lancaster University, United Kingdom (Great Britain)), Nicholas Race (Lancaster University, United Kingdom (Great Britain)) ......................... 202

An Efficient Module Deployment Algorithm in Edge Computing
Jang-Ping Sheu (National Tsing Hua University, Taiwan), Yi-Cian Pu (National Tsing Hua University, Taiwan), Yeh-Cheng Chang (National Tsing Hua University, Taiwan), Jagadeesha Rb (National Tsing Hua University, Taiwan) ............. 208

The Path Towards Resource Elasticity for 5G Network Architecture
David M Gutierrez-Estevez (Samsung Electronics, United Kingdom (Great Britain)), Marco Gramaglia (Universidad Carlos III de Madrid, Spain), Antonio De Domenico (CEA-LETI Minatec, France), Nicola di Pietro (CEA LETI, France), Sina Khatibi (NOMOR Research GmbH, Germany), Kunjan Shah (NOMOR Research GmbH, Germany), Dimitris Tsolkas (University of Athens, Greece), Paul Arnold (Deutsche Telekom AG & DT, Germany), Pablo Serrano (Universidad Carlos III de Madrid, Spain) ................................................................. 214
Challenges for Enabling Virtual Reality Broadcast Using 5G Small Cell Network
Athul Prasad (Nokia Bell Labs, Finland), Mikko Uusitalo (Nokia Bell Labs, Finland), Mikko Säily (Nokia Bell Labs, Finland), David Navratil (Nokia Networks, Finland) .................................................... 220

Good Neighbor Distributed Beam Scheduling in Coexisting Multi-RAT Networks
Alexandr Kuzminskiy (University of Surrey, United Kingdom (Great Britain)), Pei Xiao (University of Surrey, United Kingdom (Great Britain)), Rahim Tafazolli (University of Surrey, United Kingdom (Great Britain)) .................................................... 226

Simple modeling of energy consumption for D2D relay mechanism
Cesar Vargas Anamuro (Orange Labs, France), Nadège Varsier (Orange Labs, France), Jean Schwoerer (Orange Labs, France), Xavier Lagrange (IMT Atlantique & IRISA, Université Bretagne Loire, France) .................................................... 231

A Machine Learning-Based Approach for Virtual Network Function Modeling
Albert Mestres (Universitat Politècnica de Catalunya, Spain), Eduard Alarcón (Universitat Politècnica de Catalunya, Spain), Albert Cabellos-Aparicio (Universitat Politècnica de Catalunya, Spain) .................................................... 237

Machine Learning Models for Wireless Network Monitoring and Analysis
Pedro Casas (Austrian Institute of Technology (AIT), Austria) .................................................... 242

Resource-aware Routing and Scheduling in Multi-Radio Multi-Channel Wireless Mesh Networks
Zhanmao Cao (South China Normal University, USA), Chase Q. Wu (New Jersey Institute of Technology & Oak Ridge National Laboratory, USA), Mark Berry (New Jersey Institute of Technology, USA), Yongqiang Wang (Northwest University, P.R. China) .................................................... 248
5G Technologies supporting Vertical Industries

Network Slices for Vertical Industries
Claudio E. Casetti (Politecnico di Torino, Italy), Carla Fabiana Chiasserini (Politecnico di Torino, Italy), Thomas Deiss (Nokia, Germany), Pantelis A. Frangoudis (EURECOM, France), Adlen Ksentini (Eurecom, France), Giada Landi (Nextworks, Italy), Xi Li (NEC, Germany), Josep Mangues-Bafalluy (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain), Nuria Molner (IMDEA Networks Institute & Universidad Carlos III de Madrid, Spain) 254

Service Orchestration and Federation for Verticals
Xi Li (NEC, Germany), Josep Mangues-Bafalluy (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain), Giada Landi (Nextworks, Italy), Luca Valcarenghi (Scuola Superiore Sant’Anna, Italy), Kiril Antevski (Universidad Carlos III, Spain), Carlos J. Bernardos (Universidad Carlos III de Madrid, Spain), Carla Fabiana Chiasserini (Politecnico di Torino, Italy), F Moscatelli (Nextworks, Italy), Íñaki Pascual (CTTC, Spain), Barbara Martini (CNIT, Italy), Claudio E. Casetti (Politecnico di Torino, Italy), Dmitriy Andrushko (Kharkov National University of Radioelectonics, Ukraine), Nicolás Serrano (Telefónica I+D, Spain), Adlen Ksentini (Eurecom, France) 260

5G Mobile Transport and Computing Platform for verticals
Paola Iovanna (Ericsson, Italy), Teresa Pepe (Ericsson, Italy), F Moscatelli (Nextworks, Italy), Carla Fabiana Chiasserini (Politecnico di Torino, Italy), Claudio E. Casetti (Politecnico di Torino, Italy), Luca Valcarenghi (Scuola Superiore Sant’Anna, Italy), Barbara Martini (CNIT, Italy), Xi Li (NEC, Germany), Carmen Guerrero (University Carlos III of Madrid, Spain), Adlen Ksentini (Eurecom, France), Josep Mangues-Bafalluy (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain), Giuliana Zennaro (Centro Ricerche Fiat S. c. p. A., Italy) 266

Deployment Algorithm for Minimum Unmanned Aerial Vehicles towards Optimal Coverage and Interconnections
Haijun Wang (National University of Defense Technology, P.R. China), Haitao Zhao (National University of Defense Technology, P.R. China), Li Zhou (National University of Defense Technology, P.R. China), Dongtang Ma (National University of Defense Technology, P.R. China), Ji-Bo Wei (National University of Defense Technology, P.R. China) 272
Dynamic mmWave Beam Tracking for High Speed Railway Communications
Meilin Gao (Beijing Jiaotong University & State Key Lab of Rail Traffic Control and Safety, P.R. China), Bo Ai (Beijing Jiaotong University & State Key Lab of Rail Traffic Control and Safety, P.R. China), Yong Niu (State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, P.R. China), Zhangdui Zhong (Beijing Jiaotong University, P.R. China), Yiru Liu (Beijing Jiaotong University, P.R. China), Guoyu Ma (Beijing Jiaotong University, P.R. China), Zhewei Zhang (Beijing Jiaotong University, P.R. China), Dapeng Li (ZTE Corporation, P.R. China) ................................................................. 278

5G Multi-antenna V2V Channel Modeling with a 3D Game Engine
David Garcia-Roger (Universitat Politècnica de València, Spain), David Martín-Sacristán (Universitat Politècnica de València, Spain), Sandra Roger (Universitat Politècnica de València, Spain), Jose F Monserrat (Universitat Politècnica de València, Spain), Apostolos Kousaridas (Huawei Technologies, German Research Center, Germany, Germany), Panagiotis Spapis (Huawei Technologies, German Research Center, Germany, Greece), Serkan Ayaz (Huawei Technologies, German Research Center, Germany, Germany), Chan Zhou (Huawei Technologies, German Research Center, Germany, Germany) ....... 284

Evaluation of IEEE 802.11ad for mmWave V2V Communications
Baldomero Coll-Perales (Universidad Miguel Hernandez de Elche (UMH), Spain), Marco Gruteser (WINLAB / Rutgers University, USA), Javier Gozalvez (Universidad Miguel Hernandez de Elche, Spain) ................................................................. 290

Building a connected BLE mesh: a network inference study
Alessandro Chiumento (Katholieke Universiteit Leuven, Belgium), Brecht Reynders (KU Leuven, Belgium), Yuri Murillo (KU Leuven, Belgium), Sofie Pollin (KU Leuven, Belgium) .................................................................................. 296

Data Fusion for Robust Indoor Localisation in Digital Health
Michal Kozlowski (University of Bristol, United Kingdom (Great Britain)), Dallan Byrne (University of Bristol, United Kingdom (Great Britain)), Raúl Santos-Rodriguez (University of Bristol, United Kingdom (Great Britain)), Robert J Piechocki (University of Bristol, United Kingdom (Great Britain)) .......... 302
Enabling the First Step for IoT Health Systems using Antidote and IEEE 11073
Danilo F S Santos (Federal University of Campina Grande, Brazil), Jose Luis Nascimento (UFCG, Brazil), Mateus Lima (Federal Institute of Paraiba, Brazil), Angelo Perkusich (Federal University of Campina Grande, Brazil), Hyggo Almeida (Federal University of Campina Grande, Brazil) ................................................................. 308

Threat Modeling for Mobile Health Systems
Matteo Cagnazzo (Institute for Internet Security, Germany), Markus Hertlein (XignSYS, Institute for Internet-Security, Germany), Norbert Pohlmann (Institute for Internet-Security, Germany), Thorsten Holz (Ruhr-University Bochum, Germany) ........................................................................................................... 314

IEEE WCNCW BDCIWN 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): International Workshop on Big Data with Computational Intelligence for Wireless Networking

WS6: International Workshop on Big Data with Computational Intelligence for Wireless Networking Part II

Learning-assisted Beam Search for Indoor mmWave Networks
Yu-Jia Chen (National Chiao Tung University, Taiwan), Wei-Yuan Cheng (National Chiao Tung University, Taiwan), Li-Chun Wang (National Chiao Tung University, Taiwan) .......................................................................................................................... 320

Random Forests Resource Allocation for 5G Systems: Performance and Robustness Study
Sahar Imtiaz (KTH Royal Institute of Technology, Sweden), Hadi Ghauch (Royal Institute of Technology (KTH), Sweden), Georgios P. Koudouridis (Huawei Technologies R&D Center Sweden, Sweden), James Gross (KTH Royal Institute of Technology, Sweden) ........................................................................................................ 326

On the use of Artificial Intelligence techniques in Intelligent Transportation Systems
Mirialys Machin (University of Zaragoza, Spain), Julio A. Sanguesa (University of Zaragoza, Spain), Piedad Garrido (University of Zaragoza, Spain), Francisco J. Martinez (University of Zaragoza, Spain) ........................................................................................................ 332
Technologies for the Edge and Fog

An Integrated Edge and Fog System for Future Communication Networks
Ping-Heng Kuo (InterDigital Europe, United Kingdom (Great Britain)), Alain Abdel-Majid Mourad (Interdigital Europe Ltd, United Kingdom (Great Britain)), Chenguang Lu (Ericsson Research, Sweden), Miguel Berg (Ericsson AB, Sweden), Simon Duquennoy (RISE, Sweden), Ying-Yu Chen (Industrial Technology Research Institute, Taiwan), Yi-Huai Hsu (Industrial Technology Research Institute, Taiwan), Aitor Zabala (Telcaria Ideas S. L., Spain), Riccardo Ferrari (Azcom Technology, Italy), Sergio González (Universidad Carlos III de Madrid, Spain), Chi-Yu Li (National Chiao Tung University, Taiwan), Hsu Tung Chien (National Chiao Tung University, Taiwan) ........................................ 338

Opportunities and Challenges of Joint Edge and Fog Orchestration
Luca Cominardi (Universidad Carlos III, Spain), Osamah Ibrahim Abdullaziz (National Chiao Tung University, Taiwan), Kiril Antevski (Universidad Carlos III, Spain), Shahzoob Bilal Chundrigar (Industrial Technology Research Institute, Taiwan), Robert Gdowski (Industrial Technology Research Institute, Taiwan), Ping-Heng Kuo (InterDigital Europe, United Kingdom (Great Britain)), Alain Abdel-Majid Mourad (Interdigital Europe Ltd, United Kingdom (Great Britain)), Li-Hsing Yen (National Chiao Tung University, Taiwan), Aitor Zabala (Telcaria Ideas S. L., Spain) ................................................................. 344

MEC-aware Cell Association for 5G Heterogeneous Networks
Mustafa Emara (Intel Deutschland GmbH & Hamburg University of Technology, Germany), Miltiades C. Filippou (Intel Germany GmbH, Germany), Dario Sabella (Intel, Germany) ................................................................. 350

Cross-Layer Resource Allocation for Mixed Tactile Internet and Traditional Data in SCMA Based Wireless Networks
Hamid Saeedi (Tarbiat Modares University, Iran), Nader Mokari (Tarbiat Modares University, Iran), Narges Gholipoor (Tarbiat Modares University, Iran) ................................................................. 356

Downlink Resource Allocation and Packet Scheduling in Multi-Numerology Wireless Systems
Anique Akhtar (University of Missouri Kansas City, USA), Huseyin Arslan (University of South Florida & Istanbul Medipol University, USA) ........................................ 362
IEEE WCNCW CmMmW5G 2018: 2018 IEEE Wireless Communications and Networking Conference Workshops (WCNCW): Centimetre and Millimetre Wave based communications for 5G Networks (CmMmW5G)

WS2: Centimetre and Millimetre Wave based communications for 5G Networks (CmMmW5G) Part IV

Configurable Distributed Physical Downlink Control Channel for 5G New Radio: Resource Bundling and Diversity Trade-off
Honglei Miao (Intel Deutschland GmbH, Germany), Michael Faerber (Intel Deutschland GmbH, Germany) ................................................................. 368


5G and Wireless Body Area Networks
Richard Jones (ZJU-UIUC International Institute, Zhejiang University, P.R. China), Konstantinos Katzis (European University Cyprus, Cyprus) ........................................... 373

Energy Efficient Human Activity Recognition Using Wearable Sensors
Genming Ding (Fujitsu Research & Development Center, Co. LTD., P.R. China), Jun Tian (Fujitsu R&D Center Co., Ltd., P.R. China), Jinsong Wu (Universidad de Chile, Chile), Qian Zhao (Fujitsu R&D Center Co., Ltd., P.R. China), Lili Xie (Fujitsu Research & Development Center Co., LTD, P.R. China) ........................................................................................................... 379

Initial UWB in-body channel characterization using a novel multilayer phantom measurement setup
Sofia Perez-Simbor (Univeristat Politècnica de València, Spain), Martina Barbi (Instituto de Telecomunicaciones y Aplicaciones Multimedia (iTEAM), Spain), Concepcion Garcia-Pardo (Universitat Politècnica de Valéncia & Institute of Telecommunications and Multimedia Applications (iTEAM), Spain), Sergio Castelló-Palacios (Universitat Politècnica de València, Spain), Narcis Cardona (The Polytechnic University of Valencia, Spain) ................................................................. 384

Localization for Capsule Endoscopy at UWB Frequencies using an Experimental Multilayer Phantom
Martina Barbi (Instituto de Telecomunicaciones y Aplicaciones Multimedia (ITEAM), Spain), Sofia Perez-Simbor (Universitat Politècnica de València, Spain), Concepcion Garcia-Pardo (Universitat Politècnica de València & Institute of Telecommunications and Multimedia Applications (ITEAM), Spain), Carlos Andreu (Institute of Telecommunications and Multimedia Applications, Spain), Narcis Cardona (The Polytechnic University of Valencia, Spain) ........................................... 390
An Accelerometer Lossless Compression Algorithm and Energy Analysis for IoT Devices

James Pope (University of Bristol, United Kingdom (Great Britain)), Antonis Vafeas (University of Bristol, United Kingdom (Great Britain)), Atis Elsts (University of Bristol, United Kingdom (Great Britain)), George Oikonomou (University of Bristol, United Kingdom (Great Britain)), Robert J Piechocki (University of Bristol, United Kingdom (Great Britain)), Ian Craddock (University of Bristol, United Kingdom (Great Britain)) .......................................................... 396