Technical Program

Time	Auditorium 1	Auditorium 2	Auditorium 3a	Auditorium 3b	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6+7	Room 8
Sunday, September 4											
09:00-10:40			SuA1: *Workshop 1: From M2M Communications to Internet of Things*	SuA2: *Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond*	SuA3: *Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)*		SuA5: *Workshop 8: Deployment perspectives of Physical Layer Security into wireless public RATs*	SuA6: *Workshop 5: Internet of Things for Ambient Assisted Living (IoTAAL)*		SuA8: *Tutorial 2*	
10:40-11:10							*Coffee break*				
11:10-12:50			SuB1: *Workshop 1: From M2M Communications to Internet of Things*	SuB2: *Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond*	SuB3: *Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)*	SuB4: *Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)*	SuB5: *Workshop 8: Deployment perspectives of Physical Layer Security into wireless public RATs*	SuB6: *Workshop 5: Internet of Things for Ambient Assisted Living (IoTAAL)*		SuB8: *Tutorial 2 (cont.)*	
12:50-14:10							*Lunch*				
14:10-15:50			SuC1: *Workshop 1: From M2M Communications to Internet of Things*	SuC2: *Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond*	SuC3: *Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)*	SuC4: *Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)*	SuC5: *Workshop 7: 2nd International Workshop on Vehicular Networking and Intelligent Transportation systems (VENITS'16)*	SuC6: *Workshop 6: The International Workshop on mmWave Networks—fundamental limits, protocols, and experimental research platforms (mmWave)*	SuC7: *Tutorial 3*	SuC8: *Tutorial 5*	SuC9: *Tut*
15:50-16:20							*Coffee break*				
16:20-18:00			SuD1: *Workshop 1: From M2M Communications to Internet of Things*	SuD2: *Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond*	SuD3: *Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)*	SuD4: *Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)*	SuD5: *Workshop 7: 2nd International Workshop on Vehicular Networking and Intelligent Transportation systems (VENITS'16)*	SuD6: *Workshop 6: The International Workshop on mmWave Networks—fundamental limits, protocols, and experimental research platforms (mmWave)*	SuD7: *Tutorial 3 (cont.)*	SuD8: *Tutorial 5 (cont.)*	SuD9: *Tut (cont.)*
Monday, September 5											
09:00-10:40			MoA1: *Massive MIMO Scheduling and Transceiver Design*	MoA2: *Relaying*	MoA3: *Cognitive Radio and D2D*	MoA4: *Wireless Ad Hoc and Mesh Networks*	MoA5: *Emergency and Healthcare*	MoA6: *MAC and Routing for Wireless Sensor Networks*	MoA7: *LTE System Design and Evaluation*	MoA8: *Energy Efficient Communications 1*	MoA9: *Mu Access Tech*
10:40-11:10							*Coffee break*				
11:10-11:30	MoB0: *Openning*										
11:30-12:10	MoB0: *Plenary 1. Part I*										
12:10-12:50	MoB0: *Plenary 1. Part II*										
12:50-14:10							*Lunch*				
14:10-15:50		MoC0: *Panel 1*	MoC1: *Massive MIMO Channel Measurement, Modeling and Calibration*	MoC2: *Relaying/Cooperative Relaying 1*	MoC3: *Device-to-device (D2D) communications 1*	MoC4: *Wireless Sensor Networks: Applications and Localization*	MoC5: *Opportunistic Communications*	MoC6: *Medium Access Control (MAC) 1*	MoC7: *LTE Networks*	MoC8: *Energy Efficient Communications 2*	
15:50-16:20							*Coffee break*				
16:20-18:00		MoD0: *Panel 2*	MoD1: *Massive MIMO Channel Estimation and Precoding*	MoD2: *Relaying/Cooperative Relaying 2*	MoD3: *Device-to-device (D2D) communications 2*	MoD4: *Wireless Sensor Networks: Architecture, Security, Traffic*	MoD5: *QoS and ultra-reliability*	MoD6: *Medium Access Control (MAC) 2*	MoD7: *LTE and WiFi Coexistence and Offloading Techniques*	MoD8: *Energy Awareness and Power Control*	
Tuesday, September 6											
09:00-09:50	TuA0: *Plenary 2. Part I*										
09:50-	TuA0: *Plenary*										

10:40	*2. Part II*									
10:40-11:10						*Coffee break*				
11:10-12:50		TuB0: *Panel 3*	TuB1: *Beamforming Techniques*	TuB2: *Coding Techniques*	TuB3: *Cognitive radio*	TuB4: *HetNets and Energy-Aware Communications*	TuB5: *5G System Design and Evaluation*	TuB6: *Relaying and Satellite Communications*	TuB7: *Security, Authentication and Pricing*	TuB8: *Access Point and Base Station Deployment and Selection*
12:50-14:10	*Lunch*							*Lunch*		
13:30-14:10		*N2Women*								
14:10-15:50		TuC0: *Panel 4*	TuC1: *Millimetre-Wave Beamforming 1*	TuC2: *Modulation and Coding Techniques*	TuC3: *Cognitive Techniques and Self Organizing Networks*	TuC4: *HetNets and Resource Management*	TuC5: *OFDM 1*	TuC6: *Energy Aware Wireless Sensor Networking*	TuC7: *Physical Layer Security 1*	TuC8: *Network Planning and Topology Design*
15:50-16:20							*Coffee break*			
16:20-18:00		TuD0: *Panel 5*	TuD1: *Millimetre-Wave Beamforming 2*	TuD2: *Coding, Transport and Routing solutions for Wireless Networks*	TuD3: *Spectrum Sensing and User Selection in Cognitive Radio Networks*	TuD4: *Small cells and HetNets*	TuD5: *OFDM 2*	TuD6: *Energy Harvesting and Smart Grids*	TuD7: *Physical Layer Security 2*	TuD8: *Performance Analysis in Wireless Communications*

Wednesday, September 7

09:00-09:50		WeA0: *Plenary 3. Part I*								
09:50-10:40		WeA0: *Plenary 3. Part II*								
10:40-11:10							*Coffee break*			
11:10-12:50			WeB1: *Millimetre-Wave Channel Sounding and Modeling 1*	WeB2: *Transceiver Design 1*	WeB3: *Vehicular Communications 1*	WeB4: *Ultra Dense Networks*	WeB5: *Caching, Multi-Cell and Software Defined Networks (SDN)*	WeB6: *Resource and Interference Management in Wireless Networks*	WeB7: *Applications*	WeB8: *Localization and Tracking*	WeB9: *Fu Duplex Transmissio Networks*
12:50-14:10							*Lunch*			
14:10-15:50			WeC1: *Millimetre-Wave Channel Sounding and Modeling 2*	WeC2: *Transceiver Design 2*	WeC3: *Vehicular Communications 2*	WeC4: *Small Cells and Network Densification*	WeC5: *Software Defined Networking and NFV*	WeC6: *Scheduling*	WeC7: *Information Centric Networking and Caching Strategies*	WeC8: *Localization, Mobility and Link Quality Prediction*	WeC9: *Vi Light Communica (VLC)*
15:50-16:20							*Coffee break*				
16:20-18:00			WeD1: *Channel Measurement, Characterization and Modeling*	WeD2: *MIMO Systems*	WeD3: *Vehicular Communications 3*	WeD4: *WLAN networks*	WeD5: *Cloud-RAN and SDN Cellular Networks*	WeD6: *Cooperative Communications*	WeD7: *Ultra-Wideband (UWB)*	WeD8: *Body Area Networks*	WeD9: *Fa than-Nyquis (FTN)/Equa*

Thursday, September 8

09:00-10:40	
10:40-11:10	*Coffee break*
11:10-12:50	
12:50-14:10	*Lunch (not included)*
14:10-15:50	
15:50-16:20	*Break (coffee not included)*
16:20-18:00	

Sunday, September 4

Sunday, September 4, 09:00 - 10:40

SuA1: Workshop 1: From M2M Communications to Internet of Things

Local and Body Area Communications for IoT
Sassan Iraji

Room: Auditorium 3a
Chair: Sassan Iraji

A Novel Technique for ZigBee Coordinator Failure Recovery and Its Impact on Timing Synchronization
Davide Scazzoli, Atul Kumar, Navuday Sharma, Maurizio Magarini and Giacomo Verticale

An Analytical Model of the Effective Delay Performance for Bluetooth Low Energy
Raúl Rondón, Krister Landernäs and Mikael Gidlund

Comparison of 802.11ah and BLE for a Home Automation Use Case
Luis Felipe Del Carpio Vega, Piergiuseppe Di Marco, Per Skillermark, Roman Chirikov, Karin Lagergren and Parth Amin

Measurement and Characterization on a Human Body Communication Channel
Yan Zhang, Zunwen He, Yang Liu, Luis Alberto Lago Enamorado and Xiang Chen

SuA2: Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond

Room: Auditorium 3b
Chair: Laurent Clavier

Compact Dual-band Antenna Array for Massive MIMO
Linsheng Li, Muhammad Ali and Katsuyuki Haneda

On stochastically emulating continuous scattering structures by discrete sources for OTA testing of DuT with highly directive antennas
Wim A. Th. Kotterman, Markus Landmann and Giovanni Del Galdo

Indoor Experiment on 5G Radio Access Using Beam Tracking at 15 GHz Band
Kiichi Tateishi, Daisuke Kurita, Atsushi Harada, Yoshihisa Kishiyama, Shoji Itoh, Hideshi Murai, Arne Simonsson and Peter Ökvist

SuA3: Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)

Small cells
Room: Room 1
Chair: Lars Christoph Schmelz

On attachment optimization and muting pattern selection in eICIC
Ole Grøndalen, Kashif Mahmood and Olav Norvald Østerbø

Self-Optimization of Coverage and Sleep Modes of Multi-Vendor Enterprise Femtocells
Lester Ho, Holger Claussen and Haris Gacanin

SuA5: Workshop 8: Deployment perspectives of Physical Layer Security into wireless public RATs

About new academic and experimental results on Physec schemes
Room: Room 3
Chair: Arsenia Chorti

Secure Compute-and-Forward Transmission With Artificial Noise and Full-Duplex Devices
Stefano Tomasin

Secure Multiuser MISO Communication Systems with Quantized Feedback
Berna Özbek, Özgecan Özdoğan and Gunes Karabulut Kurt

SuA6: Workshop 5: Internet of Things for Ambient Assisted Living (IoTAAL)

Enabling technologies
Room: Room 4
Chair: Susanna Spinsante

A Transmit Power Control Scheme for Body Area Networks used in Ambient Assisted Living
Son Dinh Van, Simon Cotton and David B Smith

A two stages fuzzy logic approach for Internet of Things (IoT) wearable devices
Amilcare-Francesco Santamaria, Pierfrancesco Raimondo, Floriano De Rango and Abdon Serianni

Indoor Localization System for AAL over IPv6 WSN
Paola Pierleoni, Luca Pernini, Alberto Belli, Lorenzo Maurizi, Lorenzo Palma and Simone Valenti

Smartphone-Centric Wi-Fi Device-to-Device Sensor Communication for User Mobility in AAL Services
Thomas Lindh and Jonas Wahslen

MQTT in AAL Systems for Home Monitoring of People With Dementia
Antonio Del Campo, Ennio Gambi, Laura Montanini, Davide Perla, Laura Raffaeli and Susanna Spinsante

SuA8: Tutorial 2

The Road to 5G: Small-Cells, Context-Awareness and Ultra Dense Networks
Mehdi Bennis

Room: Room 6+7

While small cell densification is a promising solution to tame increasing traffic demands, a systematic deployment of small cells is cost-inefficient and poses serious challenges in terms of backhaul and interference. In this tutorial, we provide a brief overview on SCNs while highlighting key challenges, associated techniques, and future landscape towards 5G. First, we delve into the details of advanced interference management techniques by introducing concepts such as cell range expansion (CRE), cell association, and intercell and interference coordination (ICIC) that lie at the heart of 5G networks. Then, we discuss in detail the concept of self-organizing networks (SONs) and its key role in self-configuring and self-optimizing small cell deployment. Here, we focus on novel game-theoretic and learning techniques that are seen as an enabler for deploying self-optimizing and self-configuring heterogeneous and small cell networks. In the second part of the tutorial, we will present an array of important topics such as cellular-WiFi integration (2015 COMSOC Fred Ellersick Prize), multi connectivity, dynamic TDD and decoupled uplink-downlink, full duplexing, co-primary operator spectrum sharing (CoPSS), backhaul-aware resource management, and context-aware edge caching (2016 COMSOC Best Tutorial Prize). The tutorial will conclude with a number of trending topics including connected vehicles (V2V/V2I), deployment of unmanned aerial vehicles (UAV), and other 5G-related topics. The objective of this tutorial is two-fold, first it will provide a good overview of the technical challenges and open problems of 5G, and second it will showcase a number of mathematical tools from which the audience will benefit.

Sunday, September 4, 11:10 - 12:50

SuB1: Workshop 1: From M2M Communications to Internet of Things

Low-Power Wide-Area Communications for IoT
Magnus Frodigh (Ericsson, Sweden)

Room: Auditorium 3a
Chair: David González G

Keynote title:

5G Machine Communication Technologies

NB-IoT Deployment Study for Low Power Wide Area Cellular IoT
Nitin Mangalvedhe, Rapeepat Ratasuk and Amitava Ghosh

Trusted D2D-based Data Uploading in In-band Narrowband-IoT with Social Awareness
Leonardo Militano, Antonino Orsino, Giuseppe Araniti, Michele Nitti, Luigi Atzori and Antonio Iera

Measurements, Performance and Analysis of LoRa FABIAN, a real-world implementation of LPWAN
Tara Petric, Mathieu Goessens, Loutfi Nuaymi, Laurent Toutain and Alexander Pelov

SuB2: Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond

M. Beach (University of Bristol, UK)

Room: Auditorium 3b
Chair: Laurent Clavier

Keynote title:

Massive MIMO: Bristol - Lund Joint Field Trial Experiments and Record Breaking Spectrum Efficiency

Evaluation of massive MIMO systems using time-reversal beamforming technique
Marie Mbeutcha, Wei Fan, Johannes Hejselbæk and Gert Pedersen

Large Scale Experimental Trial of 5G Mobile Communication Systems—TDD Massive MIMO with Linear and Non-linear Precoding Schemes
Xin Wang, Xiaolin Hou, Huiling Jiang, Anass Benjebbour, Yuya Saito, Yoshihisa Kishiyama, Jing Qiu, Haihua Shen, Chen Tang, Tingjian Tian and Tsuyoshi Kashima

SuB3: Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)

Self-healing and traffic steering
Room: Room 1
Chair: Fredrik Gunnarsson

A Robust Algorithm for Anomaly Detection in Mobile Networks
Levente Bodrog, Márton Kajó, Szilárd Kocsis and Benedek Schultz

Self-optimizing adaptive transmission mode selection for LTE-WLAN aggregation
Irina Balan, Eva Perez, Bernhard Wegmann and Daniela Laselva

Evolution from Network Planning to SON Management using the Simulator for Mobile Networks (SiMoNe)
Dennis M. Rose, Sören Hahn and Thomas Kürner

QoE driven SON for Mobile Backhaul Demo
Lajos Bajzik, Csaba Deák, Tamas Karasz, Péter Szilágyi, Zoltán Vincze and Csaba Vulkán

Demonstrator for Utility-based SON Management
Christoph Frenzel, Simon Lohmüller, Lars Christoph Schmelz and Henning Sanneck

SuB4: Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)

Innovations in Spectrum Sharing
Martha Suarez (Director of ANE, Colombia)

Room: Room 2
Chair: Andres Navarro

Keynote title:

TV White Spaces: Technical trial results in Colombia, challenges and perspectives

Potential Sharing between DTT and IoT Services in the UHF band
Gerardo Martinez-Pinzon, Kevin Llamas and Narcis Cardona

Sharing under Licensed Shared Access in a LTE real test network at 2.3-2.4 GHz
Doriana Guiducci, Claudia Carciofi, Valeria Petrini, Eva Spina, Domenico Massimi, Giuseppe De Sipio and Pravir Chawdhry

Spectrum sharing efficiency analysis in rule regulated networks with decentralized occupation control
Alexandr Kuzminskiy, Yuri Abramovich, Pei Xiao and Rahim Tafazolli

SuB5: Workshop 8: Deployment perspectives of Physical Layer Security into wireless public RATs

About the implantation perspectives of physec scheme
Room: Room 3
Chair: Stefano Tomasin

RECiP: Wireless Channel Reciprocity Restoration Method for Varying Transmission Power
Gerhard Wunder, Rick Fritschek and Khan Reaz

SuB6: Workshop 5: Internet of Things for Ambient Assisted Living (IoTAAL)

Applications
Room: Room 4
Chair: Susanna Spinsante

Ambient Assisted Living Systems in the Context of Human Centric Sensing and IoT Concept: eWall Case Study
Nikola Zaric, Milica Pejanovic-Djurisic and Albena Mihovska

Design and Implementation of Multi Radio, IoT Enabled Autonomous Greenhouse WSN
Shahnam Mirzaei and Mehrdad Amanabi

A Model for Adaptive Accessibility of Everyday Objects in Smart Cities

Ilaria Torre and Ilknur Celik

AAL solutions toward cultural heritage enjoyment
Fabio Franchi, Claudia Rinaldi, Fabio Graziosi and Francesco Tarquini

SuB8: Tutorial 2 (cont.)

The Road to 5G: Small-Cells, Context-Awareness and Ultra Dense Networks
Mehdi Bennis

Room: Room 6+7

Sunday, September 4, 14:10 - 15:50

SuC1: Workshop 1: From M2M Communications to Internet of Things

Ultrareliability and Security Aspects for IoT
Preben Mogensen (Nokia Bell Labs/Aalborg University, Denmark)

Room: Auditorium 3a
Chair: Andres Laya

Keynote title:

IoT Evolution Towards 5G

Analysis of Transmission Modes for Ultra-reliable Communications
Hamidreza Shariatmadari, Ruifeng Duan, Zexian Li, Sassan Iraji, Mikko A Uusitalo and Riku Jäntti

A Secure Scheme for Group Communication of Wireless IoT Devices
Bashar Ahmed Alohali and Vassilios G. Vassilakis

Ultra-Reliable Communication in a Factory Environment for 5G Wireless Networks: Link Level and Deployment Study
Bikramjit Singh, Zexian Li, Olav Tirkkonen, Mikko A Uusitalo and Preben Mogensen

SuC2: Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond

Roberto Verdone (CNIT-Univ. Bologna, Italy)

Room: Auditorium 3b
Chair: Laurent Clavier

A Self-Interference Cancellation Testbed for Full-Duplex Transceiver Prototyping
Chunqing Zhang, Leo Laughlin, Mark Beach, Kevin A Morris and John Haine

FQAM-FBMC Design and Its Application to Machine Type Communication
Yinan Qi and Milos Tesanovic

Waveform Performance For Asynchronous Wireless 5G Uplink Communications
Shendi Wang, Jean Armstrong and John Thompson

SuC3: Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)

5G Neighbor relations and cell search
Room: Room 1
Chair: Thomas Kürner

On Automatic Establishment of Relations in 5G Radio Networks
Pradeepa Ramachandra, Fredrik Gunnarsson, Kristina Zetterberg, Reza Moosavi, Mehdi Amirijoo, Stefan Engström, Claes Tidestav and Edgar Ramos

Self-organizing Networks for 5G: Directional Cell Search in mmW Networks
Furqan Ahmed, Junquan Deng and Olav Tirkkonen

SuC4: Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)

Innovations in Cognitive Technologies
Room: Room 2
Chair: Faouzi Bader

Weighted sum rate maximization with filtered multi-carrier modulations for D2D underlay communications
Mylene Pischella, Rostom Zakaria and Didier Le Ruyet

cooperative ARQ in full duplex cognitive radio networks
Vahid Towhidlou and Mohammad Shikh-Bahaei

Non-cooperative superposition relaying for multicarrier cognitive networks
Donatella Darsena, Giacinto Gelli and Francesco Verde

Network Architecture Self-adaption Technology in Cognitive Radio Networks
Haijun Wang, Haitao Zhao, Jiaxun Li, Shan Wang and Ji-Bo Wei

Using Trust to Mitigate Malicious and Selfish Behavior of Autonomous Agents in CRNs
Konstantinos Ntemos, Nicholas Kolokotronis and Nicholas Kalouptsidis

SuC5: Workshop 7: 2nd International Workshop on Vehicular Networking and Intelligent Transportation systems (VENITS'16)

Vehicular Networking and Communications
Room: Room 3
Chair: Claudia Campolo

Communication Protocol for Platoon of Electric Vehicles in Mixed Traffic Scenarios
Ibrahim Rashdan, Hong Quy Le and Stephan Sand

Beaconing from Connected Vehicles: IEEE 802.11p vs. LTE-V2V
Alessandro Bazzi, Barbara M Masini, Alberto Zanella and Ilaria Thibault

Context-aware Unified Routing for VANETs Based on Virtual Clustering
Celimuge Wu, Tsutomu Yoshinaga and Yusheng Ji

V2VUNet - A Filtering Out Concept For Packet Forwarding Decision in Three-Dimensional Inter-vehicular Communication Scenarios
Lisa Kristiana, Corinna Schmitt and Burkhard Stiller

SuC6: Workshop 6: The International Workshop on mmWave Networks—fundamental limits, protocols, and experimental research platforms (mmWave)

Room: Room 4
Chair: Behnaam Aazhang

Outage Probability Analysis of the Millimeter-Wave Relaying Systems
Nima Eshraghi, Behrouz Maham and Vahid Shah-Mansouri

Optimal Opportunistic Transmissions Over Directional mmWave Channels
David Ramirez, Lei Huang, Yi Wang and Behnaam Aazhang

Experimental Evaluation of a Novel Fast Beamsteering Algorithm for Link Re-Establishment in mm-Wave Indoor WLANs
Avishek Patra, Ljiljana Simić and Marina Petrova

Field Experimental Evaluation of Beamtracking and Latency Performance for 5G mmWave Radio Access in Outdoor Mobile Environment
Shohei Yoshioka, Yuki Inoue, Satoshi Suyama, Yoshihisa Kishiyama, Yukihiko Okumura, James Kepler and Mark Cudak

SuC7: Tutorial 3

Towards Network Softwarization
Tarik Taleb

Room: Room 5

This tutorial will be shedding light on network softwarisation, an important vision towards the realization of elastic and flexible 5G mobile systems. The tutorial will commence with a brief introduction of major 3GPP wireless technologies, namely GSM, GPRS, UMTS and LTE, comparing amongst the different relevant architectures and their evolution to the nowadays' Evolved Packet System (EPS). After a short discussion on the basic principles of LTE, the tutorial presents the major architectural enhancements that have been already standardized within 3GPP for supporting EPS. The tutorial will subsequently lay emphasis on the functional and technical requirements of 5G mobile systems and discuss relevant opportunities, challenges, and expectations. The tutorial will be afterwards touching upon cloud computing technologies, virtualization techniques, and software defined networking (SDN). The main focus will be towards the use-case of these technologies in the context of network softwarisation to create programmable virtual mobile networks, highlighting the key performance indicators and aspects for ensuring carrier-grade service delivery. The tutorial will also cover the concept of network function virtualization (NFV), detailing virtual network function (VNF) management and orchestration, and showcasing NFV and SDN as key technology enablers for the creation of elastic and flexible 5G mobile systems. The tutorial will be then describing, using concrete examples, how cloud-based virtual mobile networks can be designed, instantiated, configured, managed, and orchestrated, and that using current cloud infrastructure management tools, such as OpenStack and OpenDaylight. The tutorial will finish by highlighting few open issues that are forming the focus of research efforts in the network softwarisation arena.

SuC8: Tutorial 5

Internet of Medical things: Wearable wireless sensors systems for healthcare monitoring applications
Mona Ghassemian

Room: Room 6+7

Recent technological advancements in wireless low power/low range communication systems, MicroElectroMechanical Systems (MEMS) technology and integrated circuits have enabled low-power, intelligent, miniaturised, nano-technology sensor nodes strategically placed around the human body to be used in various applications, such as wearable wireless healthcare monitoring systems. This exciting new area of research is called Wireless Body Area Networks (WBANs) and leverages the emerging IEEE 802.15.6 and IEEE 802.15.4j standards, specifically standardised for Internet of Medical Things (IoMTs). This tutorial provides a survey on the current state-of-art of WBANs based on the latest standards which enable IoMTs with a range of representative applications. From these applications, we will abstract out the major challenges to realising the wearable wireless sensors systems for healthcare monitoring applications. Part I of the tutorial will start with an overview of WBANs, with a focus on the fundamental concepts of healthcare sensor hardware and measurement circuits. Furthermore related low power /low range wireless communication technologies and standards used for WBANs, the challenges and impairments of wireless media for IoMTs will be addressed. Introduction session will conclude by addressing the data acquisition and validation techniques for processing the healthcare data collected from the wearable wireless sensor networks. In Part II of the tutorial, the key design issues for wearable Activity Recognition systems, as an example of healthcare applications, will be presented. Design issues with respect to type/number/location of sensors according to the purpose of the application will be discussed. Emerging IoMTs research opportunities and challenges will be discussed in Part III of the tutorial. Topics in this section cover both theoretical and practical aspects, including the wearable system limitations, selection of attributes and sensors, obtrusiveness, data collection protocols, recognition performance criteria, energy consumption, processing and user flexibility. Open issues and challenges within each area are also explored as a source of inspiration towards future developments in WBANs. An activity recognition prototype demonstration will conclude the tutorial to provide the practical aspects and challenges for a wearable wireless sensor network solution.

SuC9: Tutorial 4

Energy-Neutral System-Level Analysis and Optimization of 5G Wireless Networks
Alessio Zappone, Marco Di Renzo and Eduard Jorswieck

Room: Room 8+9

The Internet of Things (IoT) will connect billions of devices by 2020. Such systems suppose batteries and/or energy harvesting from the environment, which also bets for very low energy devices. In order to enable IoT service capabilities, 5G wireless networks will need to bring a drastic energy efficiency improvement and will need to develop energy harvesting capabilities. This energy chase will cover low-energy devices and network elements, and will rely on the availability of renewable energy sources, dedicated power sources, as well as the possibility of harvesting energy directly from the radio waves that are primarily used for data transmission. This leads to a new design space, where the availability of energy is not deterministic anymore but may depend on environmental factors, the interference may not necessarily be harmful as it may be a natural source electromagnetic-based power to be used for replenishing the batteries of low-energy devices, and the intended signals may be exploited for both data transmission and energy harvesting. This paradigm-shift introduces a new concept in the design of 5G wireless networks: energy-neutrality. Energy-neutral networks are systems that not only make an efficient use of the available energy, but, more importantly, that operate in a complete self-powered fashion. The present tutorial provides the audience with a complete survey of the potential benefits, research challenges, implementation efforts and application of technologies and protocols for achieving energy-neutrality, as well as the mathematical tools for their modeling, analysis and optimization. This tutorial is unique of its kind, as it tackles both system-level modeling and optimization aspects, which are usually treated independently. Special focus will be put on two methodologies for enabling the system-level modeling and the system-level and distributed optimization of energy-neutral 5G wireless networks: stochastic geometry and fractional programming. In the proposed tutorial, we illustrate how several candidate transmission technologies, communication protocols, and network architectures for 5G can be modeled, studied and optimized for their energy-neutral operation.

Sunday, September 4, 16:20 - 18:00

SuD1: Workshop 1: From M2M Communications to Internet of Things

Energy, Architecture and Technoeconomical Aspects for IoT
Room: Auditorium 3a
Chair: Rapeepat Ratasuk

Feasibility and Fundamental Limits of Energy-Harvesting Based M2M Communications
Jukka Rinne, Jari Keskinen, Paul Berger, Donald Lupo and Mikko Valkama

Performance analysis of ambient backscattering for green Internet of Things
Donatella Darsena, Giacinto Gelli and Francesco Verde

RELOAD/CoAP Architecture with Resource Aggregation/Disaggregation Service
Luís Rodrigues, Joel Guerreiro and Noelia Correia

Theoretical Analysis of UNB-based IoT Networks with Path Loss and Random Spectrum Access
Yuqi Mo, Claire Goursaud and Jean-Marie Gorce

Value Creation and Coopetition in M2M Ecosystem - The Case of Smart City
Amirhossein Ghanbari, Andres Laya and Jan Markendahl

SuD2: Workshop 2: IRACON - Inclusive Radio Communication Networks for 5G and Beyond

Room: Auditorium 3b
Chair: Laurent Clavier

Numerology and Frame Structure for 5G Radio Access
Jaakko Vihriälä, Ali Zaidi, Venkatkumar Venkatasubramanian, Ning He, Esa Tiirola, Jonas Medbo, Eeva Lähetkangas, Karl Werner, Kari Pajukoski, Andreas Cedergren and Robert Baldemair

Energy Efficiency for Cloud-Radio Access Networks with Imperfect Channel State Information
Bayan Al-Oquibi, Osama Amin, Hayssam Dahrouj, Tareq Y. Al-Naffouri and Mohamed-Slim Alouini

Performance Analysis of K-Tier Cellular Networks with Time-Switching Energy Harvesting
Yan Liao, Jing Zhang, Yanxia Zhang, Min Chen, Qiang Li and Tao Han

Joint Remote Radio Head Selection and User Association in Cloud Radio Access Networks
Aini Li, Yan Sun, Xiaodong Xu and Chunjing Yuan

SuD3: Workshop 3: 6th International Workshop on Self-Organizing Networks (IWSON)

5G Management Challenges
Room: Room 1
Chair: Fredrik Gunnarsson

Network Management Automation in 5G: Challenges and Opportunities
Stephen S. Mwanje, Guillaume Decarreau, Christian Mannweiler, Muhammad Naseer-ul-islam and Lars Christoph Schmelz

SuD4: Workshop 4: Cognitive Radio and Innovative Spectrum Sharing Paradigms for Future Networks (CRAFT 2016)

Spectrum Sharing and Coexistence Mechanisms for 5G
Room: Room 2
Chair: Maziar Nekovee

Panel:

Panel Discussion on Spectrum Sharing and Coexistence Mechanisms for 5G Networks

Panel Chair:

Maziar Nekovee (Samsung Electronics, UK)

Panelists:

- **Pravir Chawdhry** (Joint Research Centre of the European Commission, Italy/EU)
- **Martha Suarez** (Agencia Nacional del Espectro, Colombia)
- **Faouzi Bader** (CentraleSupélec, France)
- **Andres Navarro Cadavid** (Universidad Icesi, Colombia)

Distributed Beam Scheduling for Multi-RAT Coexistence in mm-Wave 5G Networks
Maziar Nekovee, Yinan Qi and Yue Wang

SuD5: Workshop 7: 2nd International Workshop on Vehicular Networking and Intelligent Transportation systems (VENITS'16)

Network Services over VANETs
Room: Room 3
Chair: Celimuge Wu

Named Data Networking for Priority-based Content Dissemination in VANETs
Marica Amadeo, Claudia Campolo and Antonella Molinaro

Hierarchical Adaptive Trust Establishment Solution for Vehicular Networks
Chaker abdelaziz Kerrache, Carlos T. Calafate, Nasreddine Lagraa, Juan-Carlos Cano and Pietro Manzoni

Multimedia Transmissions over Vehicular Networks
Armir Bujari, Claudio E. Palazzi and Daniele Ronzani

SuD6: Workshop 6: The International Workshop on mmWave Networks—fundamental limits, protocols, and experimental research platforms (mmWave)

Room: Room 4
Chairs: Lei Huang, Jianhua Zhang

Effects of Vehicle Vibrations on mm-Wave Channel: Doppler Spread and Correlative Channel Sounding
Jiri Blumenstein, Josef Vychodil, Martin Pospíšil, Tomas Mikulasek and Ales Prokes

Radio Parameter Design for OFDM-based Millimeter-Wave Systems
Lei Huang, Yi Wang, Zhenyu Shi and Rong Wen

Delay Characteristics for Directional and Omni-Directional Channel in Indoor Open Office and Shopping Mall Environments at 28 GHz
Lei Tian, Jianhua Zhang, Pan Tang, Fusheng Huang and Yi Zheng

A SAGE Algorithm for Channel Estimation using Signal Eigenvectors for Direction-Scan Sounding
Luxia Ouyang and Xuefeng Yin

SuD7: Tutorial 3 (cont.)

Towards Network Softwarization

Tarik Taleb

Room: Room 5

SuD8: Tutorial 5 (cont.)

Internet of Medical things: Wearable wireless sensors systems for healthcare monitoring applications
Mona Ghassemian

Room: Room 6+7

SuD9: Tutorial 4 (cont.)

Energy-Neutral System-Level Analysis and Optimization of 5G Wireless Networks
Alessio Zappone, Marco Di Renzo and Eduard Jorswieck

Room: Room 8+9

Monday, September 5

Monday, September 5, 09:00 - 10:40

MoA1: Massive MIMO Scheduling and Transceiver Design

Room: Auditorium 3a
Chair: Lei Tian

Low-Complexity Symbol Detection for Massive MIMO Uplink Based on Jacobi Method
Byeong Yong Kong and In-Cheol Park

User Scheduling and Beam Allocation for Massive MIMO Systems with Two-Stage Precoding
Chen Lu, Wenjin Wang, Wen Zhong and Xiqi Gao

Correlation-based User Scheduling and Multi-planar Parallelogram Array for Massive Antenna Systems
Takuto Arai, Atsushi Ohta, Satoshi Kurosaki, Kazuki Maruta, Tatsuhiko Iwakuni and Masataka Iizuka

Message-Passing Detector for Uplink Massive MIMO Systems Based on Energy Spread Transform
Lixin Gu, Wenjin Wang, Wen Zhong and Xiqi Gao

A Novel User Selection Algorithm for Multiuser Hybrid Precoding in mmWave Systems
Wenfang Yuan, Simon Armour and Angela Doufexi

MoA2: Relaying

Room: Auditorium 3b
Chair: Jose F Monserrat

A Thompson Sampling Approach to Channel Exploration-Exploitation Problem in Multihop Cognitive Radio Networks
Viktor Toldov, Laurent Clavier, Valeria Loscrí and Nathalie Mitton

Opportunistic Relay Scheme Exploiting Channel Coherence Time in IEEE 802.15.6 Wireless Body Area Networks
Ruifeng Zhang, Nick Francis Timmons and Jim Morrison

Hierarchical Mesh Routing Implementation for Indoor Data Collection
Verotiana Rabarijaona, Fumihide Kojima and Hiroshi Harada

Broadcasting in LTE-Advanced networks using multihop D2D communications
Giovanni Nardini, Giovanni Stea, Antonio Virdis, Dario Sabella and Marco Caretti

Connectivity Study in Professional Mobile Radio Networks with Portable 4G Base Stations
Leonardo Goratti, Karina Mabell Gomez, Tinku Rasheed and Sam Reisenfeld

MoA3: Cognitive Radio and D2D

Room: Room 1
Chair: Ferran Adelantado

Continuous Hidden Markov Model Based Interference-Aware Cognitive Radio Spectrum Occupancy Prediction
Rana Al Halaseh and Dirk Dahlhaus

Compressive Cognitive Radio with Causal Primary Message
Wenbo Xu, Yifan Wang and Jiaru Lin

Performance Improvements of Reputation-Based Cooperative Spectrum Sensing
Francesco Benedetto, Antonio Tedeschi, Gaetano Giunta and Pietro Coronas

Social Comparison Based Relaying in Device-to-Device Networks
Young Jin Chun, Gualtiero Colombo, Simon Cotton, William G. Scanlon, Roger Whitaker and Stuart Allen

Interference Management Scheme for Network-Assisted Multi-Hop D2D Communications
Laila Melki, Sameh Najeh and Hichem Besbes

MoA4: Wireless Ad Hoc and Mesh Networks

Room: Room 2
Chair: Olga Muñoz-Medina

Fair Queueing for mmWave WMN Backhaul
Kari Seppänen and Jouko Kapanen

QoI-aware Tradeoff Between Communication and Computation in Wireless Ad-hoc Networks
Sepideh Nazemi Gelyan, Kin K. Leung and Ananthram Swami

An Efficient Routing Strategy for Performance Improvement in WMNs
Francesco Valentini, Elena Cinque and Marco Pratesi

Multi-hop Multi-AP Multi-channel Cooperation for High Efficiency WLAN

Yinghong Ma, Jiandong Li, Hongyan Li, Haibin Zhang and Ronghui Hou

High-Reliability Scheduling in Deterministic Wireless Multi-hop Networks
Guillaume Gaillard, Dominique Barthel, Fabrice Theoleyre and Fabrice Valois

MoA5: Emergency and Healthcare

Room: Room 3
Chair: Susanna Spinsante

Mobile Network Service Demand in case of Electricity Network Disturbance Situation
Joonas Säe and Jukka Lempiäinen

Designing an Adaptive Emergency Warning System for Heterogeneous Environments
Gareth Tyson, John Bigham, Eliane L Bodanese, Nadeem Akhtar, Pradipta Biswas, Pat Langdon, Vineet Mimrot, Pratyay Mukhopadhyay and Vinay Ribeiro

An Ambient Assisted Living System for Elderly Assistance Applications
Luca Mainetti, Luigi Manco, Luigi Patrono, Andrea Secco, Ilaria Sergi and Roberto Vergallo

Impact of physical channels and physical signals from LTE small cell eNB in audible frequency band
Suna Choi

Heartbeat Detection with Doppler Radar Based on Estimation of Average R-R Interval Using Viterbi Algorithm
Eriko Mogi and Tomoaki Ohtsuki

MoA6: MAC and Routing for Wireless Sensor Networks

Room: Room 4
Chair: Kamran Sayrafian

Improving Robustness of Beacon-Enabled IEEE 802.15.4 with Round-Robin Channel Diversity
Liviu-Octavian Varga, Martin Heusse, Roberto Guizzetti and Andrzej Duda

Using RTS/CTS to Enhance the Performance of IEEE 802.15.6 CSMA/CA
Martina Barbi, Kamran Sayrafian and Mehdi Alasti

Ultra-low Power MAC Protocol Complied with RIT in IEEE 802.15.4e for Wireless Smart Utility Networks
Jun Fujiwara, Ryota Okumura, Keiichi Mizutani, Hiroshi Harada, Sota Tsuchiya and Takuya Kawata

Energy-Delay Constrained Minimal Relay Placement in Low Duty-Cycled Sensor Networks Under Anycast Forwarding
Messaoud Doudou, Jose M. Barcelo-Ordinas and Jorge Garcia-Vidal

CRRP: A Cooperative Relay Routing Protocol for IoT Networks
Jingwen Bai, Yan Sun and Chris Phillips

MoA7: LTE System Design and Evaluation

Room: Room 5
Chair: Fredrik Tufvesson

Adaptive Physical Resource Block Design for Enhancing Voice Capacity over LTE network in PMR Context
Manh-Cuong Nguyen, Hang Nguyen, Duy-Huy Nguyen, Eric Georgeaux, Philippe Mege and Laurent Martinod

Multi-antenna Feature Comparison in Urban Environment for 4 TX Base Stations
Andreas Nilsson and Martin Johansson

Enhanced Time of Arrival Estimation and Quantization for Positioning in LTE Networks
Henrik Rydén, Ali Zaidi, Sara Modarres Razavi, Fredrik Gunnarsson and Iana Siomina

Single-rate and Multi-rate Multi-service Systems for Next Generation and Beyond Communications
Lei Zhang, Ayesha Ijaz, Pei Xiao, Atta Ul Quddus and Rahim Tafazolli

Experimental evaluation of timing synchronization accuracy for QZSS short message synchronized SS-CDMA communication
Kei Ohya, Suguru Kameda, Hiroshi Oguma, Akinori Taira, Noriharu Suematsu, Tadashi Takagi and Kazuo Tsubouchi

MoA8: Energy Efficient Communications 1

Room: Room 6+7
Chair: David Plets

Antenna Selection based on Mutual Coupling and Spatial Correlation among Integrated Antennas for Maximum Energy Efficiency
Lakju Sung, Daehee Park and Dong-Ho Cho

An Adaptive Polarization-QAM Modulation Scheme for Improving the Power Amplifier Energy Efficiency in OFDM Systems
Shulun Zhao, Zhimin Zeng, Chunyan Feng, Fangfang Liu and Yao Nie

SWIPT Techniques for Multiuser MIMO Broadcast Systems
Javier Rubio, Antonio Pascual-Iserte, Daniel P Palomar and Andrea Goldsmith

Energy efficient power allocation and relay selection in MIMO relay channels
Zijian Wang and Luc Vandendorpe

Optimization of Energy Efficiency in Computationally-Aware Adaptive OFDM Systems
Bartosz Bossy and Hanna Bogucka

MoA9: Multiple Access Techniques

Room: Room 8+9
Chair: Ana Garcia Armada

Performance Evaluation of Subcarrier Hopping Multiple Access in Wireless LAN Scenarios
Yuta Hori and Hideki Ochiai

Inherent instability of user channels in the localized SC-FDMA under doubly selective fading
Takeshi Hashimoto and Chenggao Han

On the Performance Analysis of Binary Non-Coherent Modulations with Selection Combining in Double Rice Fading Channels
Rym Khedhiri, Nazih Hajri and Neji Youssef

Generalized Spatial Modulation for Downlink Multiuser MIMO Systems with Multicast
Robinson Pizzio, Bartolomeu F. Uchôa-Filho, Marco Di Renzo and Didier Le Ruyet

CSI enhancement for multi-user superposed transmission using the second best feedback
Karol Schober, Panu Lähdekorpi, Mikko Kokkonen, Mikko Mäenpää and Mihai Enescu

Monday, September 5, 11:10 - 11:30

MoB0: Openning

Room: Auditorium 1

Monday, September 5, 11:30 - 12:10

MoB0: Plenary 1. Part I

Leap Forward to 5G Commercialization
Peiying Zhu (Huawei, Ottawa, Canada)

Room: Auditorium 1

Abstract:

It is envisioned that 5G will embrace machine to machine and machine to human communication in addition to human to human communication. To enable this vision, extreme high throughput,ultra low latency/high reliability and massive connectivities are the design target of 5G. This talk will present the framework and a set of enabling technologies to build such a system including some latest Huawei's field trial efforts and results. In addition, a high level view of standardization efforts will be given to provide a roadmap toward the commercialization of 5G system.

Short Bio:

Dr. Peiying Zhu is a Huawei Fellow. She is currently leading 5G wireless system research in Huawei. The focus of her research is advanced wireless access technologies with more than 150 granted patents. She has been regularly giving talks and panel discussions on 5G vision and enabling technologies. She served as the guest editor for IEEE Signal processing magazine special issue on the 5G revolution and co-chaired for various 5G workshops. She is actively involved in IEEE 802 and 3GPP standards development. She is currently a WiFi Alliance Board member. Prior to joining Huawei in 2009, Peiying was a Nortel Fellow and Director of Advanced Wireless Access Technology in the Nortel Wireless Technology Lab. She led the team and pioneered research and prototyping on MIMO-OFDM and Multi-hop relay. Many of these technologies developed by the team have been adopted into LTE standards and 4G products. Peiying Zhu received the Master of Science degree and Doctor Degree from Southeast University and Concordia University in 1985 and 1993 respectively.

Monday, September 5, 12:10 - 12:50

MoB0: Plenary 1. Part II

Remote Tele-surgery via Haptic Communications- Potential and Challenges
Prokar Dasgupta (King's College London, London, UK)

Room: Auditorium 1

Abstract:

A number of important developments have taken place in the evolving field of robotic surgery. This includes the Touch and Image guided robotic surgery (TIGERS) project. Haptics is expected to play an important role in the future. In addition we have seen the development of a number of soft robots which learn to avoid danger from a surgeons movements. In parallel to this the imminent arrival of 5G will hopefully improve the underpinning communication between these hi tech devices. Finally it is expected that the cost to providers and patients will be cheaper in coming years.

Short Bio:

Professor Prokar Dasgupta is the Editor-in-Chief of the BJUI. He leads academic urology at Guy's Hospital, King's College London. He has over 500 publications and a highly productive team of clinician-scientists developing novel robotics for the delivery of cytotopic therapies in prostate cancer. He is credited with the "Dasgupta technique" of injecting Botulinum toxin in overactive bladders. He was awarded the Golden Telescope by BAUS for a significant and lasting contribution to urology.

Monday, September 5, 14:10 - 15:50

MoC0: Panel 1

What is relevant research for 5G Advanced?
Room: Auditorium 2
Chair: Olav Queseth

Panellists:

- **Dr. Magnus Frodigh** (Ericsson, Stockholm, Sweden)
- **Dr. Maziar Nekovee** (mmMAGIC/Samsung R&D, Staines, Surrey, UK)
- **Dr. Christian Mannweiler** (Nokia Bell Labs, Munich, Germany)
- **Sébastien Hémard** (Magneti Marelli, China)

Motivation and Background:

At the time of PIMRC the standardisation of 5G has been running for some time and the first deployments are only one and a half year into the future. What is clear though is that this first wave will be followed by a number of innovations and improvements. At this time it is important to start thinking about initiating research on topics that will be important in the future but at the moment may have taken a back seat to the standardisation efforts.

The panel will provide the view of a number of industry and academic leaders on the topics that will shape the development of 5G advanced and make a guess at important emerging fields.

Questions:

1. What research areas do you see to be important in 3-5 years?
2. What services will be important that we cannot imagine today?
3. When would you expect the first 5G system to be fully deployed?
4. What would be the most important feature for the first 5G system to be considered 5G?
5. What do you expect will not be standardised in the first wave of standards?

MoC1: Massive MIMO Channel Measurement, Modeling and Calibration

Room: Auditorium 3a
Chair: Katsuyuki Haneda

Massive MIMO Real-time Channel Measurements and Theoretic TDD Downlink Throughput Predictions
Siming Zhang, Paul Harris, Angela Doufexi, Andrew Nix and Mark Beach

Geometry-Based Stochastic Channel Models for 5G: Extending Key Features for Massive MIMO
Àlex Oliveras Martínez, Patrick Eggers and Elisabeth de Carvalho

A Receive/Transmit Calibration Technique based on Mutual Coupling for Massive MIMO Base Stations
Joao Vieira, Fredrik Rusek and Fredrik Tufvesson

A Phase Calibration Method Based on L1-norm Minimization for Massive MIMO Systems
Zhensheng Jiang, Wenjin Wang, Xiaodong Xie and Xiqi Gao

A Simple Over-the-Air Hardware Calibration Procedure in TDD Systems
Samer Bazzi and Wen Xu

MoC2: Relaying/Cooperative Relaying 1

Room: Auditorium 3b
Chair: Milica Pejanovic-Djurisic

Multi-hopping Loss in MIMO Decode-and-Forward Cooperative Relaying
Ishtiaq Ahmad, Khoa D. Nguyen, André Pollok and Nick A Letzepis

Amplify-and-Forward Relay based Spectrum Sensing with Generalized Selection Combining
Vaibhav Kumar, Deep Kandpal, Ranjan Gangopadhyay and Soumitra Debnath

Outage Probability of Dual-Hop FSO Fixed Gain Relay Transmission Systems
Emna Zedini, Hamza Soury and Mohamed-Slim Alouini

Outage Probability of Non-Orthogonal Multiple Access Schemes with Partial Relay Selection
Sunyoung Lee, Daniel Benevides da Costa and Trung Q. Duong

System-Level Performance Analysis of Relay-Aided Multiple-Antenna Cellular Networks
Konstantinos Ntontin, Marco Di Renzo and Christos Verikoukis

MoC3: Device-to-device (D2D) communications 1

Room: Room 1
Chair: Yan Zhang

A Two-Step Resource Allocation Algorithm for D2D Communication in Full Duplex Cellular Network
Luming Ren, Ming Zhao, Xinyu Gu and Lin Zhang

A Distributed MAC Protocol for Multi-Packet Reception Wireless Networks
António Furtado, Rodolfo Oliveira, Rui Dinis and Luis Bernardo

Interference Coordination in HetNet: Can D2D Communication Help?
Mustapha Amara, Afef Feki and Luca Rose

Q-Learning Based Power Control Algorithm for D2D Communication
Shiwen Nie, Zhiqiang Fan, Ming Zhao, Xinyu Gu and Lin Zhang

Joint Subcarrier Assignment and Power Allocation for D2D Communication Underlaying Full-Duplex Cellular Networks
Long Liu, Zhi Zhang and Yue Xu

MoC4: Wireless Sensor Networks: Applications and Localization

Room: Room 2
Chair: Kamya Yekeh Yazdandoost

Dynamic Service Switching for the Medical IoT
Philipp Kindt, Daniel Yunge, Andreas Tobola, Georg Fischer and Samarjit Chakraborty

Cloud-based Self-Organizing Localization with Virtual Network Topology for Wireless Sensor Networks and Its Implementation
Takamasa Kitanouma, Naotoshi Adachi and Yasuhisa Takizawa

Antenna Cluster Selection for Localization- Communication Dual Mode Operation
Stephen Lingfeng Wang, Yuechuan Zhang and Zhong Fan

Factor Graph Approach for Joint Passive Localization and Receiver Synchronization in Wireless Sensor Networks
Weijie Yuan, Nan Wu, Hua Wang and Jingming Kuang

Joint Optimization for Social Content Dissemination in Wireless Networks
Xiangnan Weng and John Baras

MoC5: Opportunistic Communications

Room: Room 3
Chair: Andres Navarro

A Green Coalitional Store-and-Forward Scheme for Delay Tolerant Networks
Sara Arabi, Sara Handouf, Essaid Sabir and Mohamed Sadik

BALCON: BAckward Loss Concealment Mechanism for Scalable Video Dissemination in Opportunistic Networks
Merza Klaghstan, David Coquil, Harald Kosch, Nadia Bennani and Lionel Brunie

Incentivizing User Provided Connectivity for Enhanced Quality of Service
Sinan Emre Tasci and Omer Korcak

Content- and Context-Aware Opportunistic Cellular Communications in Device-Centric Wireless Networks
Baldomero Coll-Perales and Javier Gozalvez

Estimating Data Transfer Capacity for Intermittent Connectivity: A Transport Aware Model
Johan Garcia, Stefan Alfredsson and Anna Brunstrom

MoC6: Medium Access Control (MAC) 1

Room: Room 4
Chair: Antonio Pascual-Iserte

Fair Resource Allocation Using the MCS Map for Multi-user Superposition Transmission (MUST)

Hung-Yun Hsieh, Ming-Jie Yang and Chun-Hsiung Wang

Joint Coding of Sequential HARQ Feedback
David Cooper

Improved Message Passing Algorithms for Resource Allocation in Two-Tier Femtocell Networks
Qun Gu, Ying-lei Teng and Mei Song

A Novel Dynamical Uplink Power Control Scheme for Dual Connectivity
Shizhou Lv, Chang Yongyu, Yang Sun and Mengshi Hu

Ephemeral: Lightweight Pseudonyms for 6LoWPAN MAC addresses
Jessye Dos Santos, Christine Hennebert, Cedric Lauradoux and Jean Christophe Fonbonne

MoC7: LTE Networks

Room: Room 5
Chair: Xavier Gelabert

Measurement-Based Modelling of LTE Performance in Dublin City
Miguel Báguena, Douglas Leith and Pietro Manzoni

Quality of Service for LTE Public Safety Networks with Satellite Backhaul
Laurent Reynaud, Karina Mabell Gomez and Tomaso De Cola

Feasibility Study of LTE Middle-Mile Networks in TV White Spaces for Rural India
Chaitanya Prasad N, Soubhik Deb and Abhay Karandikar

Dynamic and Adaptive QoE Management for OTT Application Sessions in LTE
Balázs Héder, Péter Szilágyi and Csaba Vulkán

Indoor Planning and Optimization of LTE-U Radio Access over WiFi
Omar Sandoval, David González G, Jyri Hämäläinen and Sangjo Yoo

MoC8: Energy Efficient Communications 2

Room: Room 6+7
Chair: Chenyang Yang

Physical and MAC Cross-Layer Analysis of Energy-Efficient MIMO Networks
Guilherme Peron, Glauber Brante and Richard Demo Souza

Energy Efficiency Optimization in Cognitive Radio Inspired Non-Orthogonal Multiple Access
Yi Zhang, Qian Yang, Tong-Xing Zheng, Hui-Ming Wang, Ying Ju and Yue Meng

Energy Efficient Optimization for Full-duplex Assisted Closed-loop MISO Downlink Transmission
Yu Zhang, Shengqian Han, Chenyang Yang and Gang Wang

Impact of Uncertainty in Predicting the User's Request on Pushing
Chuting Yao and Chenyang Yang

Energy-Efficient Optimization for MISO Gaussian Broadcast Channel with Integrated Services
Weidong Mei, Lingxiang Li, Zhi Chen and Chuan Huang

Monday, September 5, 16:20 - 18:00

MoD0: Panel 2

mmWave - The Path to 5G Enhanced Mobile Broadband
Room: Auditorium 2
Chair: James Kimery

Panellists:

- **Prof. Fredrik Tufvesson** (Lund Univ., Lund, Sweden)
- **Prof. Mark Beach** (Bristol Univ., Bristol, UK)
- **Dr. Laurent Dussopt** (Research Director, CEA-LETI, Lyon, Francia)
- **Jyri Putkonen** (Lead Researcher, Nokia, Espoo, Finland)
- Alternate: **Prof. Nuria González Prelcic** (Vigo Univ., Vigo, Spain)

Motivation and Background:

The world's standardization bodies are moving to define the next generation of wireless access including the 3GPP. Enhanced Mobile Broadband with a goal of peak data rates exceeding 10 Gbit/s has been proposed as one goal but other objectives touch on latency, supporting billions of new types of devices, enhanced communication at the cell edge, and improved spectral efficiency. Many researchers are investigating cmWave and mmWave technologies as possible options for addressing these goals. However, research as these frequencies has really just begun and many questions remain including the use, deployment strategy, viability and potential integration with existing 4G structure. This panel will discuss cmWave and mmWave technologies for addressing the goals and objectives for next generation wireless and access to support a broad range of new applications.

Questions:

1. Are mmWave and cmWave frequencies possible for next generation wireless access?
2. If so, what applications are better for communication in these frequencies?
3. What frequencies could be possible for cmWave and mmWave frequencies for next generation wireless access?
4. How can cmWave and mmWave be used in a mobile access network?
5. What are the challenges for cmWave and mmWave for wide adoption?

MoD1: Massive MIMO Channel Estimation and Precoding

Room: Auditorium 3a
Chair: Jose Flordelis

Compressive Downlink CSI Estimation for FDD Massive MIMO Systems: A Weighted Block L1 -Minimization Approach
Chih-Chun Tseng, Jwo-Yuh Wu and Ta-Sung Lee

Pilot Design and AMP-Based Channel Estimation for Massive MIMO-OFDM Uplink Transmission
Xiaying Wu, Lixin Gu, Wenjin Wang and Xiqi Gao

Exploiting Antenna Correlation in Measured Massive MIMO Channels
Jose Flordelis, Sha Hu, Fredrik Rusek, Ove Edfors, Ghassan S Dahman, Xiang Gao and Fredrik Tufvesson

Nonlinear Block Multi-diagonalization Precoding for High SHF Wide-band Massive MIMO in 5G
Hiroshi Nishimoto, Akinori Taira, Hiroki Iura, Shigeru Uchida, Akihiro Okazaki and Atsushi Okamura

MMSE based Two-stage Beamforming for Large-Scale Multi-user MISO Systems
Younghyun Jeon, Changick Song, Seung Joo Maeng, Myonghee Park and Inkyu Lee

MoD2: Relaying/Cooperative Relaying 2

Room: Auditorium 3b
Chair: Hikmet Sari

Performance of Two-Way AF MIMO Relay Networks with Single and Multiple Antenna Selection Schemes
Efendi Fidan and Oğuz Kucur

Statistical Properties of Two Hop Relay Systems With Polarization Diversity
Maja Delibasic and Milica Pejanovic-Djurisic

Efficient hierarchical embedded signaling scheme for nodes identification in cooperative wireless networks with relay selection
Mariem Ayedi, Noura Sellami and Mohamed Siala

Joint Optimization of Throughput and Delay Over PPP Interfered Relay Networks
Young Jin Chun, Simon Cotton, Mazen Omar Hasna and Ali Ghrayeb

On the Reception Criteria Adopted in Asynchronous Multi-Packet Networks Relying on Spatial Reuse
Fulvio Babich and Massimiliano Comisso

MoD3: Device-to-device (D2D) communications 2

Room: Room 1
Chair: Baldomero Coll-Perales

Resource Allocation in D2D-based V2V Communication for Maximizing the Number of Concurrent Transmissions
Shiyu Zhang, Yanzhao Hou, Xiaodong Xu and Xiaofeng Tao

Cooperative Spectrum Sharing Between D2D Users and Edge-Users: A Matching Theory Perspective
Yiling Yuan, Tao Yang, Yuedong Xu and Bo Hu

Investigation of Decision Metrics for Reuse Link Selection in Device-to-Device Communication
Markus Klügel, Mu He and Wolfgang Kellerer

Clustered Device-to-Device Caching Based on File Preferences
Xiangyang Zhang, Ying Wang, Ruijin Sun and Dong Wang

ProVa: A Proximity Validation Approach For Enhanced Device Discovery
Dimitris Tsolkas, Nikos Passas and Lazaros Merakos

MoD4: Wireless Sensor Networks: Architecture, Security, Traffic

Room: Room 2
Chair: Panagiotis Sarigiannidis

SOL: An End-to-end Solution for Real-World Remote Monitoring Systems
Keoma Brun-Laguna, Thomas Watteyne, Sami Malek, Ziran Zhang, Carlos Oroza, Steven D Glaser and Branko Kerkez

Priority-oriented Multicast Transmission Schemes for Heterogeneous Traffic in WSNs
Debasish Ghose and Frank Y. Li

Analysing Indirect Sybil Attacks in Randomly Deployed Wireless Sensor Networks
Panagiotis Sarigiannidis, Eirini Karapistoli and Anastasios A. Economides

Adaptive Scheme for Collaborative Mobile Sensing in Wireless Sensor Networks: Bacterial Foraging Optimization approach
Ado Adamou Abba Ari, Abdelhak (Mourad) Gueroui, Nabila Labraoui, Blaise Omer Yenke, Chafik Titouna and Damakoa Irépran

Optimal Active Detection in Machine-to-Machine Mobile Networks: A Repeated Game Approach
Kun Wang, Miao Du, Dejun Yang, Chunsheng Zhu and Yanfei Sun

MoD5: QoS and ultra-reliability

Room: Room 3
Chair: David Gomez-Barquero

Performance of Retransmission Schemes for Multicasting in Random Wireless Networks
Mohammad Ghadir Khoshkholgh Dashtaki, Keivan Navaie, Kang G. Shin and Victor C.M. Leung

Optimized Transmission and Resource Allocation Strategies for Ultra-Reliable Communications
Hamidreza Shariatmadari, Sassan Iraji, Zexian Li, Mikko A Uusitalo and Riku Jäntti

QoE and Throughput Aware Radio Resource Allocation Algorithm in LTE Network with Users using Different Applications
Takahiro Hori and Tomoaki Ohtsuki

Power Allocation for Statistically Delay Constrained Video Streaming in Femtocell Networks based on Nash Bargaining Game
Hamed Hosseiny, Mohammadamin Baniasadi, Vahid Shah-Mansouri and Mohammad Ghanbari

QoE-based Video Delivery over LTE Hierarchical Architecture
Nabeel Khan and Maria G. Martini

QoE-aware Power Allocation for Device-to-Device Video Transmissions
Nima Eshraghi, Vahid Shah-Mansouri and Behrouz Maham

MoD6: Medium Access Control (MAC) 2

Room: Room 4
Chair: Masahiro Umehira

Stochastic Resource Allocation with a Backhaul Constraint for the Uplink

Javier Rubio, Olga Muñoz-Medina, Antonio Pascual-Iserte and Josep Vidal

Improvement of HARQ Based on Redundant Data of Near User in Non-Orthogonal Multiple Access
Dongseok Roh, Minhoe Kim and Dong-Ho Cho

Compressed Sensing based ACK Feedback for Grant-Free Uplink Data Transmission in 5G mMTC
Xianjun Yang, Wang Xin, Weiwei Wang and Jian Zhang

Two-tier Distributed and Open Loop Multi-point Cooperation Using SCMA
Hadi Baligh, Alireza Bayesteh, Yicheng Lin, Usa Vilaipornsawai and Keyvan Zarifi

User Cooperation Enabled Traffic Offloading in Urban Hotspots
Tim Rüegg, Yahia Hassan and Armin Wittneben

MoD7: LTE and WiFi Coexistence and Offloading Techniques

Room: Room 5
Chair: Xavier Gelabert

Optimal Scheduling for Incentive WiFi Offloading under Energy Constraint
Juntao Gao, Minoru Ito and Norio Shiratori

Coexistence of LTE and Wi-Fi for future 5G system: A Field Test on Cell ON/OFF Mechanism in Unlicensed Spectrum
Yang Liu, Rongtao Xu, Shaoyi Xu, Hantao Li, Zhenyu Li and Wenfang Tang

Mobile Data Offloading addressing the Service Quality vs. Resource Utilisation Dilemma
Alicia Whittier, Parag Kulkarni, Fengming Cao and Simon Armour

Performance Analysis of Delayed Mobile Data Offloading With Multi-level Priority
Heng Xu, Xiangming Wen, Zhaoming Lu, Zhiqun Hu, Wenpeng Jing and Kun Chen

A New Data Offloading Algorithm by Considering Interactive Preferences
Amir Mohammad Hatami, Mahtab Mirmohseni and Farid Ashtiani

MoD8: Energy Awareness and Power Control

Room: Room 6+7
Chair: Shengqian Han

On joint energy and information transfer in relay networks with an imperfect power amplifier
Mahdi Haghifam, Behrooz Makki, Masoumeh Nasiri-Kenari and Tommy Svensson

Energy and Spectrum Efficient Wireless LAN by Tightly Integrating Low-Power Wake-up Radio
Suhua Tang, Chao Zhang, Hiroyuki Yomo and Sadao Obana

Energy-Efficient Data Transmission with Non-FIFO Packets
Qing Zhou and Nan Liu

Transmission Power Control in WBAN Using the Context-Specific Temporal Correlation Model
Sukhumarn Archasantisuk, Takahiro Aoyagi, Minseok Kim and Jun-ichi Takada

Energy-Efficient Power Control for OFDMA Cellular Networks
Lokman Sboui, Zouheir Rezki and Mohamed-Slim Alouini

Tuesday, September 6

Tuesday, September 6, 09:00 - 09:50

TuA0: Plenary 2. Part I

The Road to Massive MIMO mmWave Mobile Communications Systems
Erik Luther (National Instruments, Texas, USA)

Room: Auditorium 1

Abstract:

Massive MIMO promises to increase the the capacity of wireless systems through high-channel count multi-user MIMO techniques. mmWave offers new spectrum above 24 GHz that offer multi GHz of bandwidth. The inevitable marriage of these techniques promise to revolutionize next generation wireless communications systems enabling efficient, low power, high data rate communications solutions. In this talk we discuss the evolution of bands being considered at mmWave frequencies and the obstacles research must overcome on the road to making this a commercially viable technology. Discussion includes the need for open, reconfigurable platforms that enable both early channel sounding research and advanced prototyping of real-time 2-way communications protocols that accelerate the prototyping process. New advances in RF, ADC and DAC, FPGA, and RFIC technologies provide the building blocks necessary to fully exercise this new spectrum.

Short Bio:

Mr. Erik Luther (KF5LTV), Senior Group Manager - 5G Prototyping Solutions, leads the 5G product marketing team at National Instruments (NI) focused on accelerating next generation wireless research. Over the last 5 years he has managed product marketing for NI and Ettus Research software defined radio solutions including product roadmaps, outbound marketing, and collaborations with leading industry, academic, and government wireless research teams. Since joining NI in 2002, Luther has held positions across applications engineering and product marketing focused on advancing NI design platforms, specifically making prototyping and experimentation more accessible for both research and education. Early in his career, Luther pioneered NI's efforts to support universities with curriculum and textbooks, launching NI's independent textbook publishing arm NTS Press. His accomplishments include collaboration on more than 50 published textbooks and lab related materials on topics that include RF/communications, DSP, circuit design, and real-time control which have been utilized by more than 100,000 engineering students around the world. Luther led the IEEE Communication Society Education and Training initiative to establish http://labs.comsoc.org a community focused on establishing best practices for hands-on education and teaching resources for wireless communications. Luther holds a bachelors degree from the University of Missouri in Electrical Engineering.

Tuesday, September 6, 09:50 - 10:40

TuA0: Plenary 2. Part II

Beyond IoT - Ubiquitous Sensing and Human Experience
Joseph Paradiso (MIT Media Lab, Cambridge, MA USA)

Room: Auditorium 1

Abstract:

This talk will overview the broad theme of interfacing humans to the ubiquitous electronic "nervous system" that sensor networks will soon extend across things, places, and people, going well beyond the 'Internet of Things,' and in different ways challenging the notion of physical presence. I'll illustrate this through two avenues of research - one looking at a new kind of digital "omniscience" (e.g., different kinds of browsers for sensor network data & agile frameworks for sensor representation) and the other looking at buildings & tools as "prosthetic" extensions of humans (e.g., making HVAC and

lighting systems an extension of your natural activity and sense of comfort, or smart tools as human-robot cooperation in the hand), drawing from many projects that are running in my group at the MIT Media Lab.

Short Bio:

Joe Paradiso is the Alexander W. Dreyfoos (1954) Professor in Media Arts and Sciences at the MIT Media Laboratory, where he directs the Responsive Environments group, which explores how sensor networks augment and mediate human experience, interaction and perception. He received his PhD in Physics from MIT in 1981 and a BSEE from Tufts University in 1977. After two years developing precision drift chambers at the Lab for High Energy Physics at ETH in Zurich, he joined the Draper Laboratory in 1984, where his research encompassed spacecraft control systems, image processing algorithms, underwater sonar, and precision alignment sensors for large high-energy physics detectors. He joined the Media Lab in 1994, where his current research interests include embedded sensing systems and sensor networks, wearable and body sensor networks, energy harvesting and power management for embedded sensors, ubiquitous and pervasive computing, human-computer interfaces, & interactive media.

Tuesday, September 6, 11:10 - 12:50

TuB0: Panel 3

Wireless Communications for the Internet of Things
Room: Auditorium 2
Chair: John Thompson

Panellists:

- **Prof Angeliki Alexiou** (Digital Systems Department, Univ. of Piraeus, Piraeus, Greece)
- **Dr Jesus Alonso-Zarate** (CTTC, Barcelona, Spain)
- **Henrik Lund Staermose** (Neogrid Technologies ApS, Northern Region, Denmark)
- **Prof Mahesh Sooriyabandara** (Associate Managing Director of Toshiba TRL, Bristol, UK)

Motivation and Background:

One of the major growth application areas for future wireless communications is in the area of the Internet of Things. Enabling connectivity between different electronic devices and systems will open up many new application areas in different industries and different aspects of life. This panel is sponsored by the European Project ADVANTAGE which studies communications and power technologies for the emerging "smart grid". The smart grid will provide a more intelligent power grid in the future, which should provide a better match between supply and demand, as well as integrating increasing levels of renewable energy sources which are intermittent in terms of the power provided. Wireless communications and the internet of things is a key building block in enabling better sharing of information within the smart grid to support improved control and decision making. The first wave of this technology can be seen in smart meters which are currently being rolled out across Europe. This panel will discuss in detail the technology requirements for the internet of things in general as well as focussing on the application to smart grid technology in more detail.

Questions:

1. What are the key steps to move towards mass deployment of Internet of Things technology?
2. What the stumbling blocks and problems that still need to be overcome to enable this vision?
3. How will the Internet of Things be used in the Smart Grid in future?
4. How will our lives be changed when the Smart Grid is fully deployed?
5. What are the future research challenges in this area?

TuB1: Beamforming Techniques

Room: Auditorium 3a
Chair: Yinan Qi

Robust Beamforming Method for SDMA with Interleaved Subarray Hybrid Beamforming
Shunsuke Fujio, Chikara Kojima, Toshihiro Shimura, Kenichi Nishikawa, Kazuyuki Ozaki, Zhengyi Li, Atsushi Honda, Shohei Ishikawa, Takenori Ohshima, Hiroshi Ashida, Masahiko Shimizu and Yoji Ohashi

Linearization of nonlinear MISO channel
Ilia Iofedov and Dov Wulich

Block diagonalization for interference mitigation in Ka-band backhaul networks
Rudolf Zetik, Venkatesh Ramireddy, Marcus Grossmann, Markus Landmann and Giovanni Del Galdo

A Top-down SCMA Codebook Design Scheme Based on Lattice Theory
Haonan Yan, Hui Zhao, Zhaobiao Lv and Haojun Yang

TuB2: Coding Techniques

Room: Auditorium 3b
Chair: Felip Riera-Palou

RAID-6 Reed-Solomon Codes with Asymptotically Optimal Arithmetic Complexities
Sian-Jheng Lin, Amira Alloum and Tareq Y. Al-Naffouri

On Physical-Layer Raptor Coded Modulation with Gray-mapped 16QAM
Shiuan-Hao Kuo, Hsuan-Kuan Wu and Mao-Chao Lin

The Design of Protograph LDPC Codes for Channel-Coded Physical-layer Network Coding
Pingping Chen, Kaixiong Su, Yi Fang and Lingjun Kong

Analysis and Design of Rate Compatible LDPC Codes
Fulvio Babich, Matteo Noschese and Francesca Vatta

Improved Turbo Product Coding dedicated for 100 Gbps Wireless Terahertz Communication
Lukasz Lopacinski, Jörg Nolte, Steffen Büchner, Marcin Brzozowski and Rolf Kraemer

TuB3: Cognitive radio

Room: Room 1
Chair: Dirk Dahlhaus

Ant Colony System Based Control Channel Selection Scheme for Guaranteed Rendezvous in Cognitive Radio Ad-hoc Network
Henry Ohize and Mqhele E. Dlodlo

Fair and Regulated Spectrum Allocation in Licensed Shared Access Networks
M. Majid Butt, Carlo Galiotto and Nicola Marchetti

Blind Channel Selection Strategies for Distributed Cognitive MAC
Nazanin Rastegardoost and Bijan Jabbari

Energy-Efficient Power Allocation for Simultaneous Wireless Information-and-Energy Multicast in Cognitive OFDM Systems
Wei Chen, Wenjun Xu, Fengyu Wang, Shengyu Li and Jiaru Lin

Design and experimental evaluation of C-MAC solutions for heterogeneous spectrum sharing

Iker Sobron, Cristina Regueiro, Iñaki Eizmendi, Unai Gil and Manuel Velez

TuB4: HetNets and Energy-Aware Communications

Room: Room 2
Chair: Andrea Abrardo

Energy and Spectrum Efficient User Association in 5G Heterogeneous Networks
Agapi Mesodiakaki, Ferran Adelantado, Angelos Antonopoulos, Luis Alonso and Christos Verikoukis

An Energy-Efficient Radio Resource Allocation Algorithm for Heterogeneous Wireless Networks
Mary Adedoyin and Olabisi Emmanuel Falowo

Distributed Power and Resource Allocation for Weighted Sum Energy-Efficiency Maximization in OFDMA Smallcell Network
Guodong Zhang, Jinming Hu, Wei Heng and Wang Gang

Fuzzy Q-Learning based Energy Management of Small Cells Powered by the Smart Grid
Mouhcine Mendil, Antonio De Domenico, Vincent Heiries, Raphael Caire and Noredine Hadjsaid

Energy-Delay Analysis for Partial Spectrum Sharing in Heterogeneous Cellular Networks with Wired Backhaul
Zhiyan Cui, Qimei Cui, Zheng Wei and Zhen Li

TuB5: 5G System Design and Evaluation

Room: Room 3
Chair: Sandra Roger

5G Millimeter Wave SDMA Multi-user MIMO Experimental System
Huang Huang, Xianfeng Du, Wenxian Jiang, Guangjian Wang and Jia He

A 5G Hybrid Channel Model Considering Rays and Geometric Stochastic Propagation Graph
Gerhard Steinboeck, Anders Karstensen, Pekka Kyösti and Aki Hekkala

Uplink Control Channel Design for 5G Ultra-Low Latency Communication
Shuqiang Xia, Xianghui Han, Xiao Yan, Zhisong Zuo and Feng Bi

Ultra-Low Latency for 5G - A Lab Trial
Peng Guan, Xi Zhang, Guangmei Ren, Tingjian Tian, Anass Benjebbour, Yuya Saito and Yoshihisa Kishiyama

Effects of Channel Estimation Errors on Ultra-Dense Small Cell Networks
Yosub Park, Jihaeng Heo, Jintae Kim, Sooyong Choi and Daesik Hong

TuB6: Relaying and Satellite Communications

Room: Room 4
Chair: David López-Pérez

Selective Multi-Hop Relaying for Ultra-Reliable Communication in a Factory Environment
Bikramjit Singh, Olav Tirkkonen, Zexian Li, Mikko A Uusitalo and Risto Wichman

Dynamic Relay Selection and Channel Adaptive Uplink For LTE Device-to-Device (D2D) Communication
Bighnaraj Panigrahi, Rashmi Ramamohan, Hemant Kumar Rath and Anantha Simha

Toward High Throughput Contact Plan Design in Resource-Limited Small Satellite Networks
Di Zhou, Min Sheng, Jiandong Li, Chao Xu, Runzi Liu and Yu Wang

Joint Relay Selection and Power Allocation for Maximum Energy Efficiency in Hybrid Satellite-Aerial-Terrestrial Systems
Yichun Xu, Ying Wang, Ruijin Sun and Yuan Zhang

Capacity Analysis of Zero-Forcing Precoding in Multibeam Satellite Systems with Rain Fading
Ishtiaq Ahmad, Khoa D. Nguyen, André Pollok and Nick A Letzepis

TuB7: Security, Authentication and Pricing

Room: Room 5
Chair: Maria G. Martini

Dynamic Multi-Factor Authentication for Smartphone
Alexander Yohan, Nai-Wei Lo and Henry Roes Lie

Delay-Reliability Tradeoff for Wireless-Connected Indoor Robot Surveillance Based on Radio Environment Map
Yunlong Wu, Bo Zhang, Chaoqun Wang, Xuefeng Chang, Xiaodong Yi and Yuhua Tang

A Game Theoretic Model for Network Virus Protection
Iyed Khammassi, Rachid El-Azouzi, Majed Haddad and Issam Mabrouki

Biometric Authentication using Hand Movement Information from Wrist-worn PPG Sensors
Hiroto Kamoi and Tomoaki Ohtsuki

Optimal Pricing Strategy for a Wireless Sensor Data Broker under a Zipf-distributed Sensing Rate Offer
Luis Guijarro, Maurizio Naldi, Vicent Pla and Jose R Vidal

TuB8: Access Point and Base Station Deployment and Selection

Room: Room 6+7
Chair: Lorenza Giupponi

Two-stage Access Point Selection for Hybrid VLC and RF Networks
Xiping Wu, Dushyantha Basnayaka, Majid Safari and Harald Haas

An Energy Efficient Base Station Deployment for mm-wave Based Wireless Backhaul
Miryam Gonzalez and John Thompson

Environment-based Roadside Unit Deployment for Urban Scenarios
Jose Leon Calvo, Halil Alper Tokel and Rudolf Mathar

Access Point Selection in Li-Fi Cellular Networks with Arbitrary Receiver Orientation
Mohammad Dehghani Soltani, Xiping Wu, Majid Safari and Harald Haas

Inverse Fingerprinting: Server Side Indoor Localization with Bluetooth Low Energy
Jae Hyung An and Lynn Choi

Tuesday, September 6, 13:30 - 14:10

N2Women

Tips Success in Different Stages of One's Career
Ana Garcia Armada

Room: Auditorium 2

It's time for Networking Networking Women (N2Women) Meeting

N2Women is a discipline-specific community for researchers in the communications and networking research fields. Join us for networking and open discussion!

- Main Speaker: Prof. Ana Garcia Armada
- Contact: Mary Adedoyin, addmar004@myuct.ac.za, +27630341165

N2Women is supported by ACM SIGMOBILE, ACM SIGCOMM, IEEE Communications Society, IEEE Computer Society (CS), Technical Committee on Computer Communications (TCCC), NSF Division of Computer and Network Systems, CRA-W, Microsoft Research, HP Labs, and Google Research.

Learn more about N2 Women at http://n2women.comsoc.org/.

Tuesday, September 6, 14:10 - 15:50

TuC0: Panel 4

From Vehicular Networks to the Internet of Vehicles
Room: Auditorium 2
Chair: Jorge Pereira

Panellists:

- **Dino Flore** (Qualcomm, Barcelona, Spain)
- **Angela Doufexi** (Univ. of Bristol, Bristol, UK)
- **Leonardo Goratti** (CREATE-NET, Varese, Italy)
- **Álvaro Arrúe** (Applus IDIADA, Barcelona, Spain)

Motivation and Background:

Vehicular Networks pose some still open challenges, but their potential is well recognized. As we move towards the so-called Internet of Vehicles, the problems compound with the need to up-scale to the level of a city, region, even continent, and to integrate the whole range of legacy (i.e., dumb) to semi-autonomous and eventually autonomous, as well as unmanned, vehicles. (This Panel will not focus on Autonomous Driving per se.)

The critical aspects of interaction with humans (pedestrians and drivers) and with infrastructure (built or self-organizing) also need to be taken into consideration. In this regard, large-scale deployments are essential to test and validate solutions in context. Complex Cyber-Physical Systems (CPS) approaches need also to be explored.

Questions:

1. What are the major open challenges in Vehicular Networks? How can these scale up as needed for example in the context of Smart Cities? What underlying technologies will be needed?
2. What role for Unmanned Vehicles (land, air, see and underwater) in the future Internet of Everything? How to optimally combine them to extract real-time system information, including in emergency situations? How to secure their interaction with humans and other vehicles?
3. What role for large-scale deployments extending from Intelligent Transportation Systems to Smart Cities? How to address the challenge of multi-vendor offerings and of complex system integration?
4. As we move towards connected vehicles, how expensive will on-board technology be, versus handheld solutions, and what impact in terms of coexistence with legacy and varying levels of smart public infrastructure, versus ad hoc solutions?

TuC1: Millimetre-Wave Beamforming 1

Room: Auditorium 3a
Chair: Maziar Nekovee

Linear Baseband Precoding Strategies for Millimeter Wave MIMO Multi-X Channels
Venkatesh Ramireddy, Marcus Grossmann, Markus Landmann, Rudolf Zetik and Giovanni Del Galdo

Experiment of 28 GHz Band 5G Super Wideband Transmission Using Beamforming and Beam Tracking in High Mobility Environment
Tatsunori Obara, Yuki Inoue, Yuuichi Aoki, Satoshi Suyama, Jaekon Lee and Yukihiko Okumura

Millimeter-Wave Beam Multiplexing Method Using Hybrid Beamforming
Masahiko Shimizu, Atsushi Honda, Shohei Ishikawa, Kazuyuki Ozaki, Shunsuke Fujio, Kenichi Nishikawa, Zhengyi Li, Chikara Kojima, Toshihiro Shimura, Hiroshi Ashida, Takenori Ohshima, Yoji Ohashi and Makoto Yoshida

Performance of Hybrid Beamforming for mmW Multi-antenna Systems in Dense Urban Scenarios
Sonia Gimenez, Sandra Roger, David Martín-Sacristán, Jose F Monserrat, Paolo Baracca, Volker Braun and Hardy Halbauer

Reconfigurable Hybrid Beamforming for Dual-Polarized mmWave MIMO Channels
Sau-Hsuan Wu, Jing-Wen Wang and Ju-Ya Chen

TuC2: Modulation and Coding Techniques

Room: Auditorium 3b
Chair: Laurent Clavier

Joint Recognition of Error Correcting Codes and Interleaver Parameters in a Robust Environment
Swaminathan Ramabadran and A S Madhukumar

Layered Source-Channel Coding for Uniformly Distributed Sources over Parallel Fading Channels
Hieu T. Nguyen, Ilangko Balasingham and Tor A. Ramstad

Adaptive Coded Modulation for Mobility Constrained Indoor Wireless Environments
Indrakshi Dey and Ronald Y. Chang

Constellation Shaping for Bit-Interleaved Polar Coded-Modulation
Dekun Zhou, Kai Niu and Chao Dong

Modulation Recognition of PSK and QAM Signals Based on Envelope Spectrum Analysis

Min Li, Lili Liang, Dong Wei, Meng Zhang and Chunwei Miao

TuC3: Cognitive Techniques and Self Organizing Networks

Room: Room 1
Chair: David González G

Tradeoff Between Energy Consumption and Detection Capabilities in Collaborative Cognitive Wireless Networks
Marco Martalò, Gianluigi Ferrari and Andrea Abrardo

Sender-Jump Receiver-Wait: a blind rendezvous algorithm for distributed cognitive radio networks
Jiaxun Li, Haitao Zhao, Ji-Bo Wei, Dongtang Ma, Chunsheng Zhu, Xiping Hu and Li Zhou

A Robust Conscious Model For Enhancing Cognitive Radio Quality of Service
Periola A Ayodele and Olabisi Emmanuel Falowo

Self Optimizing Network (SON) Framework for Automated Vertical Sectorization
Dereje Woldemedhin Kifle, Bernhard Wegmann, Ingo Viering and Anja Klein

A Double Auction Mechanism for Virtual Resource Allocation in SDN-based Cellular Network
Di Zhang, Zheng Chang, F. Richard Yu, Xianfu Chen and Timo Hämäläinen

TuC4: HetNets and Resource Management

Room: Room 2
Chair: Ramón Agüero

Analysis of Interference Avoidance with Load Balancing in Heterogeneous Cellular Networks
Fazal Muhammad, Ziaul Haq Abbas and Lei Jiao

Tridimensional Frequency Reuse Based Interference Mitigation Strategy in Two-Tier Femtocell Networks
Weilong Ren, Haichao Wei and Wuyang Zhou

Dynamic Cell Selection and Resource Allocation in Cognitive Small Cell Networks
Xiaoge Huang, Sijia Liu, Yangyang Li, Fan Zhu and Qianbin Chen

Resource Allocation via Hierarchical Clustering in Dense Small Cell Networks: A Correlated Equilibrium Approach
Zhu Xiao, Yu Jianzhi, Tong Li, Zhiyang Xiang, Dong Wang and Wenjie Chen

Control Plane Load Balancing in Wireless C/U Split Architectures
Jinwei Gang and Vasilis Friderikos

TuC5: OFDM 1

Room: Room 3
Chair: Gema Piñero

Blind Frequency Synchronization for OFDM System with I/Q Imbalance
Yue Meng, Weile Zhang, Wenjie Wang, Hui-Ming Wang and Yi Zhang

Selective Clipping and Filtering: A Low-EVM PAPR Reduction Scheme for OFDM Standards
Audrey Cuenin and Nur Engin

Subcarrier Index Modulation OFDM for Multiuser MIMO Systems with Iterative Detection
Huiying Zhu, Wenjin Wang, Qing Huang and Xiqi Gao

SINR Analysis of OFDM and f-OFDM for Machine Type Communications
Kun Chen Hu and Ana Garcia Armada

Using Maximal Ratio Combining and Subcarrier Selection to Improve the OFDM Receiver Performance in IEEE802.15.4g
Gabriel da Silva, Eduardo de Lima and Cesar G Chaves

TuC6: Energy Aware Wireless Sensor Networking

Room: Room 4
Chair: Takahiro Aoyagi

Semidefinite Programming based Resource Allocation for Energy Consumption Minimization in Software Defined Wireless Sensor Networks
Yueyue Zhang, Yaping Zhu, Feng Yan, Zhengquan Li and Lianfeng Shen

Energy Efficient Adaptive Transmission Strategy Using Cooperative Diversity for Wireless Sensor Networks
Nesrine Atitallah, Hela Hakim, Kais Loukil, Abdulfattah M. Obeid and Mohamed Abid

Energy Efficiency Cooperative Scheme for Cluster-based Capillary Networks in Internet of Things Systems
Liumeng Song, Kok Keong Chai, Yue Chen and John Schormans

Decentralized Data Dissemination and Harvesting for Urban Monitoring
Milica Milojevic and Javier A. Barria

Energy-Efficient Mobile Groupcasting Protocol in Wireless Sensor Networks
Jeongcheol Lee, Min Yoon, Hyun-kyu Lee, Yongje Shin, Euisin Lee and Mario Gerla

TuC7: Physical Layer Security 1

Room: Room 5
Chair: Pietro Manzoni

Intercept Probability-Constrained Secure MIMO AF Relaying with Arbitrarily Distributed ECSI Errors
Jiaxin Yang, Qiang Li, Hao Li and Benoit Champagne

Experimental Channel-Based Secret Key Generation with Integrated Ultra Wideband Devices
Marharyta Bulenok, Iulia Tunaru, Lionel Biard, Benoit Denis and Bernard Uguen

Novel Joint Secure Resource Allocation Optimization for Full-duplex Relay Networks with Cooperative Jamming
Zhenyu Xu, Jie Zhong, Gaojie Chen, Minjian Zhao and Liyan Li

A Hybrid Channel Estimation Strategy Against Pilot Spoofing Attack in MISO System
Fengyi Bai, Pinyi Ren, Qinghe Du and Li Sun

Secrecy Capacity Analysis for $\alpha-\mu$ / $\kappa-\mu$ and $\kappa-\mu$ / $\alpha-\mu$ Fading Scenarios
Nidhi Bhargav and Simon Cotton

TuC8: Network Planning and Topology Design

Room: Room 6+7
Chair: Mikael Knudsen

Drone Formation Algorithm on 3D Space for a Drone-based Network Infrastructure
Seongjoon Park, Hyunsoon Kim, Kangho Kim and Hwangnam Kim

Coverage and Performance of Stratospheric Balloons Wireless Networks
Jean-Marc Kelif

A Machine Learning enabled network Planning tool
Jessica Moysen, Lorenza Giupponi and Josep Mangues-Bafalluy

Capacity-aware Cost-efficient Network Reconstruction for Post-Disaster Scenario
Xiaoyan Wang, Hao Zhou, Lei Zhong, Yusheng Ji, Kiyoshi Takano, Shigeki Yamada and Guoliang Xue

Radio Environment Map Techniques and Performance in the Presence of Errors
Tim D Farnham

Tuesday, September 6, 16:20 - 18:00

TuD0: Panel 5

Smart Cities and the Internet Of Things
Room: Auditorium 2
Chair: Gema Roig

Panellists:

- **Gema Roig** (INNDEA Valencia, Spain)
- **Ramón Ferri** (VLCi Smart City Platform, Valencia, Spain)
- **Miguel Ángel Llorente** (Prodevelop, Valencia, Spain)
- **Francisco Sanchis** (PayIn, Valencia, Spain)
- **Javier Ferrer** (WiTraC, Valencia, Spain)

TuD1: Millimetre-Wave Beamforming 2

Room: Auditorium 3a
Chair: Katsuyuki Haneda

Speeding Up mmWave Beam Training through Low-Complexity Hybrid Transceivers
Joan Palacios, Danilo De Donno, Domenico Giustiniano and Joerg Widmer

Low-Complexity Spatial Channel Estimation and Hybrid Beamforming for Millimeter Wave Links
Hsiao-Lan Chiang, Tobias Kadur, Wolfgang Rave and Gerhard Fettweis

System Validation of Millimeter-Wave Beam Multiplexing with Interleaved Hybrid Beam-forming Antennas
Atsushi Honda, Shohei Ishikawa, Kazuyuki Ozaki, Shunsuke Fujio, Kenichi Nishikawa, Zhengyi Li, Chikara Kojima, Toshihiro Shimura, Hiroshi Ashida, Takenori Ohshima, Masahiko Shimizu and Yoji Ohashi

Transmitter Design for Analog Beamforming Aided Spatial Modulation in Millimeter Wave MIMO Systems
Ming-Chun Lee and Wei-Ho Chung

On the Performance of Millimeter Wave-based RF-FSO Links with HARQ Feedback
Behrooz Makki, Tommy Svensson and Mohamed-Slim Alouini

TuD2: Coding, Transport and Routing solutions for Wireless Networks

Room: Auditorium 3b
Chair: Ramón Agüero

Efficient Scheduling to Reduce Latency for Signaling Traffic using CMT-SCTP
Johan Eklund, Anna Brunstrom and Karl-Johan Grinnemo

Transmission of Scalable Video Coding over Heterogeneous Cellular Networks
Mojtaba Ghermezcheshmeh, Vahid Shah-Mansouri and Mohammad Ghanbari

Q-SWiM: QoE-based Routing algorithm for SVC Video Streaming over Wireless Mesh Networks
Tran Anh Quang Pham, Kandaraj Piamrat, Kamal Deep Singh and César Viho

Performance and Complexity of Tunable Sparse Network Coding with Gradual Growing Tuning Functions over Wireless Networks
Pablo Garrido, Chres W. Sørensen, Daniel E. Lucani and Ramón Agüero

Study of the enhanced algorithm for control information dissemination in Wi-Fi Mesh networks
Andrey Belogaev, Evgeny Khorov, Artem Krasilov and Andrey Lyakhov

TuD3: Spectrum Sensing and User Selection in Cognitive Radio Networks

Room: Room 1
Chair: Rapeepat Ratasuk

Wireless Power Transfer Based Spectrum Leasing with User Selection in Cognitive Radio Networks
Chao Zhai, Ju Liu, Lina Zheng and Xinhua Wang

Secure Transmission via Jamming in Cognitive Radio Networks with Possion Spatially Distributed Eavesdroppers
Xiang Hu, Xing Zhang, Haozhou Huang and Yongjing Li

Sparse Spectrum Sensing in Infrastructure-less Cognitive Radio Networks via Binary Consensus Algorithms

Mohamed Seif Eldin Mohamed, Tamer ElBatt and Karim G Seddik

Embedded primary users identification and channel estimation for underlay cognitive radio network based on Compressive sensing
Imen Sahnoun, Inès Kammoun and Mohamed Siala

TuD4: Small cells and HetNets

Room: Room 2
Chair: Adrian Agustin

Almost Blank Subframes versus Partially Shared Deployment in Heterogeneous Networks
Ararat Shaverdian, Santhana Krishnan and Catherine Rosenberg

A Source-Destination Based Dynamic Pricing Scheme to Control Congestion in Heterogeneous Wireless Networks
Jeremiah Mutungi and Olabisi Emmanuel Falowo

Load-Balanced User Association and Resource Allocation Under Limited Capacity Backhaul for Small Cell Networks
Chia-Yu Wang, Pei-Rong Li, Chia-Lin Tsai and Kai-Ten Feng

Energy Efficiency Optimization in OFDMA Heterogeneous Networks with RF Energy Harvesting
Zhiqiang Chen, Xiangming Wen, Zhaoming Lu, Wenpeng Jing, Zeguo Xi and Kun Chen

Radio Resource Allocation with Proportional-Fair Energy Efficiency Guarantee for Smallcell Networks
Wenpeng Jing, Xiangming Wen, Zhaoming Lu, Zhiqun Hu and Tao Lei

TuD5: OFDM 2

Room: Room 3
Chair: Felip Riera-Palou

Characterizing and Optimizing the Throughput of FFR/SFR-aided OFDMA Networks
Jan Garcia-Morales, Guillem Femenias and Felip Riera-Palou

Ultra-multi-amplitude-level BPSK based SSB-DFTs-OFDM to Achieve Higher Spectrum Efficiency
Hirokazu Fusayasu, Shigeki Nihei, Masahiro Umehira, Jun-ichi Abe and Jun Mashino

Atomic-Norm for Joint Data Recovery and Narrow-Band Interference Mitigation in OFDM Systems
Hanan Al-Tous, Imad Barhumi and Naofal Al-Dhahir

Performance Evaluation of Filterbank Multicarrier Systems in an Underwater Acoustic Channel
Mohammud Junaid Bocus, Angela Doufexi and Dimitris Agrafiotis

TuD6: Energy Harvesting and Smart Grids

Room: Room 4
Chair: David González G

Energy Outage and Achievable Throughput in RF Energy Harvesting Cognitive Radio Networks
Shanai Wu, Yoan Shin, Jin Young Kim and Dong In Kim

Spatial Throughput of Energy Harvesting Cognitive Radio Networks
Xiao Yang, Min Sheng, Hongguang Sun, Xijun Wang and Jiandong Li

Reducing the impact of solar energy shortages on the wireless access network powered by a PV panel system and the power grid
Margot Deruyck, Daniela Renga, Michela Meo, Luc Martens and Wout Joseph

Battery State Based Power and Time Allocation in Wireless Powered MIMO Uplink Transmission
Liqin Shi, Liqiang Zhao and Kai Liang

Holistic Link Quality Estimation-based Routing Metric for RPL Networks in Smart Grids
Sana Rekik, Nouha Baccour, Mohamed Jmaiel and Khalil Drira

TuD7: Physical Layer Security 2

Room: Room 5
Chair: Bernard Uguen

Physical Layer Security with Hostile Jammers and Eavesdroppers: Secrecy Transmission Capacity
Chenzhi Si, Hongguang Sun, Min Sheng, Xijun Wang and Jiandong Li

Transmission mode selection scheme for Physical Layer Security in Multi-user Multi-relay systems
Asma Mabrouk, Kamel Tourki and Nouredine Hamdi

Secure Communications for SWIPT over MIMO Interference Channel
Shiqi Gong, Chengwen Xing, Fei Zesong and Jingming Kuang

Secrecy Throughput Maximization for Millimeter Wave Systems with Artificial Noise
Ying Ju, Hui-Ming Wang, Tong-Xing Zheng, Yi Zhang, Qian Yang and Qinye Yin

TuD8: Performance Analysis in Wireless Communications

Room: Room 6+7
Chair: Ana Garcia Armada

On the Symmetric α -Stable Distribution with Application to Symbol Error Rate Calculations
Hamza Soury and Mohamed-Slim Alouini

An Exact Power Series Formula of the Outage Probability with Noise and Interference over Generalized Fading Channels
Nadhir Ben Rached, Abla Kammoun, Mohamed-Slim Alouini and Raul Tempone

Approximate Capacity Formulas for Generalized Fading Radio Channels
Natalia Ermolova

BER Analysis of Asynchronous and non Linear FBMC Based Multi-Cellular Networks
Brahim Elmaroud, Mohamed Abbad and Driss Aboutajdine

Modeling and Throughput Analysis of Distributed WiFi Networks
Shweta Suresh Sagari, Krishna Balachandran, Joseph Kang, Mehmet Kemal Karakayali and Kiran M Rege

Wednesday, September 7

Wednesday, September 7, 09:00 - 09:50

WeA0: Plenary 3. Part I

Enabling the Internet of Things with NB-IoT
Mabel Pous-Fenollar (New Technologies & Innovation Manager at VF Group, London, UK)

Room: Auditorium 2

Abstract:

Today's M2M technologies only partially address some key verticals, limiting new IoT business opportunities. Narrow Band Internet of Things (NB-IoT) is a radio access technology that has been standardised in 3GPP Rel13 that will enable telecom industry to extend the existing products and services to address the key Low Power Wide Area requirements, battery, coverage and cost. In the last two year Vodafone has champion the technology with Huawei and has become the industry thought leaders, completing the first pre-standard NB-IoT field trial and developing a 3GPP global standard. Vodafone will present their experience on the technology and plans to continue to lead in this space.

Short Bio:

Mabel has recently been appointed to Head of Strategy in Group Technology. Mabel's career with Vodafone began nearly 10 years ago when she joined Vodafone Ireland as a network optimisation engineer, later moving into customer experience management and the introduction of Vodafone first CEM system. Mabel became optimisation manager, and played a major role in helping Ireland to achieve network leadership - Vodafone Ireland's data performance moved from last to 1st within 3 months of Mabel taking on the role. Following a year spent helping VHA to improve network performance in Australia, Mabel joined Vodafone UK to manage network performance in London, including optimisation of 4G when it was first launched. In 2015 she moved to Vodafone Group to manage the New Technologies and Innovation team within the Networks organisation where she has been critical to the success of 4GFi, Crowd Cell and other key initiatives such as Narrow Band IoT. Prior to joining Vodafone, Mabel was an Accenture Consultant in Madrid and London. Mabel earned her first degree in Electronic Engineering from Universidad de Valencia, Spain, and then undertook a two year Masters by Research with the Cork Institute of Technology in Ireland.

Wednesday, September 7, 09:50 - 10:40

WeA0: Plenary 3. Part II

Heterogeneous V2X Networks for Connected and Automated Vehicles
Javier Gozálvez (Univ. Miguel Hernández, Elche, Spain)

Room: Auditorium 2

Abstract:

Connected vehicles will rely on V2X communications to improve traffic safety and management. V2X communications can also facilitate the development of cooperative driving and sensing applications for automated vehicles. The automotive industry is currently working to deploy connected vehicles that will initially rely on the IEEE802.11p/ITS-G5 standard. At the same time, the cellular industry has started the evolution of 4G LTE standards to integrate V2X communications, and has identified the automotive sector as one of the key verticals in the development of 5G. A massive deployment of connected and automated vehicles demand the capacity to provide reliable, scalable, and low-latency V2X communications. Providing such levels of quality of service is a challenge, and this keynote will discuss the need, opportunities and challenges for heterogeneous V2X networks to support connected and automated vehicles.

Short Bio:

Javier Gozálvez received an electronics engineering degree from the Engineering School ENSEIRB (Bordeaux, France), and a PhD in mobile communications from the University of Strathclyde, Glasgow, U.K. Since October 2002, he is with the Universidad Miguel Hernández de Elche (UMH), Spain, where he is currently an Associate Professor and Director of the UWICORE laboratory. At UWICORE, he leads research activities in the areas of vehicular networks, multi-hop cellular networks and D2D communications, and wireless industrial networks. He has published over 125 papers in international conferences and journals. He has received several awards at international and national conferences, the best research paper award from the Journal of Network and Computer Applications (Elsevier) in 2014, and the Runner-up prize for the "Juan López de Peñalver" award of the Royal Academy of Engineering in Spain that recognizes the most notable Spanish engineers aged below 40. He is an elected member to the Board of Governors (2011-2016) and 2016 President of the IEEE Vehicular Technology Society (IEEE VTS). He was an IEEE Distinguished Lecturer for the IEEE VTS, and currently serves as Distinguished Speaker. He currently serves as Mobile Radio Senior Editor of the IEEE Vehicular Technology Magazine, and on the Editorial Board of the Computer Networks journal. He was the General Co-Chair for the IEEE VTC-Spring 2015 conference in Glasgow (UK), ACM VANET 2013, ACM VANET 2012 and ISWCS 2006, and TPC Co-Chair for 2011 IEEE VTC-Fall and 2009 IEEE VTC-Spring.

Wednesday, September 7, 11:10 - 12:50

WeB1: Millimetre-Wave Channel Sounding and Modeling 1

Room: Auditorium 3a
Chair: Reiner S. Thomä

mm-Wave Channel Sounding Using a Fully Programmable SoC
Jan Erik Håkegård, Helge Rustad, Isabelle Tardy, Tor A Myrvoll and Vidar Ringset

Ultrawideband VNA Based Channel Sounding System for Centimetre and Millimetre Wave Bands
Johannes Hejselbæk, Wei Fan and Gert Pedersen

E-Band Millimeter Wave Indoor Channel Characterization
Aliou Bamba, Francesco Mani and Raffaele D'Errico

Spatio-Temporal Channel Sounding in a Street Canyon at 15, 28 and 60 GHz
Reza Naderpour, Joni Vehmas, Sinh Nguyen, Jan Järveläinen and Katsuyuki Haneda

Millimeter-Wave Channel Model Parameters for Urban Microcellular Environment Based on 28 and 38 GHz Measurements
Jae-Joon Park, Jinyi Liang, Juyul Lee, Heon Kook Kwon, Myung-Don Kim and Bonghyuk Park

WeB2: Transceiver Design 1

Room: Auditorium 3b
Chair: Angela Doufexi

A Low Complexity Detector with MRC Diversity Reception for MCIK-OFDM
Eleftherios Chatziantoniou, James Crawford and Youngwook Ko

Graph-Based Detectors for Filter Bank Multicarrier Systems
Fangyu Cui, Minjian Zhao and Jie Zhong

A New Digital Communications Receiver Using Partial Knowledge of the Channel State Information
Arafat Al-Dweik, Youssef Iraqi and Mohammed Al-Mualla

Coherent Detection in a Receive Diversity PLC System Under Nakagami-m Noise Environment
Soumya Prakash Dash, Ranjan K. Mallik and Saif Khan Mohammed

Optimum Receiver Filter for a Noise-based Frequency-Offset Modulation System

Ibrahim Bilal, Arjan Meijerink and Mark J. Bentum

WeB3: Vehicular Communications 1

Room: Room 1
Chair: Baldomero Coll-Perales

Propagation Experiment on Millimeter Wave for High-speed Rail Trains
Tetsunori Hattori and Tsukasa Kudo

Radar Cross Section Measurement with 77 GHz Automotive FMCW Radar
Seongwook Lee, Seokhyun Kang, Jae-Eun Lee and Seong-Cheol Kim

Hardware Testbed for Sidelink Transmission of 5G Waveforms without Synchronization
David Garcia-Roger, Josue Flores de Valgas, Nicolo Incardona, Jose F Monserrat and Narcis Cardona

Methods for Downlink Performance Enhancement in HST SFN
Fankui Lin, Chang Yongyu, Xizeng Dai, Qiming Li and Li Anjian

A Cooperative Relay Selection Scheme in V2V Communications under Interference and Outdated CSI
Petros S. Bithas, George Efthymoglou and Athanasios G. Kanatas

WeB4: Ultra Dense Networks

Room: Room 2
Chair: Lorenza Giupponi

An Efficient Sounding Protocol for Multi-User MIMO in IEEE 802.11ax WLAN
Toshihisa Nabetani, Hiroki Mori and Tsuguhide Aoki

Uplink Reference Signals Enabling User-Transparent Mobility in Ultra Dense Networks
Xavier Gelabert, Christer Qvarfordt, Mario Costa, Petteri Kela and Kari Leppanen

Joint User Scheduling and Transmit Direction Selection in 5G TDD Dense Small Cell Networks
Sandra Lagen, Adrian Agustin and Josep Vidal

Long-term Provisioning of Radio Resources Based on their Utilization in Dense OFDMA Networks
Sandra Lagen, Olga Muñoz-Medina, Antonio Pascual-Iserte, Josep Vidal and Adrian Agustin

Game-Theoretic Hierarchical Resource Allocation in Ultra-Dense Networks
Yuanfei Liu, Ying Wang, Yuan Zhang, Ruijin Sun and Lisi Jiang

WeB5: Caching, Multi-Cell and Software Defined Networks (SDN)

Room: Room 3
Chair: Faouzi Bader

Optimizing The Service Capacity of SDN-based Cellular Networks with Service Chaining and NFV
Rung-Hung Gau, Hsiao-Ting Chiu and Pei-Kan Tsai

OpenE2EQoS: Meter-based Method for End-to-end QoS of multimedia services over SDN
Tsungnan Lin, Yang-Ming Hsu, Sheng-Yi Kao and Po-Wen Chi

Real-time monitoring of SDN networks using non-invasive cloud-based logging platforms
Bartlomiej Siniarski, Philip A Perry, Cristian Olariu, John Murphy and Trevor Parsons

Power Allocation and Receive Antenna Selection Algorithm in Multi-cell Cooperative Networks
Chao Meng, Wei Heng, Wang Gang, Tian Liang and Jinming Hu

A Collaborative Caching Scheme with Network Clustering and Hash-routing in CCN
Weiyuan Li, Yang Li, Wei Wang, Yonghui Xin and Yuemei Xu

WeB6: Resource and Interference Management in Wireless Networks

Room: Room 4
Chair: Celimuge Wu

Mobility-aware Scheduler in CoMP Systems
Nivine Abbas, Thomas Bonald and Berna Sayrac

Joint real-time scheduling and interference coordination for wireless factory automation
Sébastien Auroux, Donald Parruca and Holger Karl

Inter-WBANs Interference Mitigation Using Orthogonal Walsh Hadamard Codes
Mohamad Ali, Hassine Moungla, Mohamed Younis and Ahmed Mehaoua

Resource Allocation with Interference Information Sharing in Multi-Carrier Networks
Marco Schito, Hamid Reza Barzegar and Luca Reggiani

Sparse Multi-User Detection for Non-Orthogonal Multiple Access in 5G Systems
K. HE, Y. Li and Changchuan Yin

WeB7: Applications

Room: Room 5
Chair: Pau Arce

A Mobile App for Real-Time Testing of Path-Loss Models and Optimization of Network Planning
David Plets, Roel Mangelschots, Kris Vanhecke, Luc Martens and Wout Joseph

A Novel Dynamic Adaptive Video Streaming Solution in Content-Centric Mobile Network
Yiran Wei, Changqiao Xu, Mu Wang and Jianfeng Guan

Cross Video HTTP Adaptive Streaming for Short Video Improvement
Xiaoli Wang and Atsushi Minokuchi