
Special Interest Groups (SIG) on sensing, communications, caching, and computing (C³) in cognitive networks

Prof. Li Wang

Email: liwang@bupt.edu.cn

Beijing university of Posts and telecommunications

IEEE ComSoc SIG on Sensing and C³
in Cognitive Networks

Outline

- 1 **Overview**
- 2 Members of Our SIG
- 3 Finished Activities
- 4 Plan and Ongoing Activities

Special Interest Groups (SIG)
on Social Behaviour Driven
Cognitive Radio Networks



Special Interest Groups (SIG)
on sensing, communications,
caching, and computing (C³)
in cognitive networks

SIG: sensing, communications, caching, and computing (C³) in cognitive networks

➤ Scope and Objectives

- Interplay between Social science and Wireless Communications
 - Mobility and Social behaviours of mobile users trigger more applications
 - Smart applications affect social behaviors of mobile users as well
- Exploit social behaviors and improve spectrum utilization to provide more flexibility in networking

➤ Critical technical problems

- How to **sense and understand** social behaviours and diverse applications characteristics?
- How to formulate and **utilize human-device interactions** to boost communication performance?
- How to facilitate the benefits of considering social behaviours and application characteristics from multi-dimensional resources, e.g., **caching and computing**?

Goal: Provide a platform for exploiting social science into cognitive radio networks by exploring and providing more new dimensions.

New goal: interplay among **sensing, communications, caching, and computing (C³) in cognitive networks.**

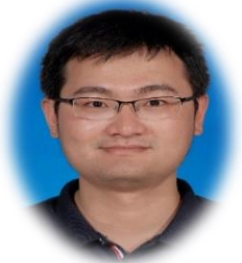
Members of SIG

➤ Chair:

- Dr. Li Wang, Professor, liwang@bupt.edu.cn
- Beijing University of Posts and Telecommunications (BUPT), China



➤ Vice-Chair



- Yongpeng Wu
Shanghai Jiaotong University,
China
yongpeng.wu@sjtu.edu.cn

- Giuseppe Araniti
University Mediterranea of
Reggio Calabria, Italy
araniti@unirc.it



- Trung Q. Duong(PhD Sep. 2012)
Queen's Uni. Belfast, UK
trung.q.duong@gmail.com

- Bo Bai
Future Network Theory Lab,
2012 Labs, Huawei Technologies
Co., Ltd., HongKong
ee.bobbai@gmail.com ;
baibo8@huawei.com



Outline

- 1 Overview
- 2 Members of Our SIG**
- 3 Finished Activities
- 4 Plan and Ongoing Activities

Members of SIG

➤ **Chair:** Prof. Li Wang, liwang@bupt.edu.cn, BUPT, China

➤ **Research Interests:**

- Wireless communications
- Cognitive radio and networks
- Emergency Communications
- Edge caching and computing
- Device-to-device communications
- Social networking

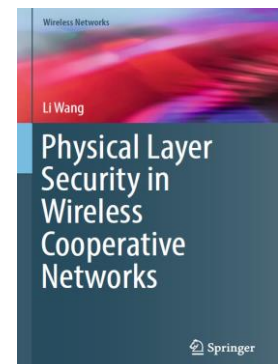
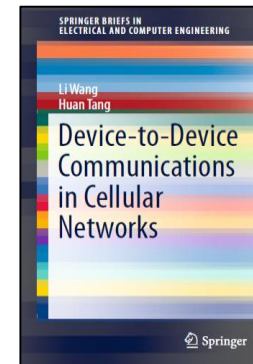
➤ **Professional Activities:**

- Published 3 books and 1 book chapter, and more than 80 journal and conference papers, as well as more than 40 patents
- Editor for IEEE Transactions on Vehicular Technology、IEEE TGCN、Computer Networks、China Communications
- Associate Editor for IEEE Access and lead guest editors
- Symposium co-chair of IEEE ICC 2019 on Cognitive Radio and Networks Symposium
- Vice chair of IEEE ComSoc APB MCC
- Tutorial Chair of IEEE VTC-Fall 2019
- Co-chair of Special session on Signal Processing and Networking for IoT
- Invited Speaker for IEEE IECON 2017
- Serving as TPC members of several IEEE conferences, e.g., IEEE INFOCOM, GLOBECOM, ICC, WCNC.

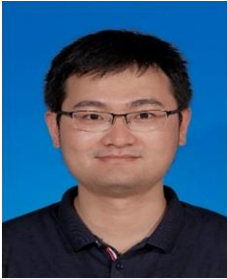


➤ **Awards:**

- Best paper award of WCSP 2019
- Best paper award of Globecom 2018
- Demo award of ICC 2018
- Best paper award of ICC 2017
- Best paper runner up of WASA 2015
- The 2013 Beijing Young Elite Faculty for Higher Education Award



➤ Vice-Chair



Yongpeng Wu
Shanghai Jiaotong University, China
yongpeng.wu@sjtu.edu.cn

➤ Research Interests

- Massive MIMO/MIMO systems;
- Physical layer security;
- Signal processing for wireless communications;
- Multivariate statistical theory.

➤ Professional Activities

- An Exemplary Reviewer of the IEEE Transactions on Communications in 2015, 2016;
- The lead guest editor for the special issue "Physical Layer Security for 5G Wireless Networks" of the IEEE JSAC;
- Editor of the IEEE Access and IEEE Communications Letters;
- TPC member of IEEE Globecom, ICC, VTC, and PIMRC, etc;
- ...

➤ Awards

- Awarded the IEEE Student Travel Grants for IEEE (ICC) 2010;
- The Alexander von Humboldt Fellowship in 2014;
- The Travel Grants for IEEE Communication Theory Workshop 2016;
- The Excellent Doctoral Thesis Awards of China Communications Society 2016.

➤ Vice-Chair



Giuseppe Araniti
University Mediterranea of Reggio Calabria, Italy
araniti@unirc.it

➤ Research Interests

- Wireless and mobile 5G communication networks
- Machine type Communications
- Device-to-Device communications
- Radio resource management
- Multicast/Broadcast services
- IoT and Nb-IoT communications

➤ Professional Activities

- Assistant professor at University Mediterranea of Reggio Calabria
- Associate Editor for IEEE Access, IEEE Transactions on Broadcasting, Guest Editor for several Special Issues
- Vice-Chair IEEE BTS Italy chapter
- Conference Technical Program Co-Chair IEEE BMSB'17 – IEEE BMSB'18
- Invited Speaker for IEEE 5G & IoT Summit – 2018
- Serving as TPC members of several IEEE conferences, including IEEE GLOBECOM, ICC, INFOCOM, PIMRC, etc.
- Published more than 140 scientific papers including IEEE international journals and conferences, book chapters and tutorial.
- Co-funder of University Spin-off (SMARTS srl) operating mainly in the field of quality of service (QoS) and quality of experience (QoE) testing for mobile 4G/5G networks.

➤ Awards:

- **Best Paper Award** of IEEE BMSB'17,
- **Best Paper Award** of IEEE ICUM'15,
- **Best Paper Award** of SPACOMM'09

➤ Vice-Chair



Trung Q. Duong (PhD Sep. 2012)

Queen's Uni. Belfast, UK

trung.q.duong@gmail.com

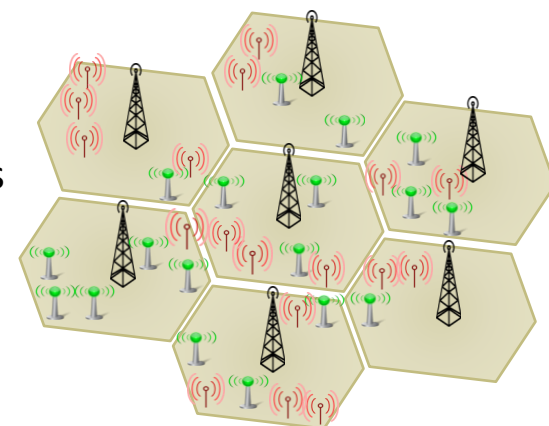
Assistant Prof. in Signal Processing for Communications

➤ Research Interests

- ✓ Applied mathematics, e.g., stochastic geometry, random process, game theory, optimization, in analyzing, modelling and optimizing the performance of networks:
 - 5G technologies: physical layer security, HetNets, small-cell, massive MIMO, mm-wave, ultra-dense cellular networks, energy harvesting communications
 - Disaster communications, molecular communications, smart grid

➤ Professional Activities and Awards

- Published 151 journals (including 113 IEEE Journals) and 130 conference papers.
- Secured research grants £2.5 million (£2 million as Principle Investigator and £0.5 million as Co-I) over the last 3 years
- Acting as Editor for major journals (IEEE Trans on Communications and IEEE Trans on Wireless Communications)
- Lead Senior Editor for IEEE Communications Letters
- Symposium Chair for Signal Processing for Communications of IEEE GLOBECOM 2016
- Acting as Guest Editor for 15 special issues (IEEE JSAC, IEEE Commun. Magazine, IEEE Wireless Commun., IET Communications, IEEE Access)
- Best Paper Award at IEEE DSP 2017, IEEE GLOBECOM 2016, IEEE ICC 2014 and IEEE VTC 2013
- Royal Academy of Engineering Research Fellowship (2016 – 2021)
- Newton Prize 2017



Secured and Energy-Efficient Small-Cell Networks

Senior Advisors



Prof. Lajos Hanzo, University of Southampton (Communications)

- IEEE fellow and IEE/IET fellow;
- Fellow of the [Royal Academy](#) of Engineering (FREng);
- A Governor of the IEEE VTS as well as of ComSoc;
- The Editor-in-Chief of the [IEEE Press](#);
- An IEEE Distinguished Lecturer of both the [Communications Society](#) and the [Vehicular Society](#) .
- The Honorary Doctorate “Doctor Honoris Causa”.
- The Doctor of Sciences (DSc) degree



Prof. Jie Wu, Temple University (Networking)

- IEEE fellow
- Director, International Affairs, College of Science and Technology (CST)
- Director, Center of Networked Computing, CST
- Laura H. Carnell Professor, Department of Computer and Information Sciences (CIS)
- A CCF Distinguished Speaker
- China Computer Federation (CCF) Overseas Outstanding Achievement Award

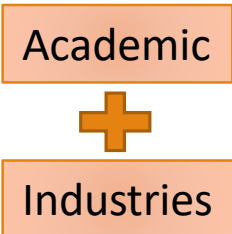


Prof. Zhu Han, University of Houston (Artificial Intelligence)

- IEEE fellow
- IEEE Distinguished Lecturer
- An NSF Career Award in 2010,
- The Fred W. Ellersick Prize of the IEEE Communication Society in 2011
- The EURASIP Best Paper Award for the Journal on Advances in Signal Processing in 2015
- IEEE Leonard G. Abraham Prize in the field of Communications Systems (best paper award in IEEE JSAC) in 2016, and several best paper awards in IEEE conferences

Founding Members

- Tommy Svensson, Chalmers University of Technology, tommy.svensson@chalmers.se
- Maurizio Murrone, University of Cagliari, Italy, m.murrone@ieee.org
- Lei Chen, Georgia Southern University, USA, lchen@georgiasouthern.edu
- Alessandro Raschellà, Liverpool John Moores University, Italy, ale.raschella@gmail.com
- Qingzhong Liu, Sam Houston State University, USA, liuqzsc@gmail.com
- Antonino Orsino, Ericsson Research, Finland, antonino.orsino@ericsson.com
- Guoru Ding, Southeast University, China, dr.guoru.ding@ieee.org
- Xiaojun Ruan, California State University, USA, xiaojun.ruan@csueastbay.edu
- Qing Yang, University of North Texas, USA, Qing.yang@unt.edu
- Massimo Condoluci, King' s College London, UK, massimo.condoluci@kcl.ac.uk
- Zhonghong Ou, Beijing University of Posts and Telecommunications, China, zhonghong.ou@bupt.edu.cn
- Kamel Tourki, Huawei, France, kamel.tourki@gmail.com
- Yuen, Singapore University of Technology and Design (SUTD), Singapore, yuenchau@sutd.edu.sg
- JakoChaub Hoydis, Nokia-Bell-Labs, France, jakob.hoydis@nokia-bell-labs.com
- Symeon Chatzinotas, University of Luxembourg, Luxembourg, Symeon.Chatzinotas@uni.lu
- Miaomiao Dong, City University of Hong Kong, mmdong2-c@my.cityu.edu.hk
- Tianyang Bai, Qualcomm Corporate R&D, USA, tianyangbai@gmail.com
- Yan Zhang, University of Oslo, Norway, yanzhang@ieee.org
- Qihui Wu, Nanjing University of Aeronautics and Astronautics, China, wuqihui2014@sina.com
- A. Nallanathan, Queen' s Mary University of London, UK, arumugam.nallanathan@kcl.ac.uk
- Octavia Dobre, Memorial University, Canada, odobre@MUN.CA
- Daniel Benevides da Costa, Federal University of Ceará, Brazil, danielbcosta@ieee.org
- Marco Di Renzo, CNRS - CentraleSupélec - Univ Paris-Sud, France, marco.di.renzo@gmail.com
- Himal A. Suraweera, University of Peradeniya, Sri Lanka, himal@ee.pdn.ac.lk
- Nghi H. Tran, University of Akron, USA, nghi.tran@uakron.edu
- Phee Lep Yeoh, University of Sydney, Australia, phee.yeoh@sydney.edu.au
- Jinhong Yuan, University of New South Wales, Australia, jinhong@ee.unsw.edu.au
- David López-Pérez, Bell Labs Alcatel-Lucent, Ireland, david.lopez-perez@nokia-bell-labs.com
- George C. Alexandropoulos, Huawei Technologies France, alexandg@ieee.org
- Kyeongjin Kim, Mitsubishi Electric Research Laboratories, USA, kkim@merl.com
- George K. Karagiannidis, Aristotle University of Thessaloniki, Greece, geokarag@auth.gr
- Le-Nam Tran, University College Dublin, Ireland, nam.tran@ucd.ie



Outline

- 1 Overview
- 2 Members of Our SIG
- 3 **Finished Activities**
- 4 Plan and Ongoing Activities

Finished Activities

Previous Work

Finished Activities: 22 items

IEEE Access (2016.11)	IEEE SPAWC (2017.07)
IEEE JSAC (2017.08)	International School on 5G Systems (2017.10)
IEEE Communications Magazine (2017.12)	IEEE BTS Young Professionals 2018 (2018.04)
IEEE Access (2017.10)	IEEE INFOCOM 2018 Workshop (2018.04)
IET Communications (2018.01)	EUROPEAN WIRELESS 2018 (2018.05)
IEEE Access (2018.01)	IEEE HotICN 2018 (2018.08)
MONET Journal (2018.10)	IEEE/CIC ICC 2018 (2018.08)
IEEE Access (2018.12)	IEEE GLOBECOM 2018 (2018.12)
IEEE JSAC (2018.12)	IEEE INFOCOM 2019 (2019.04)
IEEE Access (2019.03)	IEEE ICC Workshop 2019 (2019.05)
MONET Journal (2019.05)	
IEEE Wireless Communications (2019.10)	

12 Special Issues

10 Workshops

IEEE Access[®]

Multidisciplinary :: Rapid Review :: Open Access Journal



Associate Editor: Li Wang, Beijing University of Posts and Telecommunications, China

Guest Editors:

1. Giuseppe Araniti, University Mediterranea of Reggio Calabria, Italy
2. Yong Li, Tsinghua University, China
3. Tommy Svensson, Chalmers University of Technology, Sweden
4. Zhu Han, University of Houston, USA



Special Issue on: Socially enabled networking and computing

Paper submission: Contact Associate Editor and submit manuscript to:

<http://mc.manuscriptcentral.com/ieee-access>

For information regarding IEEE Access including its publication policy and fees, please visit the website

<http://www.ieee.org/ieee-access>



➤ **Topics of interest include:**

- Modelling of social behaviors and interactions toward efficient networking and/or computing
- Economy for social-aware networking and computing
- Socially enabled resource allocation in wireless networks
- Game theoretic formulation for networking and/or computing of interacting entities
- Socially-enhanced wireless networking technologies such as device-to-device (D2D) communications, Internet of Things (IoT), vehicular networks, LTE-U, and network virtualization
- Socially enabled mobile computing frameworks, algorithms and experiments
- Mobile cloud computing assisted by socially enabled techniques, such as offloading and caching
- Social-aware content sharing and distributed storage in mobile communications
- Privacy, trust and security for socially enabled networking and computing
- Mobile social networking systems and prototypes

<http://ieeaccess.ieee.org/special-sections-closed/socially-enabled-networking-computing/>

➤ IEEE JSAC:

- ✓ **Special Issue** on “Physical Layer Security for 5G Wireless Networks”

➤ Guest Editors

- ✓ Yongpeng Wu (Lead)

- Technical University of Munich
- yongpeng.wu2016@gmail.com

Vice Chair

- ✓ Ashish Khisti

- University of Toronto
- akhisti@ece.utoronto.ca

- ✓ Chengshan Xiao

- Missouri University of Science and Technology
- xiaoc@mst.edu

- ✓ Giuseppe Caire

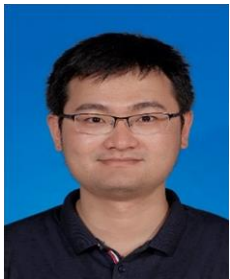
- Technical University Berlin
- caire@tu-berlin.de

- ✓ Kai-Kit Wong

- University College London
- kai-kit.wong@ucl.ac.uk

- ✓ Xiqi Gao

- Southeast University
- xqgao@seu.edu.cn





ABOUT

CONFERENCES

PUBLICATIONS

EDUCATION & CAREER

MEMBERSHIP

DIGITAL LIBRARY

STANDARDS



IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS

HOME » IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS HOME » CALL FOR PAPERS » PHYSICAL LAYER SECURITY FOR 5G WIRELESS NETWORKS

PHYSICAL LAYER SECURITY FOR 5G WIRELESS NETWORKS

➤ Research Interests:

- Fundamental aspects of physical layer security in 5G systems
- Security threats and countermeasures for massive MIMO technology
- Secure transmission in heterogeneous networks
- Security for millimeter wave communications
- Security for full duplex communications
- Security provisioning in NOMA
- Cross-layer design for secure communications
- Practical test beds for physical layer security

<https://www.comsoc.org/jsac/cfp/physical-layer-security-5g-wireless-networks>



Non-Orthogonal Multiple Access for 5G Systems

➤ **IEEE Access:**

- **Special Issue** on “Non-Orthogonal Multiple Access for 5G Systems”

➤ **Guest Editors:**

- Trung Q. Duong, Queen’s University Belfast, UK
- Zhiguo Ding, Lancaster University, UK
- Hui-Ming Wang, Xi’an Jiaotong University, China
- Kamel Tourki, Huawei France Research Center, France
- Naofal Al-Dhahir, University of Texas at Dallas, USA



Lead Guest Editor

➤ Topics

- Information theoretic perspective of NOMA
- New forms of NOMA
- Hybrid NOMA and multi-carrier NOMA
- Channel coding and modulation for NOMA
- Nonlinear precoding for NOMA
- Transceiver design in NOMA systems
- MIMO techniques for NOMA
- Resource allocation for NOMA
- Energy-efficient NOMA
- Millimeter-wave NOMA
- Cognitive networking with NOMA
- Security provisioning in NOMA
- Cross-layer design and optimization for NOMA
- Emerging applications of NOMA
- Integration of NOMA with other 5G key technologies
- Practical implementations of NOMA

IEEE COMMUNICATIONS MAGAZINE

HOME » IEEE COMMUNICATIONS MAGAZINE HOME » CALL FOR PAPERS » MULTI-ACCESS MOBILE EDGE COMPUTING FOR HETEROGENEOUS IOT

MULTI-ACCESS MOBILE EDGE COMPUTING FOR HETEROGENEOUS IOT

GUEST EDITORS

Funding member

Yan Zhang

University of Oslo, Norway

Email: yanzhang@ieee.org



Yuan Wu

Zhejiang University of Technology, China

Email: iewuy@zjut.edu.cn



Hassnaa Moustafa

Intel Corporation, USA

Email: hassnaa.moustafa@intel.com



Danny H.K. Tsang

Hong Kong University of Science and Technology, Hong Kong

Email: eetsang@ust.hk



Alberto Leon-Garcia

University of Toronto, Canada

Email: alberto.leongarcia@utoronto.ca



Usman Javaid

Vodafone, UK

Email: usman.javaid@vodafone.com



<http://www.comsoc.org/commag/cfp/multi-access-mobile-edge-computing-heterogeneous-iot>

➤ Topics

- Fundamental design issues in MA-MEC
 - Radio resource management for MA-MEC
 - Task scheduling and computation resource management for MA-MEC
 - Virtualization and network slicing for MA-MEC
 - Location and sizing of computation and storage elements for MA-MEC
 - Communication protocols and network architectures for MA-MEC
 - Security, privacy, and reliability in MA-MEC
 - QoE and QoS provisioning in MA-MEC
 - 5G/LTE/WiFi enabled MA-MEC
 - Energy management and green MA-MEC
 - Edge-to-cloud integration and protocols for MA-MEC
 - Human and social-driven design of MA-MEC
- MA-MEC for Heterogeneous IoT
 - MA-MEC for smart cities
 - MA-MEC for video/audio surveillance
 - MA-MEC for industrial IoT
 - MA-MEC for smart energy systems
 - MA-MEC for smart healthcare
 - MA-MEC for intelligent transportation systems
 - MA-MEC for big data analytics

IET *Communications*

SPECIAL ISSUE ON:

Recent Advances on 5G Communications

Guest Editors:

Trung Q. Duong

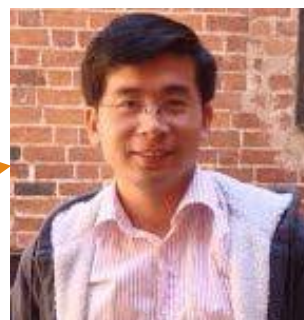
Queen's University Belfast, UK

E: trung.q.duong@qub.ac.uk

Vo Nguyen Quoc Bao

Posts and Telecommunications Institute
of Technology, Vietnam

E: baovnq@ptithcm.edu.vn



Lead Guest Editor

Hien Quoc Ngo

Linköping University, Sweden

E: hien.ngo@liu.se

Nguyen-Son Vo

Duy Tan University, Vietnam

E: vonguyenson@dtu.edu.vn

➤ Topics

- Mm-wave communications
- Full-duplex communications
- Energy harvesting communications
- Non-orthogonal multiple access (NOMA)
- Massive MIMO and cell-free massive MIMO
- Ultra-dense cellular networks
- Device-to-device communications
- Distributed caching in wireless communications
- Principles, algorithms, and test-bed for telecommunications networks

IEEE Access[®]

Modelling, Analysis, and Design of 5G Ultra-Dense Networks

➤ IEEE Access:

- **Special Issue** on “Modelling, Analysis, and Design of 5G Ultra-Dense Networks”

➤ Guest Editors:

- Trung Q. Duong, Queen’s University Belfast, UK
- Muhammad Ali Imran, University of Glasgow, UK
- Hien Quoc Ngo, Linköping University, Sweden
- Nan Yang, Australian National University, Australia
- Octavia A. Dobre, Memorial University, Canada



Lead Guest Editor

➤ Topics

- Network optimization: advanced architectures, self-organizing protocols, resource allocation, user-base station association, synchronization, and signaling
- Backhaul traffic aspects in ultra-dense networks: backhaul capacity and latency limitations, and limited centralized processing power
- Cell-free massive MIMO, distributed massive MIMO, and heterogeneous small cell architectures
- Ultra-dense network with mmWave technology
- Mobility, handoff control, and interference management
- New applications of IoT: smart-grid, smart-city, etc
- Load balancing schemes and energy saving techniques
- Transceiver hardware impairments and power consumption models in ultra-dense networks
- Wireless caching techniques, physical layer security, cognitive radio, energy harvesting, full-duplex, and D2D communications in ultra-dense networks
- Novel modulation, coding and waveforms designs
- Network measurements, implementations, and demos



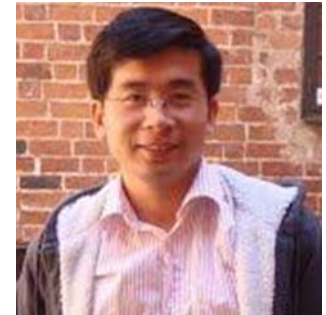
SPECIAL ISSUE ON Wireless Communications and Networks for 5G and Beyond

➤ MONET Journal:

- **Special Issue** on “Wireless Communications and Networks for 5G and Beyond”

➤ Guest Editors

- Trung Q. Duong, Queen’s University Belfast, UK
- Nguyen-Son Vo, Duy Tan University, Vietnam



Lead Guest Editor

➤ Topics:

- QoS/QoE mechanisms for wireless communications and networks
- 5G wireless heterogeneous networks: design and optimization
- Sensing technologies and applications for 5G
- 5G wireless communications and networks for surveillance and management
- 5G Cognitive networks and IoT
- Experimental results, prototypes, and testbeds of 5G wireless communications and networks
- Integration and co-existence of 5G wireless communication and network technologies
- Energy efficiency (harvesting and saving) wireless protocols and algorithms for 5G
- Security and privacy concerns in 5G wireless communications
- NOMA, full-duplex, massive MIMO
- Green 5G multimedia wireless networks



Molecular Communication Networks

➤ **IEEE Access:**

- **Special Issue** on “Molecular Communication Networks”

➤ **Guest Editors:**

- Trung Q. Duong, Queen’s University, UK
- Chan-Byoung Chae, Yonsei University, South Korea
- Andrew Eckford, York University, Canada
- Malcolm Egan, INRIA and INSA Lyon, France
- Arumugam Nallanathan, Queen Mary University of London, UK
- Marco Di Renzo, Paris-Saclay University, France



Lead Guest Editor

➤ Topics

- Theoretical Modeling (e.g., channel modeling, transmitter and receiver device modeling)
- Architectures, Protocols, Optimal Design (e.g., modulation design, channel parameter estimation, detection, inter-symbol interference mitigation)
- Transmitter/Receiver Mechanisms & Components
- Multi-scale and experimental analysis of Molecular Communication Networks
- Simulation Tools (e.g., tools, models, and approaches for developing simulation packages for Molecular Communication Networks)
- Interoperability between Molecular Communication Networks and other systems (e.g., Internet of Nano Things, Internet of Bio-Nano Things, Intra-body communication, Body Area Nano-networks)
- Implementation techniques and for Molecular Communication Networks (e.g., exploiting Nanotechnology and Nanobioscience)
- Power Sources and Energy efficiency models for Molecular Communication Networks
- Security in Molecular Communication Networks
- Potential Applications for Molecular Communication Networks

➤ IEEE JSAC:

- **Special Issue Series** on “Network Softwarization & Enablers”

➤ Guest Editors

Dr. Adlen Ksentini, Eurecom, France

Prof. Akihiro Nakao, The University of Tokyo, Japan

Prof. Alex Galis, University College London, UK

Dr. Antonio Manzalini, Telecom Italia, Italy

Dr. Bo Bai, Huawei Technologies, Hong Kong

Dr. Dutta Ashutosh, AT&T, USA

Dr. Ejaz Ahmed, National Institute of Standards and Technology, USA

Dr. Hideki Tode, Osaka Prefecture University, Japan

Dr. Husain Rehmani, Waterford Institute of Technology (WIT), Ireland

Dr. Javid Taheri, University of Karlstad, Sweden

Dr. Kashif Mahmood, Telenor, Norway

Dr. Konstantinos Samdanis, Huawei, Germany

Vice Chair



Prof. Martin Casado, Stanford University, USA

Dr. Miloud Bagaa, Aalto University, Finland

Prof. Min Chen, Huazhong University of Science and Technology, China

Dr. Mohammad Aazam, Carnegie Mellon University, Qatar

Prof. Nidal Nasser, Alfaisal University, Saudi Arabia

Dr. Ori Rottenstreich, Princeton University, USA

Prof. Robert Ricci, University of Utah, USA

Dr. Shahid Mumtaz, Instituto de Telecomunicações, Portugal

Dr. Teruyuki Hasegawa, KDDI, Japan

Prof. Toktam Mahmoudi, Kings College London, UK

Prof. Wei Wang, Electronic Engineering Zhejiang University, P.R. China

Dr. Zarrar Yousaf, NEC Europe Laboratories, Germany

IEEE JOURNAL ON **SELECTED AREAS IN COMMUNICATIONS**

Series on Network Softwarization & Enablers

➤ **Research Interests:**

- RAN slicing
- Mobile core networks and their slicing
- Fixed network slicing
- Slice programmability, modeling, composition, algorithms and deployment
- System/service orchestration and management
- Network function decomposition
- Network function virtualization
- Service function chaining
- Resource sharing, isolation, and federation
- Software defined networking
- Cloud computing technologies
- Virtualization techniques
- (mobile/multi-access) edge and fog computing
- MEC-, SDN-, NFV-based network service enhancement
- Service, slice, and infrastructure monitoring
- Performance, interoperability, and scalability issues
- Security, trust, and privacy issues in virtualized environment
- Best practices from experimental testbeds, trials and deployment
- Verticals, new value chains and business models

➤ IEEE Access:

- **Special Issue** on “D2D Communications: Security Issues and Resource Allocation”

➤ Guest Editors

- **Dr. Li Wang (Lead)**
 - Beijing university of Posts and Telecommunications, BUPT, China
 - liwang@bupt.edu.cn
- **Dr. Mauro Fadda**
 - Electronic and Information Engineering at the University of Cagliari, Italy
 - mauro.fadda@diee.unica.it
- **Dr. Vlad Popescu**
 - Transilvania University of Brasov, Romania
 - vlad.popescu@unitbv.ro
- **Dr. Adrian Kliks**
 - Poznan University of Technology, Poland
 - adrian.kliks@put.poznan.pl
- **Dr. Alexander M. Wyglinski**
 - Associate Professor of Robotics Engineering at **Worcester Polytechnic Institute**, Worcester, MA, USA, as well as the Director of the Wireless Innovation Laboratory (WI Lab)
 - alexw@wpi.edu
- **Dr. Antonino Orsino**
 - Researcher at Ericsson Research, Finland
 - antonino.orsino@ericsson.com



➤ Topics

- D2D network performance evaluation;
- D2D network design;
- D2D communications for 5G networks;
- Cognitive radio and dynamic spectrum sharing for D2D deployment in TVWS;
- Spectrum regulation and management aspects for D2D networks;
- Energy and spectral efficiency;
- Software Defined Networks (SDN) and Software Defined Radio (SDR) for D2D communications;
- D2D standardization;
- Interference and power control;
- Radio resource allocation and scheduling;
- D2D non-orthogonal multiple access (NOMA) frameworks;
- Security and privacy for D2D communications;
- Vehicle-to-everything (V2X) communications;
- Machine-to-Machine (M2M) communications;
- Novel services and applications;
- Biologically-inspired techniques for D2D spectrum management
- Deep and reinforcement learning for D2D;
- IoT architectures for D2D;
- Social networking for D2D;
- D2D sensor networks and cyber-physical systems;
- Visual light communications-based D2D;
- Satellite communications and deep space-based D2D networks;
- D2D test-beds, prototypes, and implementations.



SPECIAL ISSUE ON

Reliable Communication for Emerging Wireless Networks

➤ MONET Journal:

- **Special Issue** on “Reliable Communication for Emerging Wireless Networks ”

➤ Guest Editors

- Dr. Trung Q. Duong, Queen’s University Belfast, UK
- Dr. Chinmoy Kundu, University of Texas at Dallas, USA
- Dr. Antonino Masaracchia, University of Palermo, Italy
- Dr. Van-Dinh Nguyen, Soongsil University, Korea



Lead Guest Editor

➤ Topics:

- Ultra-reliable and low latency communication (URLLC)
- Massive machine-type communication(mMTC)
- New air interface design for 5G (New Radio(NR))
- QoS/QoE mechanisms for wireless communications and networks
- 5G wireless heterogeneous networks: design and optimization
- Sensing technologies and applications for 5G
- 5G wireless communications and networks for surveillance and management
- 5G Cognitive networks and IoT
- Experimental results, prototypes, and testbeds of 5G wireless communications and networks
- Integration and co-existence of 5G wireless communication and network technologies
- Energy efficiency (harvesting and saving) wireless protocols and algorithms for 5G
- Security and privacy concerns in 5G wireless communications
- NOMA, full-duplex, massive MIMO
- Green 5G multimedia wireless networks
- AI techniques for Wireless Communication and security
- mmWave Massive MIMO
- Hardware impairments affecting wireless communications

IEEE Wireless Communications

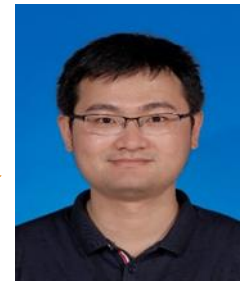
Safeguarding 5G-and-Beyond Networks with Physical Layer Security

➤ IEEE Wireless Communications:

- **Special Issue** on “Safeguarding 5G-and-Beyond Networks with Physical Layer Security”

➤ Guest Editors

- Nan Yang, Australian National University, Australia
- Yongpeng Wu, Shanghai Jiao Tong University, China
- Trung Q. Duong, Queen’s University Belfast, United Kingdom
- Robert Schober, Friedrich-Alexander University Erlangen-Nrnberg, Germany
- A. Lee Swindlehurst, University of California, USA



➤ Topics:

- Advances in the fundamental principles of physical layer security for 5G-and-beyond networks
- Physical layer security in co-located and distributed massive MIMO systems
- Secure transmission using physical layer characteristics at mmWave and THz frequencies
- Integration of physical layer security into FD systems
- Secure orthogonal and non-orthogonal connectivity to massive numbers of devices
- Lightweight, energy-efficient, and low-overhead physical layer secure transmission
- Other physical layer security techniques for eMBB, mMTC, and URLLC applications
- Prototype, testbed, and performance evaluation of physical layer security and key generation



Special Session 15: [Signal Processing and Networking for Internet-of-Things](#)

Organizer: **Prof. Kwang-Cheng Chen**, *University of South Florida, USA*

Prof. Li Wang, *Beijing University of Posts and Telecommunications, China*

Contributors: **Prof. Zhiyong Feng**, *Beijing University of Posts and Telecommunications, China*

Prof. Qihui Wu, *Nanjing University of Aeronautics and Astronautics, China*

Prof. Hongbo Zhu, *Nanjing University of Posts and Telecommunications, China*

Prof. Qimei Cui, *Beijing University of Posts and Telecommunications, China*

Prof. Kwang-cheng Chen, *University of South Florida, USA*



Organizer:



HOKKAIDO
UNIVERSITY

The 18th IEEE International Workshop on Signal Processing Advances in Wireless Communications, Hokkaido, Japan.

Copyright © 2017 IEEE SPAWC 2017. All rights reserved.

Finished activities

International School on 5G Systems



INTERNATIONAL SCHOOL Enabling Technologies, Applications, and Methods for Emerging 5G Systems

The School focuses on a program of lectures, assembled by experts in the area of 5G networks. The objective of this school is to teach the main features of emerging 5G technology from the networking perspective. Student will have the opportunity to participate in a stimulating forum of scientists, to present their own work, to obtain feedback and to start up collaborations. Lectures will provide background on 5G wireless communication concepts and particular emphasis will be placed on IoT paradigm, broadcast and multicast convergence in 5G network, D2D/M2M communications in 5G network. Through the course of the lectures, connections will be made to network architectures and protocols design, including radio resource management topics, while also introducing the mathematics associated with the analysis and optimization of wireless communication systems. The School is tailored towards Researchers, PhD, Masters, and Bachelor Students active or interested in future mobile networks. The School is held in the framework of the RUDN University Competitiveness Enhancement Program "5-100". The IEEE BTS Italy Chapter is technical co-organizer of the event. The School is also supported by the EUREKA student association from the University Mediterranea of Reggio Calabria.

ORGANIZING AND PROGRAMME COMMITTEE
Giuseppe Araniti (Italy); Konstantin Samouylov (Russia); Yevgeni Koucheryov (Finland); Sergey Andreev (Finland)

ORGANIZERS
University Mediterranea of Reggio Calabria – DIIES Dep. (Italy)
Peoples' Friendship University of Russia (RUDN University) (Russia)
Tampere University of Technology (Finland)
IEEE BTS Italy Chapter

October 2017
University Mediterranea of Reggio Calabria
REGGIO DI CALABRIA, ITALY

MARKETING-MEDITERRANEA

School Objective:

- Teach the main features of emerging 5G technologies from the networking perspective.
- Students had the opportunity to participate in a stimulating forum of scientists, to present their own work, to obtain feedbacks and to start up collaborations.

School Topics:

- Background on 5G wireless communication concepts,
- IoT paradigm,
- Broadcast/multicast convergence in next-generation networks,
- D2D/M2M communications in 5G networks.

School Organizers:

- **University Mediterranea of Reggio Calabria – DIIES Dep. (Italy)**
- Peoples' Friendship University of Russia (RUDN University) (Russia)
- Tampere University of Technology (Finland)
- IEEE BTS Italy Chapter



HOME

IEEE BTS YP

COMMITTEE

PROGRAMME

SPEAKERS

REGISTRATION

VENUE

CONTACTS

General Chair

Prof. Giuseppe Araniti

Vice Chair



General Co-Chair

Prof. Wout Joseph



Finance Chair

Dr. Pasquale Scopelliti



Local Arrangement Co-Chairs

Eng. Federica Rinaldi

Eng. Olga Vikhrova



Promotion Chair

Dr. Sara Pizzi





The First Workshop on the Age of Information - Call For Papers



➤ Workshop Organizers

- Yin Sun, Auburn University
- Anthony Ephremides, University of Maryland

➤ Technical Program Co-chairs

- Yin Sun, Auburn University
- Anthony Ephremides, University of Maryland
- **Bo Bai, Huawei** **Vice chair**



<http://www.itsoc.org/news-events/recent-news/the-first-workshop-on-the-age-of-information>

➤ Topics

- Age of Information Analysis and Optimization
- Age-based Source and Channel Coding
- Age of Information and Information Theory
- Real-time Signal Tracking and Estimation
- Age of Channel State Information
- Age of Information in Robotics and Control Systems
- Age of Information and Security
- Age of Information and Networking
- Age of Information and Game Theory
- Data Freshness in Caches and Databases
- Fresh Big Data
- Fresh Data for Online Learning
- Applications of Age of Information

CATANIA, ITALY
02-04 MAY 2018

EUROPEAN
WIRELESS
2018



EUROPEAN WIRELESS 2018

Organizers and contact information

Dr. Leonardo Militano

Mediterranea University of Reggio Calabria, Via Graziella,
Loc. Feo di Vito, 89122 Reggio Calabria, Italy
email: leonardo.militano@unirc.it

Dr. Giuseppe Araniti

Mediterranea University of Reggio Calabria, Via Graziella,
Loc. Feo di Vito, 89122 Reggio Calabria, Italy
email: araniti@unirc.it

Dr. Antonino Orsino

Ericsson Research, Hirsalantie 11, 02420 Jorvas, Finland
email: antonino.orsino@ericsson.com



Vice Chair

<http://ew2015.european-wireless.org/wp-uploads/2018/01/CFP-GET-IoTworkshop-2018.pdf>

➤ Topics

- 5G enabling technologies for the IoT
- Mobility of smart objects in 5G systems
- Radio resource management for NB-IoT bands
- Testbed development and real-world deployment of IoT use cases in 5G networks
- Short-range communications (i.e., D2D or Bluetooth) in IoT scenarios
- Long-range communications (i.e., NB-IoT, LTE Cat-M1, LoRa, Sigfox) in IoT scenarios
- Wireless caching in 5G networks to support IoT applications
- Trust & Security solutions for IoT in 5G networks
- Millimeter wave for the IoT
- Channel characteristics and modelling for the IoT
- Experiment reports of IoT in 5G networks
- Reports on IoT and 5G related standardization activities
- SDN and NFV in 5G networks for supporting the IoT
- Edge computing in 5G networks for the IoT
- Full-duplex communications for the IoT
- Cognitive Radio for M2M and IoT
- Short- and long-range communications as enabler for Human-Type-Communication, Machine-Type-Communications and vehicular networks

➤ 2018 IEEE International Conference on Hot Topics in Information Centric Network (IEEE HotICN 2018)

Industrial Forum & Exhibition Co-Chair: Dr. Bo Bai

➤ Objective:

- Information Centric Network
- Blockchain Technology
- Knowledge Graph



➤ Topics:

- ICN architecture and fundamentals
- ICN mobility
- ICN in Itoh
- Security Issues in ICN
- ICN performance and evaluation
- ICN-inspired applications and systems
- ICN analysis and theory
- Blockchain Technologies and Systems
- Distributed Consensus Algorithms
- Digital currency or Cryptocurrencies technologies
- Security, privacy and trust issues with blockchain schemes
- Performance and scalability optimization of blockchain system
- Testing, simulation, and modeling
- Smart contracts and distributed ledger applications
- Innovative applications with blockchain technique
- Information Extraction
- Information Retrieval
- Knowledge Representation
- Knowledge Graph Based Application

➤ 2018 IEEE/CIC International Conference on Communications in China (IEEE/CIC ICC 2018)

➤ Publication Co-Chairs::

- Li Wang (Beijing University of Posts and Telecommunications)
- Kan Zheng (Beijing University of Posts and Telecommunications)



➤ NGN: Next Generation Networking Co-Chairs:

- Cheng Li (Memorial University of Newfoundland)
- Bo Bai (Huawei Technologies Co., Ltd.)
- Tao Huang (Beijing University of Posts and Telecommunications)
- Wei Li (Northern Illinois University)
- Hongbin Luo (Beihang University)
- Sheng Zhou (Tsinghua University)

➤ WCS: Wireless Communications Systems Co-Chairs::

- Tommy Svensson (Chalmers University of Technology)
- Bo Ai (Beijing Jiaotong University)
- Qimei Cui ((Beijing University of Posts and Telecommunications)
- Linglong Dai (Tsinghua University)
- Min Sheng (Xidian University)

➤ Topics

- Future Internet Architecture and Design
- Next-Generation Access Networks
- Joint Access-Backhaul Network Design
- Moving Networks
- Software Defined Networking
- Information-Centric Networking, Peer-to-Peer Networking, and Social Networking
- Indoor Localization
- Data Center Networking, Network Virtualization and Services
- Network Convergence, Sustainability, and Resilience
- Privacy and Security Issues in NGN
- Network Planning and Management
- Network Service Provisioning, Measurement, and Management
- Interworking, Interconnection, Interoperability
- Issues of NGN
- Internet of Things (IoT), M2M, D2D, MTC
- Performance Evaluation
- Self-organization Networking
- Advanced equalization, channel estimation, and synchronization techniques
- Antennas, smart antennas, and space-time processing
- Broadband wireless access techniques, systems, and standards
- Channel modeling and propagation
- Cognitive communications
- Cross-layer design and physical-layer based network issues
- Device-to-device (D2D) and machine-to-machine (M2M) communications
- Digital broadcasting of audio (DAB), video (DVB), and multimedia (MBMS)
- Distributed, relay assisted, and cooperative communications
- Heterogeneous and small-cell networks
- Hybrid communication systems (e.g. satellite/terrestrial/wireline hybrids)
- Interference characterization and applications of stochastic geometry
- Interference management, alignment, and cancellation



IEEE Global Communications Conference
9-13 December 2018 // Abu Dhabi, UAE
Gateway to a Connected World

WS-14: 5G NR - 5G ADVANCED: THE NEXT EVOLUTION STEP OF 5G NR

➤ General Chairs

- Frank Schaich (Nokia Solutions and Networks GmbH)
- Marie-Helene Hamon (Orange Labs)
- Belkacem Mouhouche (Samsung R&D Institute UK)

➤ Technical Program Committee Chairs

- Gerhard Wunder (Freie Universität of Berlin)
- Tommy Svensson (Chalmers University of Technology)
- Panagiotis Demestichas (Piraeus University)
- Stelios Stefanatos (Freie Universität of Berlin)



TPC Chair

➤ Topics

- Advanced Massive MIMO/Beamforming solutions
- Antenna arrays other than rectangular arrays
- CRAN/DRAN based multi-node link management and interference coordination
- Related CRAN/DRAN architecture splits
- Non-Orthogonal Multiple Access (NOMA) and Random Access
- Efficient control and signaling schemes (for URLLC, mMTC)
- Native support of D2D, eV2X
- E2E performance optimization, advanced network control
- Novel context awareness and prediction framework
- Innovative MAC, RLC, PDPC and RRC concepts
- Novel content delivery techniques including caching
- Solutions for Self-Backhauling
- Broadcast (standalone Broadcast and mixed Broadcast/Unicast solutions)
- Autonomous driving applications (platooning, delivery drone etc.)
- Energy saving applications
- Healthcare applications
- Disaster relief applications
- Inclusion of optical wireless systems in mainstream cellular technology
- Flexible and efficient hardware transceiver implementation
- Spectrum management (licensed / unlicensed)



ABOUT

NEWS & EVENTS

CONFERENCES

PUBLICATIONS

RESOURCES

AWARDS & HONORS

COMMUNITY



The 2nd Age of Information Workshop



➤ Workshop Organizers

- Yin Sun, Auburn University
- Anthony Ephremides, University of Maryland

➤ Technical Program Co-chairs

- Yin Sun, Auburn University
- Bo Bai, Huawei



Co-Chair

➤ Topics:

- Age of Information Analysis and Optimization
- Age-based Source and Channel Coding
- Real-time Signal Tracking and Estimation
- Age of Channel State Information
- Age of Information in Robotics and Control Systems
- Age of Information and Security
- Age of Information and Networking Theory
- Age of Information and Game Theory
- Age of Information and Control Theory
- Age of Information and Information Theory
- Data Freshness in Caches and Databases
- Fresh Big Data
- Fresh Data for Online Learning
- Applications of Age of Information (e.g., Internet-of-Things (IoT), Cyber-Physical Systems (CPS), Vehicular/UAV Networks, etc.)

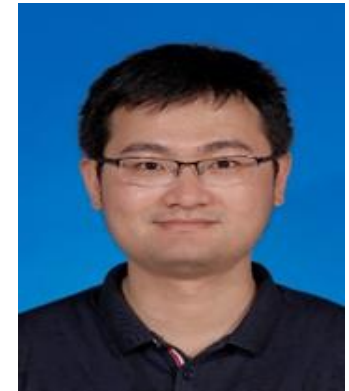


IEEE International Conference on Communications
20-24 May 2019 // Shanghai, China
Empowering Intelligent Communications

W10: PROPOSAL FOR IEEE ICC WORKSHOP ON ADVANCED MOBILE EDGE / FOG COMPUTING FOR 5G MOBILE NETWORKS AND BEYOND

➤ General Chairs

- Prof. Rose Qingyang Hu, Utah State University
- Dr. Peiyong Zhu, Huawei Canada
- Prof. Yongpeng Wu, Shanghai Jiaotong University



General Chair

➤ Technical Program Committee Chairs

- Prof. Victor C. M. Leung, University of British Columbia
- Prof. Fuhui Zhou, Nanchang University

➤ Topics:

- Energy-efficient network architectures for MEC/FC
- Energy-efficient resource allocation strategies for MEC/FC
- Energy-efficient resource sharing techniques for MEC/FC
- Energy-efficient wireless transmission techniques for MEC/FC
- Energy-efficient offloading techniques for MEC/FC
- Wireless charging techniques for MEC/FC
- Energy harvesting and offloading protocols for MEC/FC
- Energy management for MEC/FC
- Network slicing protocols for MEC/FC
- Resource allocation for MEC/FC with network slicing
- Energy-efficient design for MEC/FC with network slicing
- UAV-enabled techniques for MEC/FC
- Resource optimization for UAV-enabled MEC/FC
- Deep learning algorithms for MEC/FC
- Reinforcement learning for MEC/FC
- Deep reinforcement learning for MEC/FC
- Quality of computation provisioning in MEC/FC systems
- Cross-layer optimization for MEC/FC

Outline

- 1 Overview
- 2 Members of Our SIG
- 3 Finished Activities
- 4 **Plan and Ongoing Activities**

Schedule for Our SIG

➤ Workshops

- WCNC 2022, VTC 2022, ICC 2022, and Globecom 2022, etc.

➤ Special Issues

- IEEE JSAC, Trans. on Communications, Trans. on Wireless Communications, Trans. on Service Computing, Trans. on Information Theory, Trans. On Networking, Communication Mag., Signal Processing Mag., IEEE Access, etc.
 - The **first SI** on IEEE Access before **June. of 2022**;
 - **Two SIs** on IEEE Transactions on Cognitive Communications and Networks, IEEE Wireless Communications, or IEEE JSAC before **Dec. 2022**, and at the **beginning of 2023**, respectively.

➤ Organizing regular meetings

- During special sessions at related conferences (INFOCOM, ICC, GLOBECOM, etc.), on the personal web pages of the SIG organizers
- Through an email distribution list of potential members.

➤ Invited talks

- The possible candidates are Professors listed as follows
 - Prof. Xiang-Gen Xia at University of Delaware;
 - Prof. Chengshan Xiao at Lehigh University;
 - Prof Erik G. Larsson at Linkoping University;
 - Prof. Robert Schober at Erlangen University;
 - Prof. Zhi Ding at UC Davis.

*Thank you !
Welcome!*

SIG on Social Behaviour Driven Cognitive Radio Networks

Scope and Objectives

In the last two decades, cognitive radios have emerged as an efficient way to improve spectrum utilization and provide more flexibility in networking. A significant change in cognitive radio networks (CRNs) recently is putting social behaviour in the loop. Many social behaviours can be sensed and even predicted by the machine learning and artificial intelligence (AI) based smart applications. In this context, the social behaviour is a new driven force for better performance in CRNs. In addition, emerging smart applications can strongly affect social behaviour, which will be a new driven force for proposing new applications in CRNs as well. In this social behaviour driven CRNs, critical technical problems should be solved to realize the potential benefits, e.g., how to efficiently formulate and utilize human-device interactions to boost communication performance since the device holder are supposed to be mobile regularly, and how to facilitate the benefits of considering social behaviours and application characteristics from utilizing the devices' capability of caching and computing. Another major challenge is how to sense and understand social behaviours and application characteristics. In this SIG group, we provide a platform on the development of social behaviour driven CRNs to exploit and explore new dimensions.

Chair

Dr. Li Wang, BUPT, China

Vice-chairs

Dr. Giuseppe Araniti, University Mediterranea of Reggio Calabria, Italy

Dr. Bo Bai, Huawei Technologies Co., Ltd., HongKong

Dr. Trung Q. Duong, Queen's Uni. Belfast, UK

Dr. Yongpeng Wu, Shanghai Jiaotong University, China