SPECIAL ISSUE ON
Emerging Techniques and Applications for 5G Networks and Beyond

Overview:

As many as 50 billion devices will be connected to the Internet by 2020. It is predicted that the number of mobile-connected devices will exceed 11.5 billion by 2019 (nearly 1.5 mobile devices per capita), which poses a huge traffic demand for ubiquitous communications. It has been projected that the total volume of data traffic will nearly triple between 2016 and 2021, of which about 75% will originate from non-PC devices and about 42% of all connections will be for M2M communication between over 10 billion smart objects. It is anticipated that we will witness an up to 10000- fold growth in wireless data traffic by the year 2030. Predictions evidently indicates the skyrocketing demand on data traffic and applications for machine type communication such as self-driving vehicles, healthcare monitoring, smart cities and factories, and artificial intelligence-based personalized assistants along with traditional human-centric communications. Coexistence of human-centric and machine-type services as well as hybrids of these will make next generation wireless networks more diverse and complex. Current wireless radio access techniques are not capable of delivering these new applications and may pose a much higher security risk than the WiFi and 4G networks did. Without novel approaches, mobile networks will grind to a halt unless more capacity is added to mobile networks. In addition, in order to better support the Internet-of-Things (IoT) applications, many technical challenges need to be overcome in 5G and beyond including network architectures, network resource allocation schemes, and advanced signal processing techniques, etc. In addition, deep learning and AI techniques have been considered as promising approaches to unleash the full potential of 5G networks.

To overcome the aforementioned challenges of emerging wireless communications and networks for 5G and Beyond, this special issue focuses on (but are not restricted to) the following topics.

Topics

Topics of interest include, but are not limited to, the following scope:

− Advanced network architecture design for IoT towards 5G	− Data security, privacy and reliability for IoT towards 5G
− New air interface design for 5G (New Radio (NR))	− Energy efficiency (harvesting and saving) wireless protocols and algorithms for 5G and IoT
− Energy-efficiency in 5G for IoT applications 5G wireless heterogeneous networks: design and optimization	− Security and privacy concerns in 5G wireless communications
− Mobility management of 5G networks for IoT applications	− NOMA, full-duplex, massive MIMO
− 5G wireless communications and networks for surveillance and management	− Green 5G multimedia wireless networks
− 5G Cognitive networks and IoT	− Machine learning for resource allocation in wireless networks
− Experimental results, prototypes, and testbeds of 5G wireless communications and networks	− Deep reinforcement learning for wireless communications
	− Network planning, optimization and

− Ultra-reliable and low latency communication (URLLC)	learning theories for mmWave networks

Important Dates

- **Manuscript submission deadline:** 14th June 2019
- Notification of acceptance: 14th August 2019
- Submission of final revised paper: 1st October 2019
- Publication of special issue (tentative): December 2019

Submission Procedure

This MONET Half Special Issue will publish six selected high-quality extended papers from INISCOM 2019 http://iniscom.org/ and from the open call-for-papers. Authors should follow the MONET Journal manuscript format described at the journal site. Manuscripts should be submitted on-line through http://www.editorialmanager.com/mone/

Guest Editors:

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--- Guest Editors Bios ---

Trung Q. Duong received his Ph.D. degree in Telecommunications Systems from Blekinge Institute of Technology (BTH), Sweden in 2012. Since 2013, he has joined Queen's University Belfast, UK as an Assistant Professor. His current research interests include cooperative communications, cognitive radio networks, physical layer security, massive MIMO, cross-layer design, mm-waves communications, and localization for radios and networks. He is an author/co-author of more than 300 technical papers (including 175 ISI journals and 128 conference papers). Dr. Duong is currently serving as an Editor for the following journals: *IEEE Trans on Wireless Communications, IEEE Trans on Communications, IEEE Communications Letters, IET Communications*. He has also served as the Guest Editor of the special issue (SI) for the following journals: Lead Guest Editor of the *IEEE Journal in Selected Areas on Communications* (JSAC) for the SI on "Location Awareness for Radios and Network" in 2015; Lead Guest Editor of the *IET Communications* for the SI on "Secure Physical Layer Communications" in 2013 and on "Green Telecommunications Systems and Computing" in 2016; Guest Editor of the *IEEE Wireless Communications Magazine* for the SI on "Green Media: The Future of Wireless Multimedia Networks" in 2014; Guest Editor of the *IEEE Communications Magazine* for the SI on "Millimeter Wave Communications for 5G" in 2014 and "Energy Harvesting Communications" in 2015; Guest Editor of the *IEEE Access* for the SI on "Security for Wireless Communications and Networking" in 2016 and on "Exploiting the Benefits of Interference in Wireless Networks: Energy Harvesting and Security" in 2017; Guest Editor of the *EURASIP Journal on Wireless Communications and Networking* for the SI on "Cooperative Cognitive Networks" in 2013; Guest Editor of the *EURASIP Journal on Advances Signal Processing* for the

SI on "Security Challenges and Issues in Cognitive Radio Networks" in 2014; Editor for *Wiley Transactions on Emerging Telecommunications Technologies* (2013-2016) and *Electronics Letters* (2015-2016). He was awarded the Best Paper Award at the IEEE Vehicular Technology Conference (VTC-Spring) in 2013, IEEE International Conference on Communications (ICC) 2014, and IEEE Global Communications Conference (GLOBECOM) 2016.

Van-Dinh Nguyen received the B.E. degree in electrical engineering from HoChiMinh City University of Technology, HoChiMinh City, Vietnam, in 2012 and the M.E. and Ph.D. degrees in electronic engineering from Soongsil University, Seoul, South Korea, in 2015 and 2018, respectively. He is currently a postdoc researcher with the School of Electronic Engineering, Soongsil University. From 2012 to 2013, he spent 12 months with Vietnam Television as a principal engineer. He was PhD Visiting Scholar at Queen's University Belfast (U.K.) from JuneJuly 2015 and August 2016. His current research interests include machine learning for wireless communications, UAV/drones communications, cyber-physical security, full-duplex radios and cognitive radio networks. Dr. Nguyen received several best conference paper awards, IEEE Transaction on Communications Exemplary Reviewer 2018 and IEEE GLOBECOM Student Travel Grant Award 2017. He has authored or co-authored in some 30 papers published in international journals and conference proceedings. He has served as a reviewer for many top-tier international journals on wireless communications, and has also been a Technical Programme Committee Member for several flag-ship international conferences in the related fields. He is an Editor for *IEEE Communications Letters*.

Quoc-Tuan Vien received the B.Sc. (Hons.) degree from Ho Chi Minh City University of Technology, Vietnam, in 2005, the M.Sc. degree from Kyung Hee University, South Korea, in 2009, and the Ph.D. degree from Glasgow Caledonian University, U.K., in 2012, all in telecommunications. In 2013, he joined Middlesex University, London, U.K., as a Lecturer in Computing and Communications Engineering, where he is currently a Senior Lecturer with the Faculty of Science and Technology. He has authored/co-authored three books, five book chapters, and over 70 publications in major conference proceedings and ISI journals. His current research interests include physical layer security, network coding, non-orthogonal multiple access, energy harvesting, spectrum sensing, device-to-device communications, relay networks, cognitive radio networks, heterogeneous networks, wireless network-on-chip, public safety networks, and cloud radio access networks. He was a recipient of the Best Paper Award at the IEEE/IFIP 14th International Conference on Embedded and Ubiquitous Computing in 2016. He has been the Editor of the International Journal of Digital Multimedia Broadcasting, the Guest Editor of the EAI Endorsed Transactions on Industrial Networks and Intelligent Systems, the Program Co-Chair for the EAI International Conference on Industrial Networks and Intelligent Systems (INISCOM 2018, 2019), the Technical Symposium Co-Chair for the International Conference on Recent Advances in Signal Processing, Telecommunications and Computing (SigTelCom 2017, 2018, 2019), and a TPC member of over 100 conferences He was honored as an Exemplary Reviewer of the IEEE Communications Letters in 2017.