PASSING THE BATON

Dear readers, I have been serving as the Editor-in-Chief of *IEEE Wireless Communications* for almost three and a half years, and it is time for me to step down to take a break after days and nights of working hard for this magazine. My term as the Editor-in-Chief will officially end at the end of June 2015, and then the baton will be passed to Dr. Hamid Gharavi, National Institute of Standards and Technology (NIST), United States, who will be the next Editor-in-Chief of *IEEE Wireless Communications*. Therefore, I have invited Dr. Hamid Gharavi to write a message in this Editor's Note to mark this handover. In fact, Dr. Gharavi has been serving as Associate Editor-in-Chief for this magazine since June 2014. Therefore, the handover will definitely be a "soft handover," ensuring that the editorial work of this magazine will con-

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tinue seamlessly. Dr. Gharavi is a longtime IEEE volunteer, and I am fully confident that he has all the experience needed to bring this magazine to a new high level under his strong leadership.

Before leaving my term as the EiC, it is my privilege to summarize what I have done in my three and a half years as the EiC of *IEEE Wireless Communications*. I still remember when I first stepped into the role of Editor-in-Chief, there was a long backlog queue of accepted papers waiting for publication. Every day I received many inquiries from authors asking when their accepted papers would be published. Without doubt, a long submission-to-publication cycle was detrimental to attracting quality submissions to this magazine. Therefore, the very first mission for me was to find ways to shorten the sub-to-pub cycle. The priority identified by me

was to clear the backlog queue of accepted papers. Thanks to the strong support of the IEEE Communications Society, which generously offered a higher budget to this magazine, we were able to increase the number of pages per issue. The long backlog queue of accepted papers of *IEEE Wireless Communications* was eliminated by December 2013, after which we have been able to publish almost all accepted papers in the next immediate issue. In this way, the submission-to-publication time for this magazine has been significantly reduced, as reflected in the statistical data shown in the ScholarOne manuscript central system.

The excellent performance of this magazine is also attributed to the professionalism of all the Technical Editors, who have worked extremely hard to maintain the highest standard of technical reviews for all submissions. We should note that all Technical Editors of this magazine are very dedicated experts working in their specific areas; at the same time, they are all very busy people. It is indeed not an easy task for them to perform a timely and yet rigorous review for this magazine. Nevertheless, they have done a wonderful job! As reflected in the ScholarOne Manuscript Central system, the Editors' average turn-around time is about 60 days based on the data given in May 2015. It has been a wonderful experience for me to work closely with all these Technical Editors during my term as EiC. They are the best editorial team I have been ever worked with. I would like to thank all of the Technical Editors of *IEEE Wireless Communications* for their understanding when I pushed them very hard, urging them to finish assigned reviews sooner, and for their dedication, without which my life as EiC would not have been the same. Thank you, all Technical Editors, for your cooperation rendered to me over the last three and half years!

Before ending my farewell message in this Editor's Note, I am obliged to express my gratitude toward those who have helped and supported this magazine in various ways. In particular, I would like to thank Prof. Andrzej Jajszczyk, who was then the Director of Magazines of IEEE Communications Society, and appointed me the Editor-in-Chief for this prestigious magazine. Without his trust and support, it would have been impossible for me to bring the magazine to this level; that is, the publication with the highest impact factor in ComSoc history, as shown in the "2014 Journal Citation Reports (JCR)" by Thomson Reuters' "ISI Web of Knowledge" in July 2014. For the same reason, I should also express my gratitude to the current ComSoc Director of Magazines, Steve Gorshe; it was always a great pleasure to work closely with him for the magazine. It will be a good memory to work with such a nice person, who is always ready to help. I would like to thank ComSoc Managing Editor Charis Scoggins, who helped me to send reminders to Guest Editors for incoming Feature Topics and did many other day-to-day routine checks in the ScholarOne Manuscript Central system. I would like also to thank the ComSoc production staff, in particular Jennifer Porcello, whose timely management plays a critical role in publishing every issue of *IEEE Wireless Communications*. Last but not least, I would also like to thank my laboratory assistant, Miki Huang, for her generous help in collecting data from the Manuscript Central,

which was required to write reports for this magazine twice a year before ICC and Globecom ComSoc Publication Council meetings.

After my farewell message, I would like to highlight the contents included in this issue. As a tradition of this magazine, this magazine also publishes Special Issues (SIs) or Feature Topics (FTs) in addition to the regular open call papers, depending on the number of accepted papers in one issue. Either SIs or FTs can attract a larger audience due to their focus on very timely research topics in the wireless communications research community. As EiC of this magazine, I have performed outreach to some well-known experts in related areas to participate as Guest Editors in organizing SIs or FTs. This magazine has been able to publish at least one SI or FT in each issue so that readers can easily find research work in their field of interest in one dedicated issue, saving them a lot of time searching for separate papers in the literature.

In this issue, we also include both a Feature Topic and regular open call articles. The FT in this issue is "Heterogeneous Cloud Radio Access Networks," which was co-edited by Mugen Peng, Tony Q. S. Quek, Zhiguo Ding, Vincent Lau, and H. Vincent Poor. In the next generation wireless communications, heterogeneous networking (Het-Net) will play an extremely important role in network configuration, where different networks shall coexist and work jointly to serve both mobile and stationary users for either human-to-human (H2H) or machine-to-machine (M2M) communications. Cellular networks will be seen as an umbrella covering various smaller cells with varying sizes and for different purposes. In this FT, the Guest Editors have worked extremely hard to select the best papers from a large number of submissions due to the popularity of the research topic. I would like to take this opportunity to thank all of the Guest Editors for bringing our audience such an interesting FT. For more detailed information about the articles included in this FT, kindly refer to the Guest Editorial of the FT in this issue. In addition to the articles included in the aforementioned FT, there are seven open call papers accepted very recently.

The first open call article is contributed by H. Y. Lateef *et al.*, with the title "LTE-Advanced Self-Organizing Network Conflicts and Coordination Algorithms." Long Term Evolution (LTE) and LTE-Advanced (LTE-A) standards have introduced self−organizing network (SON) functions as an effective solution to improve network performance. However, one of the most challenging issues to implement SON functions in real LTE or LTE-A systems is how to identify the best possible interactions among simultaneously operating and even conflicting SON functions to guarantee robust and stable network operation. In this work, the authors make an effort to classify different SON function conflicts, which may lead a way to design good conflict resolution schemes in SON functions. The authors propose a self-coordination framework for conflict resolution among multiple SON functions in LTE/LTE-A networks, and at the same time highlight various future research topics for conflict-free operation of SON design.

The next article, co-authored by Changqing Luo *et al.*, is "A Holistic Energy Optimization Framework in Cloud-

Assisted Mobile Computing." Energy efficiency has become a serious concern in all communication systems and networks recently due to the worldwide consensus on global carbon emission reduction. Communication systems and networks in this world consume a lot of energy, with a lot of room for improvement. In this article, the authors address issues in multi-task offloading decision schemes in cloud-assisted mobile computing systems with an objective of minimizing the holistic energy consumption. When addressing this issue, the authors first define three energy consumption models, including the models for mobile devices, networks, and the cloud. Based on those energy consumption models, a holistic energy optimization framework is proposed to make energy-aware task offloading decisions where thermal constraint of mobile devices, the execution deadline of a task, and the communication security are taken into account jointly.

The third article is written by Yang Cao *et al.*, with the title "Cooperative Device-to-Device Communications in Cellular Networks." Recently, device-to-device (D2D) communication has been proposed to serve as an effective means to improve the overall spectrum efficiency of cellular systems. Via reusing the spectrum of cellular systems, two D2D terminals can form a direct data link without the help of base stations and core networks. In this way, spectral efficiency can be improved significantly. In this article, the authors propose a cooperative D2D communication scheme, which applies cooperative relay techniques to conventional underlay and overlay D2D communications. Adaptive mode selection and spectrum allocation schemes are suggested to improve the performance for both normal cellular users and D2D users. The results show the effectiveness of the proposed schemes in different operational scenarios.

Cloud radio access networking (C-RAN) has become an attractive solution to support the huge signal processing needs in the futuristic mobile communications. The fourth article included in this section is "DaC-RAN: Data-Assisted Cloud Radio Access Network for Visual Communications," which is co-authored by Jun Wu *et al.* In this article, the authors propose a data-assisted cloud RAN (DaC-RAN) architecture for visual communications to integrate software defined networking (SDN) and cloud RAN (C-RAN). It is suggested in this work to separate the control and data planes in conventional cellular infrastructure, and introduce a new data plane in a virtual base station specifically designed for visual communications. Simulation results show that a significant gain can be achieved in terms of spectrum efficiency over the conventional methods.

The fifth article is contributed by Zubair Md. Fadlullah *et al.*, and its title is "Field Measurement of an Implemented Solar Powered BS-Based Wireless Mesh Network." Providing robust communication services in disaster relief operations is a very challenging task due to limited access to or unavailability of stable power supply. In this article, the authors propose a way to form a wireless mesh network (WMN), which makes use of solar energy harvesting base stations (BSs). The authors also conduct a study based on the data collected from field experiments to identify the factors that may influence energy harvesting capabilities. In particular, the authors demonstrate that the operational states of radio links have a direct impact on the power consumption of BSs. In addition, it is pointed out in the article that it is important to achieve effective BS synchronization with changing states of the radio links in an effort to improve the fairness of data delivery delays in different communication services.

The next article is written by Xueqing Huang and Nirwan Ansari: "Energy Sharing within EH-Enabled Wireless Communication Networks." In this article, the authors offer an overview on the architecture of energy harvesting (EH) enabled BSs and discuss two energy sharing mechanisms within wireless communication networks, including direct energy transfer based schemes and non-direct energy transfer based schemes. The authors compare the energy sharing schemes and lay out the basic design principles and research challenges in optimizing energy harvesting enabled wireless networks.

The last open call article is "LTE-Unlicensed: The Future of Spectrum Aggregation for Cellular Networks," contributed by Ran Zhang *et al.* In this article, the authors offer a comprehensive overview of LTE-U technology from both the operator and user perspectives, and examine its impact on unlicensed systems. In particular, the authors discuss the implementation regulations, principles, and typical deployment scenarios of LTE-U systems. Potential benefits for both operators and users are identified. The challenges in bringing LTE-U into reality are elaborated in time, frequency, and power aspects, respectively. The authors also point out that the most critical issue of LTE-U implementation is the coexistence with other unlicensed systems (e.g., widely deployed Wi-Fi). Simulation results show that an LTE-U system can provide a better user experience to LTE users, while protecting the unlicensed Wi-Fi users' performance better than two existing technologies, cellular/Wi-Fi interworking and licensed-only heterogeneous networks.

BIOGRAPHY

HSIAO-HWA CHEN [S'89, M'91, SM'00, F'10] is currently a Distinguished Professor in the Department of Engineering Science, National Cheng Kung University, Taiwan. He obtained his B.Sc. and M.Sc. degrees from Zhejiang University, China, and a Ph.D. degree from the University of Oulu, Finland, in 1982, 1985 and 1991, respectively. From 2001 to 2003, he served as the founding director of the Institute of Communications Engineering of the National Sun Yat–Sen University, Taiwan, which was the first telecommunications research institute established in southern Taiwan. This institute has graduated a large number of telecommunication postgraduate degree holders in Taiwan. He has authored or co-authored over 300 technical papers in major international journals and conferences, six books, and more than 10 book chapters in the areas of telecommunications, including *Next Generation Wireless Systems and Networks* (Wiley, 2005) and *The Next Generation CDMA Technologies* (Wiley, 2007). He has been an active volunteer for IEEE various technical activities for over 26 years. He has served as General Chair, TPC Chair, and Symposium Chair for many international conferences. He has served or is serving as an Editor or/and Guest Editor for numerous major technical journals. He served as Chair of the IEEE ComSoc Communications and Information Security Technical Committee from 2010 to 2012, and served as Chair of the IEEE ComSoc Radio Communications Committee from 2007 to 2008. He was the recipient of the best paper award at IEEE WCNC 2008 and the 2008 IEEE Radio Communications Committee Outstanding Service Award. He is an elected Member-at-Large of the IEEE Communications Society. He is a Fellow of IET and BCS.

MESSAGE FROM THE INCOMING EDITOR-IN-CHIEF

It has been a great pleasure to serve as the Associate Editor-in-Chief of *IEEE Wireless Communications*. Under the leadership of Professor Hsia-Hwa Chen, the outgoing Editor-in-Chief, and Dr. Steve Gorshe, Director of Magazines, *IEEE Wireless Communications* has emerged as the top IEEE periodical with an impressive high impact factor.

My responsibility as AEiC has been to handle SI and FT proposals. I am very pleased to report that so far we have scheduled a number of important and visionary topics for our future issues. We begin with the SI on Wireless/Mobile Connected Entertainment proposed by Theodore Zahariadis, Giovanni Pau, Spyridon Tombros, and Ted "Taekyoung" Kwon. The SI aims to cover challenges and trends in the field of wireless and mobile connected entertainment that may include the latest advances in protocols, service concepts, and other related areas. Another timely issue in the pipeline is Smart Backhauling and Fronthauling for 5G Networks. This FT was proposed by Muhammad Zeeshan Shakir, Muhammad Ali Imran, Jinsong Wu, Henrik Lundqvist, Xianbin Wang, Lingjia Liu, and Amitava Ghosh, and is scheduled for publication in October 2015. It will report on the key technical challenges and recent advances related to backhaul/fronthaul networking and communications for 5G technologies.

The title of our next FT is Reconfigurable Software Defined Radio in 5G Mobile Communication Systems, proposed by Ray Yeuh-Min Huang, Victor C. M. Leung, Chin-Feng Lai, Subhas Mukhopadhyay, and Roy Xiaorong Lai. It calls for high-quality research/tutorial papers that describe seamless migration from the current 4G to future 5G wireless communications. Another seminal topic in our future publications is Wireless Powered Communications Networks: Architectures, Protocol Designs, and Standardization, This Special Issue, which is scheduled for publication in our April 2016 issue, was proposed by Dusit Niyato, Dong In Kim, Zhu Han, and Marco Maso. Its main objective is to provide comprehensive coverage on wireless energy harvesting under different types of wireless networks, such as sensor networks, mobile ad hoc networks, and delay-tolerant networks, particularly as related to power supply for the wireless nodes.

As the Internet of Things (IoT) is currently receiving global attention from academia, industry, and governments, we are pleased to include coverage of this important topic in a future edition. The title of this SI is Enabling Wireless Communication and Networking Technologies for the Internet of Things, proposed by Naveen Chilamkurti, Alexey Vinel, Wen-Shyen Eric Chen, Seung-min Rho, Neal N. Xiong, and Athanasios V. Vasilakos. It calls for submission on issues such as gateway design, service differentiation, variable link capacity, resource constraints, self-configuration and self-organization, middleware and APIs, security and reliability, computing platforms, and optimal network design. This SI is scheduled for publication in June 2016. The last FT in our current pipeline is Device-to-Device (D2D) Communications with Social Awareness. This FT is proposed by Qing Yang, Kejie Lu, Vincenzo Mancuso, and Chan-Hyun Youn, and is scheduled for publication in August 2016. Its main focus, however, will be on state-of-the-art research in various aspects of socially aware D2D communications.

We are very thankful to the Guest Editors for their timely proposals, and for the ongoing support and enthusiasm of researchers who submit high-quality papers, which make up the basic fabric of the magazine. As I succeed Professor Chen as the EiC, I would like to pay tribute to him for his dedication, vision, and hard work, which has been instrumental in the success of the magazine. It is a great pleasure to assume the role of Editor-in-Chief of *IEEE Wireless Communications*. I look forward to the challenge, and to building on the great work of our predecessors.

BIOGRAPHY

HAMID GHARAVI [F'92] (hamid.gharavi@nist.gov) received his Ph.D. degree from Loughborough University, United Kingdom, in 1980. He joined the Visual Communication Research Department at AT&T Bell Laboratories, Holmdel, New Jersey, in 1982. He was then transferred to Bell Communications Research (Bellcore) after the AT&T-Bell divestiture, where he became a consultant on video technology and a Distinguished Member of Research Staff. In 1993, he joined Loughborough University as a professor and chair of communication engineering. Since September 1998, he has been with the National Institute of Standards and Technology (NIST), U.S. Department of Commerce, Gaithersburg, Maryland. He was a core member of Study Group XV (Specialist Group on Coding for Visual Telephony) of the International Communications Standardization Body CCITT (ITU-T). His research interests include smart grid, wireless multimedia, mobile communications and wireless systems, mobile ad hoc networks, and visual communications. He holds eight U.S. patents and has over 100 publications related to these topics. He received the Charles Babbage Premium Award from the Institute of Electronics and Radio Engineering in 1986, and the IEEE CAS Society Darlington Best Paper Award in 1989. He served as a Distinguished Lecturer of the IEEE Communication Society. He has been a Guest Editor for a number of Special Issues, including Smart Grid: The Electric Energy System of the Future, *Proceedings of the IEEE*, June 2011; a Special Issue on Sensor Networks & Applications, *Proceedings of the IEEE*, August 2003; and a Special Issue on Wireless Multimedia Communications, *Proceedings of the IEEE*, October 1999. He was a TPC Co-Chair for IEEE SmartGridComm in 2010 and 2012. He served as a member of the Editorial Board of *Proceedings of the IEEE* from January 2003 to December 2008. From January 2010 to December 2013 he served as Editor-in-Chief of *IEEE Transactions on CAS for Video Technology*. He is currently a member of the Editorial Board of *IEEE Access* and the incoming Editor-in-Chief of *IEEE Wireless Communications*.