Editorial
Launching IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING

THE DEVELOPMENT of Information and Communication Technologies (ICT) within the last few decades has improved our lives tremendously, made information highly accessible, and increased productivity to unprecedented levels. However, this extraordinary improvement in our lives has a hidden cost. ICT employs computers, their peripherals, and communications equipment, all of which use energy, in many cases even when they are idle. As a result, energy consumption, and therefore the generation of greenhouse gases by this technology are already at very high levels. It is currently estimated that the ICT industry is responsible for approximately 2-4% of all of the carbon footprint generated by human activity. This corresponds to about 25% of all car emissions and is approximately equal to all airplane emissions in the world. This trend will only increase. It is estimated that there will be an annual growth rate of nearly 50% in global mobile data traffic in 2016–2021. With the proliferation of smart phones, video, and social networking, this rate of increase can be expected to be at least sustained for many years to come. As a result, serious concerns about the carbon footprint impact of this development have been raised, and the topic of "green communications and networking" has been attracting attention in ICT circles. Increasingly, more workshops, conferences, special issues of magazines and journals, and industry initiatives focus on the need to develop new approaches to communications and networking that result in drastically lower energy consumption. As the current communications and networking systems and protocols were not designed with this consideration, and since in many cases a greenfield approach needs to be taken, this effort will likely take a long time.

Recognizing the growing interest of this area, in 2015 the IEEE Communications Society (ComSoc) launched the SERIES ON GREEN COMMUNICATIONS AND NETWORKING (SGCN) as three issues of the IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS (JSAC). The intention of this series was to serve as the incubator for a new IEEE journal on the subject. The Call for Papers for the first issue of SGCN received a total of 143 submissions. This first issue was published in December 2015 with 39 papers and 552 pages, while many papers were still under review. There were a total of 125 submissions for the second issue of SGCN. The second issue was published in May 2016 with 52 papers and 752 pages, again while many papers were under review. Finally, the third issue of SGCN received 130 submissions. This final issue was published in December 2016 with 71 papers and 1004 pages.

Based on the success of the three issues of SGCN, ComSoc decided to complete its submission to the IEEE for a new journal. In June 2016, this request was granted. IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING (TGCN) is established as a quarterly, online-only journal. The website for TGCN is `www.comsoc.org/tgcn` and submissions can be made through `mc.manuscriptcentral.com/tgcn`. The Editorial Board of the journal is currently organized in six areas with Area Editors and Editors listed on the inside cover page (page C2) of this and every issue and through the journal website. Submission requirements can be found through the "Information for Authors" link at the journal website.

The goal of this new journal is to advance and promote significant technology advances in green communications and networks including wireline, optical, and wireless communications and networks. Green communications and networking in this context means sustainable, energy-efficient, energy-aware, and environmentally aware communications and networking. The journal will promote innovations, new technologies, concepts, and principles toward a sustainable ICT.

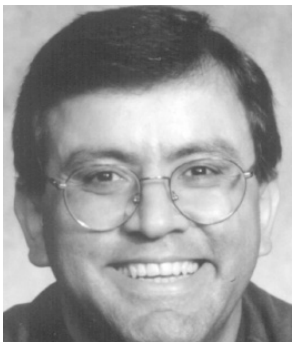
Topics of interest include but are not limited to: green wireline, optical, and wireless communications and networks; network and physical layer design, strategies, algorithms, protocols, and scheduling that consider environmental factors; energy-efficient and energy-aware heterogeneous networks, self-organized, and low-power sensor networks; energy efficiency in machine-to-machine communications, cooperative communications, and smart grid networks; energy harvesting, storage, and recycling for network cross-layer optimization; environmentally-aware designs of communications and networking devices and systems; and communications and networking for environmental protection monitoring.

It gives me great pleasure to launch this new journal with the inaugural issue of March 2017. I hope you will find it stimulating to read papers and to publish your relevant work in this exciting field and in our new journal to serve it.

The author is with the Center for Pervasive Communications and Computing, Department of Electrical Engineering and Computer Science, University of California at Irvine, Irvine, 92697-2625 CA USA (e-mail: ayanoglu@uci.edu).

Digital Object Identifier 10.1109/TGCN.2017.2677678

In conclusion, I would like to thank ComSoc Vice President of Publications N. Fonseca, ComSoc Director of Journals K. Letaief, and ComSoc Assistant Publisher J. Milizzo for their involvement in turning TGCN into reality. I would also like to thank T. Qiang, T. Hung, and N. Simonovski with ComSoc, and J. Cichocki and S. T. Nutter with IEEE Publishing Operations for their invaluable support.



Ender Ayanoglu (S'82–M'85–SM'90–F'98) received the Ph.D. degree in electrical engineering from Stanford University, Stanford, CA, USA, in 1986. He was with the Communications Systems Research Laboratory, Holmdel, NJ, USA, part of AT&T Bell Laboratories, until 1996, and Bell Laboratories, Lucent Technologies, from 1996 to 1999. From 1999 to 2002, he was a Systems Architect with Cisco Systems, Inc., San Jose, CA, USA. Since 2002, he has been a Professor with the Department of Electrical Engineering and Computer Science, University of California at Irvine, Irvine, CA, USA, where he served as the Director of the Center for Pervasive Communications and Computing and held the Conexant-Broadcom Endowed Chair from 2002 to 2010.

His past accomplishments include invention of the 56K modems, characterization of wavelength conversion gain in wavelength division multiplexed systems, and diversity coding. From 2000 to 2001, he served as the Founding Chair of the IEEE-ISTO Broadband Wireless Internet Forum, an industry standards organization. He was a recipient of the IEEE Communications Society Stephen O. Rice Prize Paper Award in 1995, the IEEE Communications Society Best Tutorial Paper Award in 1997, and the IEEE Communications Society Communication Theory Technical Committee Outstanding Service Award in 2014.

Dr. Ayanoglu served on the Executive Committee of the IEEE Communications Society Communication Theory Committee from 1990 to 2002 and the Chair from 1999 to 2002. From 1993 to 2014, he was Editor, and since 2014, Senior Editor of the IEEE TRANSACTIONS ON COMMUNICATIONS. He served as the Editor-in-Chief of the IEEE TRANSACTIONS ON COMMUNICATIONS from 2004 to 2008, and the IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS Series on Green Communications and Networking from 2014 to 2016. Since 2016, he has been serving as the Founding Editor-in-Chief of the IEEE TRANSACTIONS ON GREEN COMMUNICATIONS AND NETWORKING.