

Message From the Editor-in-Chief

As the Editor-in-Chief, I have witnessed the significant growth of the IEEE TRANSACTIONS ON NETWORK SCIENCE AND ENGINEERING (TNSE) during 2021, which would not be possible without your kind support. I want to express my sincere appreciation to all of you.

In 2021, TNSE received over 1200 original submissions. Due to the excellent work of our Editor-at-Large, Associate Editors, and Guest Editors, we were able to keep the average turn-around time of a TNSE submission below 60 days, with an acceptance ratio of 24%. We also announced six special issues, ranging from collaborative machine learning, Industrial IoT, Internet of Everything, healthcare social analytics, edge computing for 6G networks, and AI-driven cybersecurity for healthcare systems.

I want to take this opportunity to thank 19 retired Associate Editors who made significant contributions to the journal over the years: Mauricio Barahona, Danielle Bassett, Larry Blume, Vivek Borkar, Kaushik Chowdhury, Giacomo Como, Fabio Fagnani, Xiaoming Fu, Babak Hassibi, Rahul Jain, Steven Low, Eric Moulines, Thai My, Fernando Paganini, Mason Porter, Victor Preciado, Maxim Raginsky, Mehmet Vuran, and Adam Wierman (alphabetized by Last Name).

TNSE cannot be successful without the dedication of excellent editors like them.

I would also like to warmly welcome new Associate Editors who joined the TNSE editorial board in 2021: Xiaowen Chu, Rachid Elazouzi, Jie Gao, Lin Gao, Andrés García-Saavedra, George Iosifidis, Bo Ji, Carlee Joe-Wong, Baochun Li, Pan Li, Vojislav Misić, Hamed Mohsenian-Rad, Mugen Peng, Kui Ren, David Saad, Walid Saad, Fei Shen, Fan Wu, Yuan Wu, Guoliang Xing, Hong Xu, Peter Yum, Haijun Zhang, Lanjing Zhang, and Junhua Zhao (alphabetized by Last Name).

I also want to introduce our two new Editors-at-Large.

- The first Editor-at-Large is Prof. Peter Yum, who is an IEEE Fellow and a leading expert on wireless networking systems. He graduated from Columbia University with BS, MS, MPh, and Ph.D. degrees in 1974, 1975, 1977, and 1978. Between 1982-2016, Prof. Yum worked at The Chinese University of Hong Kong, was appointed Chairman of Information Engineering Department twice, and then elected as the Dean of Engineering for two terms (2004-2010). He is now a professor at Southeast University, China.
- The second Editor-at-Large is Prof. Leandros Tassiulas, who is both an IEEE Fellow and an ACM Fellow. He received the Diploma degree in electrical engineering from Aristotle University of Thessaloniki in 1987 and the Ph.D. degree in electrical engineering from the

University of Maryland, College Park, in 1991. He has held faculty positions at Polytechnic University, New York, the University of Maryland, the University of Thessaly, and the University of Ioannina, Greece. He is the John C. Malone Professor of electrical engineering at Yale University. His research was recognized by several awards, including the IEEE Koji Kobayashi Computer and Communications Award in 2016, the ACM SIGMETRICS Achievement Award in 2020, the Inaugural INFOCOM 2007 Achievement Award “for fundamental contributions to resource allocation in communication networks.”

I look forward to working closely with the entire editorial board to maintain and further increase the high visibility of TNSE.

To award Associate Editors who made excellent contributions to TNSE, we have recently established the TNSE Excellent Editor Award. By considering various aspects, including workload, turn-around time, and decision quality, we select 19 editors as the founding batch of TNSE Excellent Editor Awardees as follows:

- Yan Chen: University of Science and Technology of China, China
- Wenbo Du: Beihang University, China
- Luoyi Fu: Shanghai Jiao Tong University, China
- Bo Ji: Virginia Tech, USA
- Herbert Iu: University of Western Australia, Australia
- Xuelong Li: Northwestern Polytechnical University, China
- Xiang Li: Fudan University, China
- Chi Liu: Beijing Institute of Technology, China
- Danda Rawat: Howard University, USA
- Walid Saad: Virginia Tech, USA
- Caterina Scoglio: Kansas State University, USA
- Yiyuan She: Florida State University, USA
- Celimuge Wu: University of Electro-Communications, Japan
- Yulei Wu: University of Exeter, U.K.
- Gaoxi Xiao: Nanyang Technological University, Singapore
- Shouhuai Xu: University of Texas, USA
- Gang Yan: Tongji University, China
- David Yau: Singapore University of Technology and Design, Singapore
- Haijun Zhang: University of Science and Technology Beijing, China

Starting 2022, we also establish the TNSE Excellent Reviewer Award. Selections will be based on workload, review quality (length, depth, fairness), and timeliness. The first batch of awardees will be announced at the end of 2022.

As TNSE is fast growing into one of the largest journals in ComSoc, we will see several changes in 2022. First, TNSE will publish bi-monthly (6 issues per year) instead of quarterly (4 issues per year). Second, we will organize the review and publication in four technical areas: General Network Science, Wireless Networks, Computer Networks, and Emerging Networks. I am delighted to announce the Founding Area Editors of these areas as follows:

Prof. Xiang Li, Founding Area Editor for General Network Science:

Xiang Li is the Founding Director of the Institute of Complex Networks and Intelligent Systems, Shanghai Research Institute for Intelligent Autonomous Systems, Tongji University, Shanghai, China. His main research interests include network science and collective system control in both theory and applications. He was the recipient of the IEEE Guillemin-Cauer Best Paper Award from the IEEE Circuits and Systems Society in 2005, Shanghai Natural Science Award (1st class) in 2008, Shanghai Science and Technology Young Talents Award in 2010, National Science Foundation for Distinguished Young Scholar of China in 2014, National Natural Science Award of China (2nd class) in 2015, and TCCT CHEN Han-Fu Award of Chinese Automation Association in 2019.

Prof. Yang Yang, Founding Area Editor for Wireless Networks:

Yang Yang received the Ph.D. degree from the Chinese University of Hong Kong, Hong Kong, in 2002. He is currently a Full Professor with the School of Information Science and Technology, Master of Kedao College, and the Director of Shanghai Institute of Fog Computing Technology (SHIFT), ShanghaiTech University, Shanghai, China. He is also an Adjunct Professor with the Research Center for Network Communication, Peng Cheng Laboratory, Shenzhen, China, and a Senior Consultant of Shenzhen Smart City Technology Development Group, China. Before joining ShanghaiTech University, he held faculty positions with the Chinese University of Hong Kong, Brunel University, University College London (UCL), and SIMIT. His research interests include 5G/6G, fog/edge computing networks, service-oriented collaborative intelligence, IoT applications, and advanced testbeds and experiments. Since January 2019, he has been the Chair of the Steering Committee of Asia-Pacific Conference on Communications (APCC). He is a Fellow of the IEEE.

Prof. Shiwen Mao, Founding Area Editor for Computer Networks:

Shiwen Mao received the Ph.D. degree in electrical engineering from Polytechnic University, Brooklyn, NY, USA, in 2004. He is currently a Professor and Earle C. Williams Eminent Scholar and the Director of the Wireless Engineering Research and Education Center, Auburn University, Auburn, AL, USA. His research interests include wireless networks, multimedia communications, and smart grid. He is a Distinguished Lecturer of IEEE Communications Society and IEEE Council of RFID. He was the recipient of the 2019 IEEE ComSoc TC-CSR Distinguished Technical Achievement Award, the Auburn University 2018 Creative Research & Scholarship

Award, and the NSF CAREER Award in 2010. He was the co-recipient of the 2021 IEEE INTERNET OF THINGS JOURNAL Best Paper Award, the 2021 IEEE Communications Society Outstanding Paper Award, the IEEE Vehicular Technology Society 2020 Jack Neubauer Memorial Award, the 2004 IEEE Communications Society Leonard G. Abraham Prize in the Field of Communications Systems, and several best conference paper awards. He is a Fellow of the IEEE.

Prof. Walid Saad, Founding Area Editor for Emerging Networks:

Walid Saad received the Ph.D. degree from the University of Oslo, Oslo, Norway, in 2010. He is currently a Professor with the Department of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA, USA, where he leads the Network sciEnce, Wireless, and Security (NEWS) laboratory. He has authored or coauthored of eight conference best paper awards and the 2015 IEEE ComSoc Fred W. Ellersick Prize. His research interests include wireless networks, machine learning, game theory, cybersecurity, unmanned aerial vehicles, cellular networks, and cyber-physical systems. He is a Fellow of the IEEE.

Next, I am delighted to introduce the first issue of IEEE TRANSACTIONS ON NETWORK SCIENCE AND ENGINEERING of 2022. This issue publishes four special sections. I will briefly introduce the themes of the four special sections, including some feature articles especially recommended by some of the guest editor teams.

The Special Section on Artificial Intelligence / Machine Learning Enabled Reconfigurable Wireless Networks is focused on the state-of-art modeling and analysis results on reconfigurable wireless networks. With nine accepted papers, this special section aims at advancing research on AI/ML-enabled reconfigurable wireless networks, covering topics such as deep neural network on autonomous dynamic positioning systems, asynchronous advantage actor-critic deep reinforcement learning algorithm, hierarchical federated learning, and large-scale applications of AI enabled reconfigurable wireless sensor network.

The Special Section on Efficient Network Design for Convergence of Deep Learning and Edge Computing is focused on the state-of-art neural network design for convergence of deep learning and edge computing. Five contributed articles were accepted to cover several important topics, including the distributed long short-term memory neural networks, the multiple gradient descent designs, the resource-constrained neural architecture search on edge devices, cloud versus edge deployment strategies, and orthogonal super greedy learning. The feature article of this special section, "DLSTM: distributed long short-term memory neural networks for the Internet of Things," proposed a new distributed sequential learning framework based on the model structure marginal decomposition technique and the multiscale learning technique to lay an influential foundation for lightweight distributed collaborative learning.

The Special Section on Security and Privacy for AI Models and Applications is focused on the security and privacy of AI models and related applications. The special section contains

five contributed articles, covering several important topics such as verifiable and auditable federated learning, privacy-preserved neural network training, security framework of data collection and steganography. The feature article of this special section, “VFChain: Enabling Verifiable and Auditable Federated Learning via Blockchain Systems Minor revised,” designed a verifiable and auditable federated learning framework, which enables federated learning to be more robust against attacks.

The Special Section on Advanced Networking Technologies in the Battle Against the Outbreak of Epidemic Diseases is aimed to explore recent advances and disseminate state-of-the-art research on advanced networking technologies for epidemic monitoring, virus tracking, prevention, control and treatment, and resource allocation. Eight contributed articles were accepted to cover several important topics, from the system design, to the blockchain perspective, to the edge networks and other novel networks. The feature article of this special section, “Adjuvant Therapy System of

COVID-19 Patient: Integrating Warning, Therapy, Post-therapy Psychological Intervention,” proposed a novel adjuvant therapy system, including warning, treatment, and post-treatment psychological intervention. For the first time, they designed a framework to guide the treatment of COVID-19 patients by combining data analytics, communication networks, and artificial intelligence. It is of great significance to further provide more reasonable and intelligent medical services for patients by utilizing communication networks.

I want to thank the authors for their kind contributions and our editors, guest editors, and reviewers for their excellent volunteering work to make TNSE a great journal.

Last but not least, I wish everyone a very happy new year! I look forward to seeing many of you face-to-face soon!

Jianwei Huang
Editor-in-Chief