IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm)

25–28 October 2022 // Singapore

Submission Deadline(10 June 2022)

- The Title for the Special Session

Blockchain-Driven Decentralized Energy Management for Smart Grid

- The Names and Brief Biographies of Session Organizers

Organizer 1: Jun Zhao, School of Computer Science and Engineering (SCSE), Nanyang Technological University, Singapore.

Email: junzhao@ntu.edu.sg

Biography: Jun Zhao is currently an Assistant Professor in the School of Computer Science and Engineering (SCSE) at Nanyang Technological University (NTU) in Singapore. He received a PhD degree in May 2015 in Electrical and Computer Engineering from Carnegie Mellon University (CMU) in the USA (advisors: Virgil Gligor, Osman Yagan; collaborator: Adrian Perrig), affiliating with CMU's renowned CyLab Security & Privacy Institute, and a bachelor's degree in July 2010 from Shanghai Jiao Tong University in China. Before joining NTU first as a postdoc with Xiaokui Xiao and then as a faculty member, he was a postdoc at Arizona State University as an Arizona Computing PostDoc Best Practices Fellow (advisors: Junshan Zhang, Vincent Poor). His current research interests are mainly on blockchain, smart grid, cyber-physical systems, and federated learning. He is editor of IEEE Wireless Communications Letters, IEEE Systems Journal, IEEE Communications Letters, and Computer Communications (Elsevier). He is one of the founding members of Special Interest Group (SIG) by IEEE on Wireless Blockchain Networks (WBN) since 2021.

Organizer 2: Mansoor Ali, Department of Electrical Engineering, École de Technologie Supérieure (ETS), Montreal, Canada.

Email: mansoor.ali.1@etsmtl.net

Biography: Mansoor Ali is currently working as a post-doctoral research fellow at École de Technologie Supérieure (ETS), University of Quebec in Canada. He received the B.S. degree in electrical engineering from the National University of Computer and Emerging Sciences, Pakistan, in 2013, the M.S. degree in electrical engineering from CECOS University, Peshawar, in 2016, and the Ph.D. degree in electrical engineering from the National University of Computer and Emerging Sciences in 2020. His research interests include load forecasting in power system networks, blockchain technology, and power flow control.

Organizer 3: Muhammad Musthafa Roomi, Advanced Digital Sciences Center (ADSC), Illinois at Singapore Pte. Ltd., Singapore

Email: roomi.s@adsc-create.edu.sg

Muhammad Musthafa Roomi received the M.Sc. and Ph.D. degrees in electrical and electronic engineering from Nanyang Technological University, Singapore, in 2011 and 2016, respectively. From 2017 to 2018, he was a Research Fellow with the Energy Research Institute @ Nanyang Technological University. In 2019, he joined the Singapore University of Technology and Design, Singapore, as a

Research Fellow I. He is currently working as a Research Scientist with Illinois at Singapore Pte Ltd. He is currently working on developing an automated framework for generating cyber-physical range for smart grids. His research interests include cyber security for smart grids, energy management, power electronic converters, series compensators for distribution systems, and IEC 61850 standards for electric power systems.

- A Description of the Special Session

The smart grid concept is introduced as a new paradigm shift toward integration and coordination of a large number of distributed energy resources (DERs), microgrids, electric vehicles (EVs), vehicle-to-grid (V2G), prosumers (producers + consumers), and energy markets along with traditional power grid network in order to build a sustainable society, at the same time, considering decarbonization of economy to address the climate change challenges. Consequently, while smart grid communications and computing technologies are undergoing a transformation to the digitalization and decentralized topology, figuring out efficient, reliable, and secure energy resources (e.g., EVs, loads, generations, storage) and transactions (e.g., buy, sell, consumption, generation, demands) management to empower the end users is a necessarily a challenging issue. In this context, blockchain, a decentralized ledger technology, has been emerged and showed its great potentiality in diverse application fields of smart grid ecosystem in recent years. Incorporation of blockchain along with advanced communications, control, and computing technologies might support to build trust and tract the resources and transactions, which can considerably address the research challenges of energy resources and transactions management. Nevertheless, the aim of this special section is to bring researchers and engineers together interested in the latest advancements in this research domain.