



## 2022 IEEE Electrical Power and Energy Conference (EPEC 2022)

Special Session on

### Estimation and Control in Industrial Cyber-Physical Energy Systems under Uncertainties

organized by

**Dr. Shichao Liu** ([shichaoliu@cunet.carleton.ca](mailto:shichaoliu@cunet.carleton.ca))  
Carleton University, Ottawa, Ontario, Canada

**Dr. Bo Chen** ([bchen@zjut.edu.cn](mailto:bchen@zjut.edu.cn))  
Zhejiang University of Technology, Hangzhou, China,

#### Call for papers:

Nowadays, information and communication technologies (ICT) has been increasingly utilized to support the exchange of measurements and control signals in industrial control systems, making these systems as important applications of industrial cyber-physical systems (ICPSs). Typical examples of ICPSs include automatic control systems that are monitoring and controlling the operation of critical infrastructures such as electrical power systems, intelligent transportation systems, and water resource management systems. While the communication infrastructure significantly facilitates the transmission of the vast amount of data over wide geographical areas, it makes cyber-physical energy systems (CPESs) more vulnerable to cyber-layer uncertainties, such as time delay, packet loss, and cyberattacks. On the physical side, the energy systems are subject to critical uncertainties as well, including environmental noises, extreme weather conditions, hardware faults, etc. Therefore, estimation and control of CPESs are crucial research topics for optimal and reliable operations of critical energy infrastructures.

This special section intends to seek state-of-art solutions for the open challenges in estimation and control of critical CPESs, such as smart grids, microgrids, smart buildings, smart homes, smart communities, smart generations, etc. Topics of interest may be related to, but not limited to

- Stochastic Hybrid Modeling for CPESs,
- Distributed Estimation of CPESs under Cyber attacks,

- Distributed Control of CPESs under Cyber attacks,
- Intrusion Detection for CPESs
- Model Predictive Control for CPESs s under Cyber Attacks,
- Consensus of CPESs under Cyber Attacks
- Game Theories for Optimal Decision Making of CPESs,
- Data Security, Privacy and Transparency
- Applications and Experimental studies

## SS Organizer Information

- **Dr. Shichao Liu** received his Ph.D. degree from the Carleton University, Ottawa, ON, Canada, in 2014. Dr. Shichao Liu is currently an Assistant Professor in the Department of Electronics at Carleton University, Ottawa, Ontario, Canada. He is also an Associate Editor for the IEEE Access and Editorial Board Member of *Smart Cities*. His research interests include modeling, stability analysis and resilient control of cyber-physical energy systems and the applications in microgrids and smart grids.
- **Dr. Bo Chen** received his Ph.D degree in Control Theory and Control Engineering from Zhejiang University of Technology, Hangzhou, China, in 2014. He is currently a full professor with the Institute of Cyberspace Security, Zhejiang University of Technology, China. He was a Research Fellow with the School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, from 2014 to 2015 and from 2017 to 2018. He was also a Post-Doctoral Research Fellow with the Department of Mathematics, City University of Hong Kong, Hong Kong, China, from 2015 to 2017. He was a recipient of the outstanding thesis award of Chinese Association of Automation (CAA) in 2015. His current research interests include information fusion, cyber-physical systems security and networked fusion systems.