

---

## Editorial

---

### Yang Xiao

Department of Computer Science,  
University of Alabama,  
101 Houser Hall, Box 870290  
Tuscaloosa, AL 35487-0290, USA  
E-mail: yangxiao@ieee.org

**Biographical notes:** Yang Xiao worked in industry as a Medium Access Control (MAC) architect involving the IEEE 802.11 standard enhancement work before he joined academia in 2002. He is currently with Department of Computer Science (with tenure) at The University of Alabama. He was a voting member of IEEE 802.11 Working Group from 2001 to 2004. He has published more than 170 refereed journal papers and over 200 refereed conference papers and book chapters. His research has been supported by the US NSF, US Army Research, The Global Environment for Network Innovations (GENI), Fleet Industrial Supply Center-San Diego (FISCSD), FIATECH, etc.

---

A smart grid is the electricity delivery system (from point of generation to point of consumption) integrated with communications and information technology for enhanced grid operations, customer services, and environmental benefits. Security and Privacy in Smart Grid differ from those in traditional systems and networks due to specific features and applications in Smart Grid. The need to address security and privacy issues, and provide timely, solid technical contributions of security and privacy solutions in Smart Grid establishes the motivation behind this special issue.

This special issue is dedicated to Security and Privacy in Smart Grid. Four papers were selected for this special issue. We introduce them as follows. The first paper, Towards modelling the impact of cyber attacks on a smart grid, by Kundur et al. presents a cyber attack

impact analysis in the smart grid in which both cyber and physical grid entity relationships are modelled as directed graphs. The second paper, Privacy protection system and metrics for hiding electrical events, by Kalogridis et al., discusses present a home electrical power management system that uses a rechargeable battery to mask home energy load signatures and, effectively, protect the privacy of appliance usage information. The third paper, Secure and privacy-preserving information aggregation for smart grids, by Li et al., proposes a distributed incremental data aggregation approach, over all smart meters with minimum overhead and protecting user privacy. The last paper, Application-aware secure multicast for power grid communications, by Zhang and Gunter proposes an application-aware approach to setting up secure multicast groups for power grid communications.