



Selected Areas in Communications Symposium

Track on Smart Grid Communications & Power Line Communications

TRACK CHAIR:

Yang Xiao, The University of Alabama, USA

Email: yangxiao@ieee.org

SCOPE AND MOTIVATION

To address the global concerns on the surging power demand and carbon emissions, the future smart power grid will integrate numerous distributed elements, such as renewable generators, micro power grids, energy storage units, advanced metering devices, and electric vehicle users. Effective and reliable information and communication technology (ICT) solutions play a vital role to ensure efficient two-way flows of information and power between these distributed entities. Nowadays, wireless networks with wide-area to local coverages have been widely used to monitor and communicate the real-time operating conditions of the power system. Meanwhile, some recently emerged machine type communications and vehicle-to-grid/grid-to-vehicle communications are promising to significantly improve the power grid automation. However, the heterogeneous components in the smart grid and the distinct characteristics of power system makes ICT solutions hard to accommodate the different communication requirements on bandwidth, latency, reliability and security. There are still many challenging problems concerning the proper ICT architecture and signal processing techniques applied to smart grid. In many cases, a good design for smart grid system requires interdisciplinary considerations of control, power electronics, communication, and computing techniques.

TOPICS OF INTEREST

The aim of the Smart Grid Communications track is to bring together researchers from both academia and industry for disseminating cutting-edge research results in theory, application and implementation in the broad areas of smart grid communications. Topics of interest include, but are not limited to:

Smart Grid Communications:

- Networking architecture and device placement for supporting smart grid communications
- Physical layer techniques and resource allocation in smart grid communications
- Medium access control and routing protocols for smart grid systems
- Data acquisition, big data management and analytics for smart grid
- Cross-layer design and optimization techniques applied to smart grid systems
- Security and privacy issues in smart grid communications



- Cyber-physical modeling and analysis of smart grid systems
- Cyber-physical security in smart grid systems
- Integration of renewables, storage units and electric vehicles into smart grid systems
- Vehicle-to-grid and grid-to-vehicle communications
- Demand side management and demand response
- Distributed and autonomous control of micro-grids
- Edge/fog/cloud computing for smart grid systems
- Wireless power transfer and energy harvesting techniques for smart grid communications
- Economic approaches for improving smart grid efficiency
- Smart metering technologies for smart grid
- Machine to machine communications for smart grid
- Artificial intelligence and machine learning techniques for smart grid systems
- Measurement data, experimental testbeds and field trials
- Regulation and standardization efforts for smart grid
- Cognitive and cooperative communications
- Cross-layer optimization and service integration

Power Line Communications

- Experience from field trials and large scale PLC roll-outs
- Layer 2 (switching) and Layer 3 (routing) techniques in PLC systems
- MIMO, modulation, coding and signal processing for PLC
- Multiple access and protocols for PLC
- Network planning, optimization and management
- PLC Channel characterization, channel modelling and emulation
- PLC for the Smart Grid, in-building, access and in-vehicle networks
- PLC modem and low level design
- Signal coupling and EMI issues in PLC
- Standardization and regulation

IMPORTANT DATES

Paper Submission: 15 April 2020

Notification: 25 July 2020

Camera Ready and Registration: 1 September 2020

SUBMISSION INSTRUCTION

All papers for technical symposia should be submitted via EDAS through the following link: <https://edas.info/N27054>