

Special Session 6

Big Data Analytics, Modern Artificial Intelligence and Advanced Optimization Technologies in Power and Integrated Energy Systems

Session Chair:

Zhenzhi Lin, Zhejiang University, linzhenzhi@zju.edu.cn

Session Co-Chair:

Fushuan Wen, Zhejiang University, wenfs@hotmail.com

Scope of the Session:

The ever increasingly interconnection of modern power systems and integration of multiple energy systems are calling for more efficient approaches for addressing extensive and more significant uncertain factors. New approaches for analysis, optimization and control are highly demanded to the development of cost-effective and sustainable renewable energies. The volume, velocity, variety, and veracity (4Vs) of measured data have ever increased in recent years by the developments of sensor networks and monitoring systems in power and integrated energy systems, thus valuable opportunities to gain insight for optimizing their operation are presented by large datasets. Big data analytics technologies can be employed to deal with such complex datasets. On the other side, modern artificial intelligence (AI) and advanced optimization technologies have been proved to be powerful tools in extracting and handling useful information from large sets of data, and have potential abilities for different applications in power and integrated energy systems. With the capabilities of computation and extracting information from massive data sets, modern AI and advanced optimization technologies have enabled planners and operators to find solutions for the secure and economic operation of power and integrated energy systems.

The aim of this special session is to provide an opportunity for international researchers to share and review recent advances in the emerging topics of big data analytics, modern artificial intelligence and advanced optimization technologies in power and integrated energy systems. The special session aims to solicit original papers on new findings and applications from researchers, academicians and practitioners from industries.

Topics of interest include, but are not limited to:

- Big data analytics in power and integrated energy system planning
- Big data analytics in power and integrated energy system operation
- Big data analytics for feature extraction and knowledge discovery in power and integrated energy systems.
- Machine learning applications in power and integrated energy systems
- Modern AI technologies in power and integrated energy system applications
- Advanced optimization technologies for power and integrated energy system planning
- Advanced optimization technologies for power and integrated energy system operation