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Call for Papers

OPEN INVITED TRACK (Code: 88bv9)

Advanced Data Analytics for Large-Scale Power System Modeling and Simulation

IFAC Technical Committee for Evaluation: TC6.3. Power and Energy Systems

Organizer

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Abstract

With the challenges of increased grid dynamics and more variability of power generation from renewable energy sources, rapidly increasing complexity in the grid model, and abundant data from measurements and simulations, the requirements for computational analysis have also increased dramatically. Operators and engineers need to analyze more scenarios, extract meaningful information from a larger set of data, and respond more quickly when faced with these new challenges. Because this trend is expected to continue, faster and more effective simulation tools will be required to provide quicker and better decision support to operators and engineers. Therefore, both advanced computing techniques, such as cloud computing, distributed computing, Message passing interface (MPI) and OpenMP, Graphical Processing unit (GPU) and edge computing, and big data analytics including artificial intelligence/machine learning (AI/ML), are needed to handle complicated large-scale power system applications. The objective of this open invited track is to present the state-of-art techniques in advanced computing and big data analytics with their application in power and energy system for enhanced reliability, resilience, and security.

Topics

Any original contributions related, but not limited, to the following topics are encouraged to submit to this open invited track:

- Power and Energy System (stability, reliability, planning, operation, and control) equipped with advanced computing techniques
    - Real-time operation
    - Near-term planning
    - Long-term planning
    - Look-ahead analysis
    - Stochastic analysis
- Data-driven modelling and control using big data analysis techniques
    - Fault analysis
    - Forecasting
    - Stability analysis
    - Predictive maintenance
    - Topology identification
    - Health monitoring
- Wide-area monitoring, protection, and control in energy systems
    - Power system control and optimization
    - measurement-based applications
    - Decision-support techniques

Keywords:

Modeling and simulation of power systems; Real time simulation and dispatching; Smart grids.

Submission:

Prospective authors are invited to submit original contributions (standard two-column IFAC format and up to 6 pages) to this Open Invited Track with the Submission Code by the deadline, October 31, 2019.