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Call for Papers

OPEN INVITED TRACK (Code: r56vd)

Modern Heuristic Optimization Methods in Smart Grids

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

Organizers:

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Abstract:

Heuristic search and optimization is a new and modern approach for solving complex problems that overcome many shortcomings of traditional optimization techniques. Heuristic optimization techniques are general purpose methods that are very flexible and can be applied to many types of objective functions and constraints. Developing solutions with these tools offers two major advantages: development time is much shorter than when using more traditional approaches, and the systems are very robust, being relatively insensitive to noisy and/or missing data/information known as uncertainty.

In competitive electricity market along with increasing penetration of renewable energy sources, heuristic optimization methods are very useful. As electric utilities are trying to provide smart solutions with economical, technical (secure, stable and good power quality) and environmental goals, there are several challenging issues in the smart grid solutions such as, but not limited to, forecasting of demand, weather, price, ancillary services; penetration of distributed and renewable energy sources; bidding strategies of participants; power system planning & control; operating decisions under missing information and big data; increased distributed generations, energy storage systems, and demand response in the electric market.

The objective of this Open Invited Track is to review the state of the art technologies in the modern heuristic optimization techniques and present case studies how these techniques have been applied in smart grids.

Topics:

Original contributions related (but not limited) to the following application areas are welcome for submission to this open invited track:

- Operation & Planning of Smart Grids
- Power System Control & Optimization
- Power Plant Modeling & Control
- Distribution System Automation & Microgrids
- Demand Side Management & Demand Response
- Electricity Market under Renewables and Energy Storage Systems
- Distributed Generation & Renewable Energy Sources
- Forecasting Demand, Renewable Energy, and Price
- Integration of Renewable Energy, Energy Storage Systems & Smart Grid

Keywords:

Smart grids; Intelligent control of power systems; Control of renewable energy resources; Power system planning.

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, 2022.