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Journal of Modern Power Systems and Clean Energy

Special Section on Applications of Artificial Intelligence in Modern Power Systems

With the increasing penetration of renewable energy sources, power electronic devices and flexible loads, modern power systems are becoming more sophisticated and are facing more uncertainties. Traditional model-based methods cannot fully satisfy the analysis and control requirements of modern power systems due to a variety of reasons. As a data-driven approach, artificial intelligence (AI) can directly learn from data without requiring any simplifications and/or assumptions of the system's physical model. In recent years, great progress has been achieved in the fields of AI, such as deep learning and reinforcement learning. Advanced AI methods can facilitate the integration of renewable energy sources into power systems. Using intelligent techniques achieves a substantial improvement in predicting the optimal sets of design and operating variables for renewable energy systems. Regression techniques are well suited for learning patterns from the data, and therefore are applicable for monitoring and predicting renewable energy generation such as wind and solar energy. In addition, advanced classification methods can be employed to evaluate the security and stability of renewables-penetrated power systems. Reinforcement learning can be used to provide emergency control actions to operators amid uncertainties of modern power systems.

In this context, Journal of Modern Power Systems and Clean Energy (MPCE) has launched the special section on Applications of AI in Modern Power Systems. This special section is aimed at answering the important question on how to utilize the state-of-the-art AI techniques in modern power systems with high penetration of renewable energy sources.

The topics of interests include, but are not limited to:

- Applications of modern AI techniques in the optimization of power systems, i.e., active distribution network, microgrid, combined heat and power plant
- AI for residential solar and thermal control
- Modern AI based approaches for forecasting of renewable energy sources, loads and electricity prices
- Advanced AI methods for state evaluation and fault detection of electrical equipment
- Applications of modern AI techniques in the electricity market to accommodate the increasing penetration levels of renewable energy sources
- Applications of Machine Learning for predictive maintenance and asset management
- Modern AI approaches for power system stability and control
- Modern AI techniques for state estimation of power systems
- Applications of deep learning and reinforcement learning to modern power

systems
- Modern AI techniques for cyber security of power systems
- Real-world application and implementation of AI-based techniques in power systems
- Practical issues imposed to power systems by inclusion of data-driven based decision making tools

Submission Guidelines

The manuscripts could be submitted on https://mc03.manuscriptcentral.com/mpce .
The article templates can be downloaded from
http://www.mpce.info/ch/reader/view_news.aspx?id=20150519040134001.

Important Dates

Paper Submission Deadline: **Extended to July 31, 2020**
Acceptance Notification: **September 30, 2020**
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MPCE sponsored by State Grid Electric Power Research Institute (SGEPRI) is Golden Open Accessed (all of the publication costs are covered by the sponsor), peer-reviewed and bimonthly published journal in English. It is published by SGEPRI Press and IEEE. It is indexed in SCIE, Ei, Scopus, Google Scholar, DOAJ, CSA, OCLC, SCImago, ProQuest, CSAD, etc. MPCE publishes Original Paper, Discussion, Review, Views, and Short Letter in the field of modern power systems with focus on smart grid technology and renewable energy integration, etc.