Advanced Power Converters and Drives in Smart Grid Systems

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Message from the Guest Editors

Encouraged by rapid technological achievements in smart grids and renewable energy systems, power electronic converters and drives have been involved in various electric applications. It is challenging to achieve accurate power regulation due to the system nonlinearities coupling with the states. It is well known that the control performance is always severely affected by parameter uncertainties and external disturbances. Limited control precision cannot satisfy the high requirements. It is imperative to develop reliable, advanced controllers that can maintain a balance between the static and dynamic performances.

1. Artificial intelligence control and optimization design with the consideration for multiple converter and drive systems.
2. Data-driven and learning-based control methods.
3. Model predictive control in power converter and drive systems.
4. Optimal and robust control with uncertainty and disturbance rejection.
5. Reinforcement learning and deep-learning-assisted control methods.
6. Distributed learning and optimization over network-connected converter and drive systems.
7. Applications of learning or optimization-based control in different systems.

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Message from the Editor-in-Chief

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