Special Issue

Advanced Control and AI Methods for Future Battery Diagnostics and Prognostics

Message from the Guest Editors

The rapid expansion of battery applications has made battery diagnostics and prognostics a critical research frontier. This Special Issue aims to present cutting-edge developments at the intersection of advanced control methods and AI-driven techniques for battery health assessment, lifetime prediction, anomaly detection, and operational optimization. Research areas may include (but not limited to) the following:

- Advanced control strategies (e.g., model predictive control, adaptive control, robust control) for battery management systems;
- AI-enhanced battery state estimation, SOH/SOC/SOS/RUL/degradation trajectory/anomaly prediction, and failure prognosis;
- Physics-informed machine learning and hybrid modeling approaches for batteries;
- Data generation, augmentation, and synthetic battery datasets for training AI models;
- Optimal charging/discharging strategies based on predictive diagnostics;
- Real-time implementation and embedded system development for AI-based battery monitoring;
- Diagnostics and prognostics for second-life and recycled batteries;
- Benchmarking studies and validation frameworks for battery diagnostics algorithms.

Guest Editors

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Message from the Editor-in-Chief

Electronics is a multidisciplinary journal designed to appeal to a diverse audience of research scientists, practitioners, and developers in academia and industry. The journal is devoted to fast publication of latest technological breakthroughs, cutting-edge developments, and timely reviews of current and emerging technologies related to the broad field of electronics. Experimental and theoretical results are published as regular peer-reviewed articles or as articles within Special Issues guest-edited by leading experts in selected topics of interest.

Editor-in-Chief

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