

## 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

Dr. Junzhe Shi

Dr. Shengyu Tao

Dr. Wenxue Liu

Dr. Xingjun Li

### Deadline for manuscript submissions

15 December 2025



## Electronics

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*Electronics*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[electronics@mdpi.com](mailto:electronics@mdpi.com)

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## About the Journal

### 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.

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### Editor-in-Chief

Prof. Dr. Flavio Canavero

Department of Electronics and Telecommunications, Politecnico di  
Torino, 10129 Torino, Italy

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