Special Issue

Mathematical Optimization and Artificial Intelligence for Hybrid Renewable Energy Systems

Message from the Guest Editors

The global transition to sustainable energy has driven the rapid growth of hybrid renewable energy systems (HRESs), which integrate multiple sources like solar, wind, hydro, and storage to enhance efficiency and reliability. However, HRESs face critical challenges: balancing intermittent energy generation, optimizing resource allocation, ensuring grid stability, and reducing costs—all amid complex, dynamic environments (e.g., climate variability, demand fluctuations). This Special Issue aims to bridge mathematical optimization and artificial intelligence (AI) to address these challenges. We seek cutting-edge research that leverages optimization techniques (e.g., linear/nonlinear programming, stochastic optimization, multi-objective methods) and AI tools (e.g., machine learning, deep learning, reinforcement learning) to advance HRES design, operation, and management.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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