# Special Issue

# Application of Big Data and Machine Learning in Smart Grid

## Message from the Guest Editors

Areas of interest for this Special Issue include, but are not limited to, the following topics:

- Big data architecture and platforms for smart grid applications;
- Machine learning algorithms for load and energy demand forecasting;
- Solar and wind power prediction using AI and data-driven methods;
- Demand response optimization using real-time data analytics;
- Deep learning approaches for anomaly detection and fault diagnosis in power systems;
- Integration of distributed renewable energy sources using predictive analytics;
- Efficiency benchmarking and performance monitoring in smart grid operations;
- Reinforcement learning for smart grid control and decision-making;
- Federated learning and privacy-preserving data analytics in energy systems;
- Hybrid models combining physics-based and machine learning approaches;
- Data fusion and feature engineering for improving forecasting accuracy;
- Edge and fog computing for decentralized smart grid intelligence;
- Case studies on AI-enabled energy management in microgrids and virtual power plants;
- Visualization and explainability of machine learning models in grid operations;
- Challenges and opportunities in real-time ML deployment in critical infrastructure.

## Guest Editors

Dr. Haosen Yang

Dr. Ziyu Chen

Dr. Xiaoming Liu

Dr. Qin Wang

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*Applied Sciences*
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
applsci@mdpi.com

mdpi.com/journal/applsci

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# About the Journal

## Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

## Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy

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