

AI IN ENERGY AND ENVIRONMENTAL SCIENCE

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ABSTRACT

Artificial intelligence (AI) has shown great potential in addressing the energy and environmental challenges that the world is currently facing. In the energy sector, AI helps optimizing the generation, distribution, and consumption of energy, leading to increased efficiency and reduced emissions. It is used to predict energy demand, optimize energy storage, and enable the integration of renewable energy sources into the grid. In the field of environmental science, AI is employed in the development of sustainable solutions for managing natural resources and reducing pollution. It helps monitoring and predicting changes in the environment, such as deforestation, water quality, and air pollution. It can also be used to analyze large amounts of data to identify patterns and correlations that may not be immediately apparent to human researchers.

The application of AI in energy and environmental science can lead to more informed decision-making, improved resource management, and ultimately, a more sustainable future. However, there are also challenges associated with AI, such as the need for large amounts of high-quality data, the potential for biases in algorithm design, and ethical concerns regarding the use of AI in decision-making. Addressing these challenges will be crucial to ensure that AI is used responsibly and effectively in these important fields.

The aim of this mini-symposium is to provide a platform for researchers, practitioners, and industry professionals to share their latest findings, insights, and experiences in this important and rapidly evolving field. By bringing together experts from diverse backgrounds, the mini-symposium aims to foster interdisciplinary collaborations and stimulate discussions on the key

challenges and opportunities in the application of AI for energy and environmental sustainability.

As such, the topics of interest include, but are not limited to:

- AI applications for optimizing energy generation, distribution, and consumption.
- Predictive modeling and forecasting of energy demand using AI.
- Integration of renewable energy sources into the grid using AI.
- AI for energy storage optimization and management.
- AI for energy efficiency in buildings and industry.
- AI-based smart grid management and control systems.
- AI-assisted environmental monitoring and modeling.
- AI for air quality and water quality monitoring and management.
- AI applications for sustainable land use and management.
- AI-assisted analysis of satellite and remote sensing data for environmental monitoring.
- AI-based solutions for waste management and recycling.
- Ethical considerations and challenges associated with the use of AI in energy and environmental science.
- Real-world case studies and implementation experiences of AI-based solutions for energy and environmental challenges.
- Advances in AI algorithms, techniques, and technologies for energy and environmental applications.
- Future research directions and opportunities in the field of AI for energy and environmental science.