Call for Papers - Special Issue of Global Energy Interconnection: Advances in Artificial Intelligence in Energy Interconnection and Low-Carbon Power Systems

01 Special Issue Description

The global transition toward low-carbon energy systems, driven by the "Dual Carbon" goals and the integration of large-scale renewables, has significantly increased the complexity of modern power systems. Energy interconnection across regions and countries presents new challenges in planning, operation, control, resilience, and market coordination, particularly in the context of high penetration of renewable energy sources and distributed energy resources.

Artificial Intelligence (AI) has emerged as a transformative enabler for addressing these challenges by offering advanced data-driven, predictive, and decision-support capabilities. Recent progress in machine learning, deep learning, reinforcement learning, graph neural networks, large language models, and physics-informed AI has opened new pathways for intelligent operation and optimization of interconnected power systems.

To this end, Global Energy Interconnection has invited Prof. Dr. Mohamed Ahmed Hassan ELSAYED at Cairo University, Prof. Dr. Sherine M. Abd El-Kader at Electronics Research Institute, Prof. Dr. Yu Mei at Tianjin University, Prof. Dr. Zhang Pei at Tianjin University, and Prof. Dr. Zhang Jin at Nankai University to serve as Guest Editors-in-Chief. They will organize a special issue for the June 2026 edition, titled "Advances in Artificial Intelligence in Energy Interconnection and Low-Carbon Power Systems". We sincerely invite submissions from scholars worldwide. This Special Issue aims to bring together cutting-edge theoretical developments and practical engineering applications of AI in energy interconnection and low-carbon power systems, fostering interdisciplinary research and international collaboration.

02 Journal Introduction

Since its launch in 2018, Global Energy Interconnection has been indexed by authoritative international databases including ESCI (JCR Q2), EI, Scopus (Q1), and has been selected for inclusion in the core journal databases of 13 countries including China, Sweden, the Netherlands, Japan, the USA, the UK, France, Germany, Switzerland, Russia, Australia, Poland, and India. It has been listed in the T2 category for the Energy and Power field in the High-Quality Sci-Tech Journal Grading Catalogue of the China Association for Science and Technology, and has been honored as a "Leading International Impact Academic Journal of China".

03 Scope of Contributions

Topics of interest for this special issue include, but are not limited to:

◆ AI-Driven Planning and Operation of Energy Interconnection Systems:

AI-based coordinated planning and optimal allocation of generation-grid-load-storage resources; Wide-area/ultra-wide-area stability analysis and dynamic security assessment considering high-penetration renewable energy; Fast AI-based solutions for optimal power flow, unit commitment, and economic dispatch.

◆ AI-Empowered Smart Grids and System Control:

Intelligent data analytics, situational awareness, and fault diagnosis based on Wide-Area Measurement Systems (WAMS); Intelligent decision-making for System Integrity Protection Schemes (SIPS) and adaptive corrective control; Self-healing control and intelligent black-start strategies for enhancing grid resilience; Reinforcement Learning for Real-Time Grid Control.

◆ AI Applications in Low-Carbon Technologies and Markets:

Accurate forecasting of renewable energy generation (e.g., wind, solar) and load; AI-based fault diagnosis of renewable energy systems; AI-based collaborative optimal dispatch of integrated energy systems (electricity, heat, gas, hydrogen); Energy Storage Management and Battery Lifecycle Optimization; Electricity market clearing optimization, game theory analysis, and demand-side response.

◆ Advanced AI Methods and Cross-Disciplinary Innovations:

Application of AI (Graph Neural Networks (GNNs) and Knowledge Graphs) in power network analysis; Use of Large Language Models (LLMs) in generating power system dispatch procedures and human-computer interaction; Physics-Informed AI models to enhance algorithm interpretability and physical consistency; Federated learning for privacy-preserving grid analytics across utilities; Digital twins of power systems for simulation, predictive analysis, and decision support.

04 Important Dates

·Full Paper Submission Deadline: March 15, 2026
·First Round of Review Comments: April 5, 2026
·Revised Manuscript Submission: April 25, 2026
·Final Acceptance Notification: May 5, 2026
·Special Issue Online Publication: June 25, 2026

05 Submission Guidelines

Submission System: https://www.editorialmanager.com/gloei/
ScienceDirect Access: https://www.sciencedirect.com/journal/global-energy-interconnection
Manuscript Template: https://www.elsevier.com/__data/promis_misc/GEI%20Template.doc
Please note in your submission: Special Issue + "AI for Energy"

06 Guest Editor-in-Chief

Mohamed Ahmed Hassan ELSAYED

Prof. Dr. Mohamed is a full Professor at Cairo University from 1990 till to now. He was hired as an Associated Professor at Cairo University in 1984. Among other academic posts he was, from 1983-1989, On-leave at Electrical Power Engineering, Qatar University and, from 1993 to 1998, On-leave at Electrical & Computer Eng. Dept., Kuwait University. From 2008 till to 2010 he was Program Professor of Utilities Engineering (Electrical and Mechanical Streams) and director of Energy Center at University of Trinidad and Tobago and, from 2010 till to 2016 Professor, Electrical Engineering Department, Faculty of Engineering and Petroleum, Kuwait University. From 2016-2020 he was the Head of Electrical Engineering Department, Faculty of Engineering and Petroleum, Kuwait University. He participated as a member of the Scientific Committee of different conferences, congress, and journals. He is member of the following associations: Council of electricity and energy research, Academy of scientific research, Egypt, Egyptian hydrogen Association, IEEE, Energy Research Society, FGE, Germany, CIGRE Committee for High Voltage Electric Systems, and Artificial Intelligence Application in Engineering, Egypt. He has received the Egyptian National Prize of Engineering Science. He was awarded several scientific stays by Alexander von Humbolt Foundation, Germany. He obtained two awards from Cairo and Kuwait University in Electrical Engineering.

Sherine Abdel Kader Abd El-Raouf Moharram

Prof. Dr. Sherine Abdel Kader Abd El-Raouf Moharram is currently the President of the Electronics Research Institute (ERI) in Egypt and Chairman of the Science and Technology Park for Electronics Research and Industry (STPERI). Prof. Dr. Sherine is a distinguished Egyptian scholar, academic leader, and science policy contributor whose career spans more than two decades in the fields of computer engineering, wireless communication, artificial intelligence, and emerging information technologies. Her contributions encompass more than eighty peer-reviewed research papers, nine book chapters, and three scientific books, together with extensive leadership in more than twenty national and international funded projects. In addition to her journal papers, she has authored nine international book chapters addressing various topics. She has supervised numerous Master's theses and PhD dissertations, many of which tackled innovative topics in wireless networks, cognitive radio, IoT applications, and smart systems. Her research interests include IOT, 5G, Wireless Sensor Networks, IP QoS Models, Cognitive Radio, Localization Algorithms, Vehicle networks, Routing Protocols, Ad-Hoc Networks, etc. She earned her Master of Science in Computer Engineering in July 1998 and her Doctor of Philosophy in Computer Engineering in September 2003, both from the Faculty of Engineering at Cairo University.

Yu Mei

Prof. Dr. Yu Mei is a Professor at Tianjin University. Her research focuses on data mining, artificial intelligence, and computer networks. She has participated in research projects supported by the National Natural Science Foundation of China and major scientific and technological programs of Tianjin, and has obtained multiple authorized patents and software copyrights.

Her work spans natural language processing and knowledge graph construction, adaptive learning resource recommendation systems, wind power forecasting, and user modeling in social networks, including sentiment analysis, recommendation algorithms, resource search, and algorithm optimization. She has published a series of academic papers in these areas, contributing to the development of intelligent data analysis and AI-driven modeling methods.

Zhang Pei

Prof. Dr. Zhang Pei is a Professor at Tianjin University. He received his PhD from Imperial College of Science, Technology and Medicine, United Kingdom. His research focuses on power system planning and operation including reliability assessment, stability and control, system restoration, risk assessment. His current research interests are application of AI technologies into power system. He was elected as an IEEE Fellow for his contributions to computational methods for smart control centers and probabilistic planning and operation.

He has participated in six national-level projects including the National Key Research and Development Program of China, and over 60 projects supported by State Grid Corporation of China, China Southern Power Grid and other related organizations. He has published over 200 technical papers and has obtained multiple authorized patents.

Zhang Jin

Prof. Dr. Zhang Jin is a Professor at Nankai University and serves as the Executive Associate Editor of Laboratory Science. He has been honored with the Ministry of Education Baosteel Excellent Teacher Award. His research long-term focuses on the enabling and innovative application of modern computer technologies, such as artificial intelligence, in interdisciplinary fields and industrial practices

As a project leader, he has presided over multiple research projects including the NSFC Project, and has led in-depth industry collaboration projects with organizations such as SGCC, CNOOC Energy Technology & Services, and The Boeing Company

His research findings have been published in over 20 high-level journal papers, including in TPDSand JBHI, and his related technological achievements have been awarded six provincial/ministerial-level Science and Technology Progress Awards (first and second prizes).

07 Institutional Editorial Role of the Electronics Research Institute (ERI)

The Electronics Research Institute (ERI) participates in this Special Issue as a Strategic Editorial Partner, contributing scientific expertise and editorial support in full alignment with the journal's editorial policies and peer-review standards. ERI's role is designed to complement the responsibilities of the Guest Editors-in-Chief while reinforcing the scientific quality, thematic coherence, and international visibility of the Special Issue.

◆ (1) Editorial Responsibilities

In coordination with the Guest Editors-in-Chief, ERI contributes to the planning and organization of Guest Editorial activities, including the refinement of the Special Issue scope and thematic structure. ERI supports the initial technical and thematic screening of submitted manuscripts to assess their relevance, originality, and technical soundness, without interfering with the journal's independent editorial decision-making process. In addition, ERI assists in identifying and nominating qualified international reviewers and supports the peer-review workflow to ensure transparency, consistency, and scientific rigor. ERI may also provide consolidated feedback based on reviewer reports to facilitate high-quality revisions and maintain academic standards.

◆ (2) Dissemination and Outreach

ERI supports the dissemination of the Special Issue through its international research and academic networks, with the aim of broadening global participation and encouraging high-quality submissions from diverse geographical regions, particularly the Middle East, Africa, and other emerging economies. These efforts are intended to enhance knowledge exchange and foster international collaboration in AI-driven energy system research.

◆ (3) Handling Editors at ERI

·Dr. Doaa M. Atia - Associate Prof. at Photovoltaic Cells Dept., - Electronics Research Institute
·Dr. Rasha M. Shoitan - Associate Prof. at Computers and Systems Dept., - Electronics Research Institute
·Dr. Amal A. Hassan – Researcher at Photovoltaic Cells Dept., - Electronics Research Institute
·Dr. Sahar A. Nasef – Researcher at Photovoltaic Cells Dept., - Electronics Research Institute
·Dr. Heba Samir – Researcher at Photovoltaic Cells Dept., - Electronics Research Institute

08 Institutional Editorial Role of Tianjin University (TJU)

Tianjin University participates in this special Issue as a Strategic Editoral Partner, supporting the Special Issue by providing scientific and technical expertise, facilitating the organization and coordination of editorial activities, and ensuring alignment with the journal's peer-review standards. Its functions include assisting in the initial thematic screening of submitted manuscripts, recommending qualified reviewers, coordinating the peer-review workflow, and offering consolidated feedback based on reviewer reports to promote high-quality revisions. Additionally, the partner contributes to the dissemination of the Special Issue through its academic networks, helping to attract diverse, high-quality submissions and foster international collaboration.

◆ (1) Editorial Responsibilities

The editorial role of Tianjin University (TJU) is to collaborate closely with the Guest Editors-in-Chief, particularly in refining the scope and thematic structure of the Special Issue. TJU contributes to the preliminary

evaluation of submitted manuscripts, assessing their relevance, originality, and technical quality, while fully respecting the journal's independent editorial decisions. Furthermore, TJU assists in recommending qualified international reviewers and helps manage the peer-review process to maintain fairness, transparency, and scientific rigor. TJU may also synthesize reviewer feedback to support authors in producing high-quality revisions.

◆ (2) Dissemination and Outreach

TJU supports the dissemination of the Special Issue through its international academic and research networks, aiming to attract high-quality submissions from diverse regions, particularly within Asia-Pacific and global collaborative research communities. These efforts are intended to strengthen international collaboration and enhance the academic impact of AI-driven research in energy interconnection and low-carbon power systems.

◆ (3) Handling Editors at TJU

·Dr. Tianyi Xu – Associate Prof. at College of Intelligence and Computing, - Tianjin University
·Dr. Mankun Zhao- Associate Prof. at College of Intelligence and Computing, - Tianjin University
·Dr. Zhiqiang Liu- Researcher at College of Intelligence and Computing, - Tianjin University

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