AI Enabled Smart Grid and Energy Internet

CALL FOR PAPERS

At present, with the proposal and implementation of the national major strategy of "carbon peaking and carbon neutralization", renewable energy represented by wind power and photovoltaic can be vigorously developed and utilized, which will profoundly change the pattern of China's power and energy industry. Artificial intelligence (AI) technology represented by big data, cloud computing, Internet of things, digital twin, intelligent computing, deep learning and intensive learning is an important driving force for the development of Smart Grid and Energy Internet. It will promote the deep integration of power, energy, information, transportation and other fields, enable the production, transmission and utilization of power and energy, support the effective consumption of large-scale new energy, and help China achieve the dual carbon strategic goal. On the other hand, with the impact of climate change and human activities, China's power and energy demand continues to grow, which will put forward higher requirements on the planning, operation, control and information processing technology of Smart Grid and Energy Internet. It is urgent to establish a high-intelligent control and decision-making

platform based on AI technology. From the perspective of theory and practice, this topic will exchange and discuss AI and its research status, progress, achievements and existing challenges in Smart Grid and Energy Internet.

The solicitation scope of this topic includes but is not limited to the following topics:

❉ Artificial intelligence technology of Smart Grid and Energy Internet (including big data, cloud computing, Internet of things, digital twin, intelligent computing, deep learning, intensive learning, etc.);

❉ Application of artificial intelligence in smart grid planning, operation and dispatching;

❉ Application of artificial intelligence technologies such as deep learning in smart grid new energy and non-invasive load forecasting;

❉ Application of artificial intelligence technology such as reinforcement learning in frequency and voltage control of smart grid;

❉ Application of artificial intelligence technology such as machine learning in smart grid state estimation, power theft analysis and network attack;

❉ Application of artificial intelligence technology in power quality analysis and relay protection of smart grid;

❉ Application of artificial intelligence technology in smart grid power market transaction rules formulation, electricity price guidance and

dispatching decision-making;

❉ Application of AI technology in smart grid renewable energy efficient absorption;

❉ AI enabled smart grid "source-network-load-storage" interactive collaboration technology;

❉ AI enabled intelligent distribution network and microgrid multi-energy complementary technology;

❉ Application of AI technology in supporting the planning, operation and scheduling of multi-heterogeneous Energy Internet such as electricity, heat and gas;

❉ Application of AI technology such as deep learning in Energy Internet prediction;

❉ Application of AI technology such as reinforcement learning in Energy Internet control;

❉ Application of AI technology such as machine learning in Energy Internet state estimation, energy theft analysis and network attack;

❉ Application of AI technology in energy management of large-scale electricity gas interconnection system

❉ Application of AI technology in energy management of distributed multi-energy complementary integrated park;

❉ Application of AI technology in the formulation of Energy Internet trading rules, energy price guidance and multi-energy dispatching

decision;

❋ Application of AI technology in Smart Grid and Energy Internet;

❋ Application of blockchain technology in Smart Grid and Energy Internet;

❋ Application of digital twin technology in Smart Grid and Energy Internet;

❋ Application of cloud computing technology in Smart Grid and Energy Internet;

❋ Application of Internet of things technology in Smart Grid and Energy Internet;

❋ Artificial intelligence enables the interpretability of Smart Grid and Energy Internet;

If you want to know more about the topic, please contact Associate Professor Li Yuanzheng or Professor Zhigang Zeng via email: **Yuanzheng_Li@hust.edu.cn**