//// **Panel Session 03** ////

Emerging AI Techniques for Nexus of Electricity, Gas, Heating, and Transportation on System Modelling and Forecasting

○ INTRODUCTION AND TOPICS ○

A whole-system perspective encompassing electricity, gas, heating, and transportation is crucial for a sustainable energy transition. Traditionally, electricity, gas, heating, and transportation systems were operated independently to fulfill individual energy needs. With advancements in technologies, such as hybrid heating systems and hydrogen production through advanced electrolysis, the interactions between these systems are increasing with new interfaces. AI technologies offer innovative solutions. Big data analytics and machine learning algorithms develop a comprehensive understanding of the entire energy system, considering various dimensions, including technological, economic, social, and environmental factors. Therefore, we provide a panel session for researchers and scientists to exchange high-quality research solutions and results to tackle the whole energy system issues utilizing emerging AI-related technologies. Both data-driven and physical model-based forecasting techniques are interesting, targeting more interpretable and efficient integrated energy system modeling and evaluation.

• Smart integration of electrical, thermal, and hydrogen systems with AI

• Data-driven models for energy generation and consumption forecasting

• Clean energy usage optimization with AI

• Nexus of electricity, gas, heating, and transportation in a new era

○ PANEL SESSION CHAIRS ○

Prof. Zheng Yingying   China Agricultural University, China

Yingying Zheng was recruited in 2021 as a distinguished talent in the College of Information and Electrical Engineering at China Agricultural University, serving as a professor, doctoral supervisor, and deputy head of the Department of Electrical Engineering. She is a member of the IEEE and IEEE PES. Zheng has long been engaged in research on power systems and integrated energy system modeling, energy flow optimization and scheduling, and smart grid demand-side response control strategies. She has led a project funded by the U.S. National Science Foundation and a project by Utah Grid Company, and has been a key participant in several research projects funded by the U.S. Department of Energy and the Department of Agriculture. She has led or participated in more than ten major projects, including the National Key R&D Program, key projects of the National Natural Science Foundation of China Joint Fund, the Youth Fund Project of the National Natural Science Foundation of China, and the Open Fund of the National Key Laboratory. In the past five years, she has published more than 20 papers in the fields of energy and electrical engineering.

Prof. Fu Xueqian   China Agricultural University, China

Xueqian Fu was recruited in 2017 as an outstanding talent in the College of Information and Electrical Engineering at China Agricultural University, serving as an associate professor. He is a Senior Member of IEEE. He was selected for the "Young Star B" category of the China Agricultural University 2115 Talent Cultivation and Development Support Program in 2020. He serves as the vice chairman of the IEEE Smart Village Committee China Working Group, the deputy director of the Ministry of Agriculture and Rural Affairs Key Laboratory of Smart Farming Technology, and the executive deputy editor of Information Processing in Agriculture. He has led one project funded by the National Natural Science Foundation of China and one by the China Postdoctoral Science Foundation (First Class). In the past few years, he has published 46 SCI papers as the first or corresponding author and was listed among the "Top 2% of Scientists in the World" in 2023.

○ PAPER SUBMISSION ○

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before submission.

○ ORGANIZATIONS ○

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