

## //// Panel Session 07 ////

## AI-empowered Vehicle-grid Interaction

## ○ INTRODUCTION AND TOPICS ○

In recent years, the number of electric vehicles (EVs) in China is increasing significantly, which is expected to reach 100 million in 2030 with a peak charging load around 100GW. Such a huge amount of EVs bring challenges to the real-time balancing of the power grid due to its stochasticity. On the other hand, if properly regulated, EVs can also provide grid-supporting functions as a virtual battery system to enhance the power system operation and save unnecessary grid construction costs. However, the regulation problem for large amount of EVs has extremely high dimensionality, nonlinearity and dynamicity, which can hardly be solved by traditional modeling and optimization strategy.

In this panel session, we focus on how to leverage Artificial Intelligence (AI) technologies to empower the vehicle-grid interaction in large scale. AI can achieve data mining to learn implicit patterns from vast amount of operational data, and achieve fast generation of regulation strategies when implemented in real-time scenarios. The application scenarios include but not limited to the modeling, situational awareness, forecasting, regulation, marketing of the EV-integrated power system. By using AI technologies, the operation efficiency and control accuracy are expected to be improved.

## ○ PANEL SESSION CHAIRS ○

**Assoc. Prof. Xiaoyuan Xu** Shanghai Jiao Tong University, China

Xiaoyuan Xu (Senior Member, IEEE) received the B.S. and Ph.D. degrees in electrical engineering from Shanghai Jiao Tong University, Shanghai, China, in 2010 and 2016, respectively. He was a Visiting Scholar with the Robert W. Galvin Center for Electricity Innovation, Illinois Institute of Technology, Chicago, IL, USA, from 2017 to 2018. He is currently an Associate Professor of Electrical Engineering with Shanghai Jiao Tong University. His research interests include power system uncertainty analysis and optimization. He is an Associate Editor of IEEE TRANSACTIONS ON SUSTAINABLE ENERGY, Protection and Control of Modern Power Systems, and Journal of Shanghai Jiao Tong University.

**Asst. Prof. Yiyan Li** Shanghai Jiao Tong University, China

Yiyan Li (Member, IEEE) received the B.S. and Ph.D. degrees in electrical engineering from Shanghai Jiao Tong University, Shanghai, China, in 2014 and 2019, respectively. He is currently an Assistant Professor with the College of Smart Energy, Shanghai Jiao Tong University. Before joining SJTU, he was a postdoctoral research scholar at the Electrical and Computer Engineering Department, Future Renewable Energy Delivery and Management Systems Center, North Carolina State University. His research interests include machine learning and data analytics in power distribution systems, such as energy forecasting, synthetic data generation, anomaly detection. He has been awarded by several national/provincial level talent programs and fundings.

## ○ PAPER SUBMISSION ○

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## ○ ORGANIZATIONS ○



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