CHENG FENG

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West Academic Building, Tsinghua University, Beijing 100084, China

EDUCATION

Ph.D., Electrical Engineering Sep 2019 - June 2024
Energy Intelligence Lab, Department of Electrical Engineering, Tsinghua University, China.

Visiting Scholar Feb 2023 - Aug 2023
Automatic Control Lab (ifA), ETH Zürich, Switzerland

B.E., Electrical Engineering Sep 2015 - Jun 2019
Department of Electrical Engineering, Huazhong University of Science and Technology, China

RESEARCH INTERESTS

- Cyber-Physical Coupling in Smart Energy Systems
- Power System Flexibility, P2P Trading, and Energy Management
- Power-Electronic-Dominated Power System

MEMBERSHIP

- Student Member, IEEE Power and Energy Society
- Student Member, IET
- Student Member, CIGRE

ACADEMIC SERIVCES

- IEEE Transactions on Smart Grids
- IEEE Internet of Things Journal
- IEEE Transactions on Energy Markets, Policy, and Regulation
- IEEE Systems Journal
- IET Renewable Power Generation

INDUSTRIAL EXPERIENCES

Serve as *core developers* for hardware and algorithms for VPPs in Bejing VPPTech Co., LTD. VPPTech is a startup incubated by Tsinghua University, which has received millions in investment from Sequoia Capital.

AWARDS

- **Academic Award**

PhD Dissertation Challenge Finalist,
IEEE PES Grid Edge Technologies Conference and Expo ..... April 2023
Scholarship for Academic Excellence,
Awarded by Tsinghua University ..... November 2023, November 2022, November 2020
Highly Regarded Research Award in the Beijing Area,
Awarded by Beijing Association for Science and Technology ..... November 2020
Outstanding Undergraduate Award,
Awarded by Huazhong University of Science and Technology ..... June 2019
Undergraduate National Scholarship,
Awarded by Ministry of Education ..... October 2018
Scholarship for Academic Excellence,
Awarded by Huazhong University of Science and Technology ..... October 2017, May 2017, May 2016

• **Industrial Award**

Outstanding Invention Award, Special Gold Model,
Invention Name: *Edge Control Devices and Aggregation Platform fol Urban-Level Virtual Power Plant*
Awarded by 49th Geneva Invention Exposition Committee ..... April 2024

SELECTED PUBLICATIONS

• **Cyber-Physcial System Optimization**

APE1 **Cheng Feng**, Kedi Zheng, Lanqing Shan, et al. Connection-Aware P2P Trading: Simultaneous Trading and Peer Selection. (2024). *Submitted to Applied Energy*, Available on Arxiv, 2402.11769.

TWC1 **Cheng Feng**, Kedi Zheng, Yi Wang, Kaibin Huang, Qixin Chen. Goal-Oriented Wireless Communication Resource Allocation for Cyber-Physical Systems. (2023). *IEEE Transactions on Wireless Communications*, Early Access.

TSG1 **Cheng Feng**, Kedi Zheng, Yangze Zhou, Peter Palensky, Qixin Chen. Update Scheduling for ADMM-based Energy Sharing in Virtual Power Plants Considering Massive Prosumer Access. (2023). *IEEE Transactions on Smart Grid*, 14(5), 3961-3975.

TSG2 **Cheng Feng**, Qixin Chen, Yi Wang, Jiaqi Ma, Xuanyuan Wang. Frequency Regulation Service Provision for Virtual Power Plants through 5G RAN Slicing. (2022). *IEEE Transactions on Smart Grid*, 13(6), 4943-4956.

TSG3 **Cheng Feng**, Yi Wang, Xuanyuan Wang, Qixin Chen. Device Access Optimization for Virtual Power Plants in Heterogeneous Networks. (2021). *IEEE Transactions on Smart Grid*, 13(2), 1478-1489.

COP1 Adrian Lang, Yi Wang, **Cheng Feng**, et al. Data aggregation point placement for smart meters in the smart grid. (2021). *IEEE Transactions on Smart Grid*, 13(1): 541-554.

CHN1 Yi Wang, Qixin Chen, Ning Zhang, **Cheng Feng** (First Student Author), et al. Fusion of the 5G communication and the ubiquitous electric internet of things: application analysis and research prospects (In Chinese). (2019). *Power System Technology*, 43(5): 1575-1585.

• **Power System Flexibility and Intelligent Energy Management**

IOT1 Chenyu Zhou, **Cheng Feng** (Contribute Equally), Yi Wang. Spatial-Temporal Energy Management of Base Stations in Cellular Networks. (2021). *IEEE Internet of Things Journal*, 9(13), 10588-10599.

APE2 **Cheng Feng**, Yi Wang, Qixin Chen, Yi Ding, et al. Smart grid encounters edge computing: Opportunities and applications. (2021). *Advances in Applied Energy*, 1, 100006. (**Highly Cited Paper**)

CHN2 **Cheng Feng**, Yi Wang, Qixin Chen, Xuan Zhang, and Gang Luo. (2020) Review of energy management for data centers in energy internet (in Chinese). *Electric Power Automation Equipment*, 40(7), 1-9.

TSG4 **Cheng Feng**, Yi Wang, Kedi Zheng, Qixin Chen. Smart meter data-driven customizing price design for retailers. (2019). *IEEE Transactions on Smart Grid*, 11(3), 2043-2054.

• **Power System Stability and Control**

TPS1 **Cheng Feng**, Linbin Huang, Xiuqiang He, Yi Wang, Florian Dörfler, Qixin Chen. Joint Oscillation Damping and Inertia Provision Service for Converter-Interfaced Generation. (2023). *Submitted to IEEE Transactions on Power Systems*, Available on Arxiv, 2309.01321.

TSG5 **Cheng Feng**, Qixin Chen, Yi Wang, Peng-Yong Kong, Hongchao Gao, Songsong Chen. Provision of Contingency Frequency Services for Virtual Power Plants with Aggregated Models. (2023). *IEEE Transactions on Smart Grid*, 14(4), 2798-2811.

SELECTED PROJECTS

DATA-Analytics for Enhanced Operation of Local Energy Systems from Cyber-Physical-Social Perspectives (DATALESs) January 2022 - Present
Supported by NSFC and NWO

· Efficient and scalable distributed energy resource aggregation and peer-to-peer transaction

Analysis and Modeling Methods of Energy Consumption Behavior of Commercial and Industrial Users Considering Physical-Social Couplings January 2022 - Present

Supported by NSFC

· Modeling and coordination for commercial user consumption behaviors

Key Technologies in Aggregation, Interaction, and Regulation of Large-Scale Flexible Resources and Virtual Power Plants October 2021 - Present

Supported by the Ministry of Science and Technology of China

· Modeling and hierarchical aggregation of heterogeneous flexible resources

Behavior Modeling, Characteristics Analysis and Interaction Optimizing for Multiple Types of Users Supported by Power Internet of Things January 2021 - Present

Supported by Major Smart Grid Joint Project of NSFC and SGCC

· Cyber-physical user modelling in power distribution systems

Research and Demonstration of Key Technologies for 100% Clean Power Supply with High Reliability in Winter Olympics December 2020- December 2022

Supported by Ministry of Science and Technology of China

· Tech-economic analysis and VPP development for winter Olympics

Theory and Methodology of Generalized Dynamic Demand Response Towards Urban Energy System January 2018 - December 2021

Supported by Major Smart Grid Joint Project of NSFC and SGCC

· Feature extraction, forecasting, and clustering of electricity load profiles