

YUANXI WU

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Education

Southeast University (Project 985, Double First Class University)

Sep. 2021 – June 2024

M. Sc. in Electrical Engineering

Jiangsu, China

- **Average Score:** 94.53/100 | **Ranking:** 1/157 (Top 1%)

Hohai University (Project 211, Double First Class University)

Sep. 2017 – June 2021

B. Sc. in Electrical Engineering and Automation

Jiangsu, China

- **Average Score:** 93.24/100 | **Ranking:** 3/216 (Top 1%)

Selected Honors & Awards

China National Scholarship, Ministry of Education of China

2019

Outstanding Graduates of Jiangsu Province, Jiangsu Education Department (**Top 0.2%**)

2021

1st Prize in the Final of National College Mathematics Competition, Chinese Mathematical Society (**Top 0.05%**)

2019

Merit Graduate Student, Southeast University

2022

Top 100 Outstanding Students, Hohai University

2020

1st Prize Scholarship, Southeast University

2022

Research Experience

Managing Stochastic OPF Facing High Renewable Penetration (Dissertation)

Sep. 2022 – Present

Supervisors: Prof. Wei Gu, Prof. Yijun Xu, and Assoc. Prof. Zhi Wu (Southeast University)

Jiangsu, China

- Facilitated efficient high-dimensional uncertainty quantification through an extension of unscented transform.
- Conducted data-driven surrogate modeling under arbitrarily distributed and correlated uncertainties using a novel variant of polynomial chaos expansion.
- Coupled partial least squares and neural networks to enable improvement of voltage stability in large-scale systems.

Mechanism Design and Assessment of Power Trade in GMS Countries

April 2022 – June 2023

Core team member | Science and Technology Project of China Southern Power Grid Co., Ltd.

Yunnan, China

- Collected data and reports from different government departments and organizations.
- Wrote three technical reports independently and participated in the preparation of presentation slides.

Decentralized Implementation of Energy Markets and Mechanism Design

Sep. 2021 – Aug. 2022

Supervisors: Prof. Wei Gu and Assoc. Prof. Zhi Wu (Southeast University)

Jiangsu, China

- Designed a novel market mechanism that is incentive-compatible and individually rational to take into account social welfare and fairness simultaneously.
- Developed a joint energy, uncertainty, and carbon allowance trading market based on the consumer responsibility principle.
- Explored the multi-cut Benders decomposition, tightening McCormick envelope, and the alternating direction method of multipliers to enable decentralized implementation.

Detection of Abnormal Working Conditions of Energy Storage Batteries

July 2019 – May 2020

Team leader | Supervisor: Prof. Hongzhong Ma (Hohai University)

Jiangsu, China

- Collaborated with team members to establish the experimental platform and collect vibration signals of batteries.
- Utilized the S transform for time-frequency analysis to extract prominent vibration signal features across diverse working conditions.

Publications & Manuscripts (Reverse Order)

Journal Papers (* denotes corresponding author):

- [1] **Y. Wu**, et al., "Computationally Enhanced Approach for Chance-Constrained OPF Considering Voltage Stability", *Submitted to IEEE Transactions on Power Systems*. (Available: [arXiv: 2306.14527](https://arxiv.org/abs/2306.14527))
- [2] **Y. Wu**, et al., "Decentralized Energy Market Integrating Carbon Allowance Trade and Uncertainty Balance in Energy Communities", *Submitted to IET Renewable Power Generation*. (Available: [arXiv: 2301.12129](https://arxiv.org/abs/2301.12129))

Publications & Manuscripts Continued

Journal Papers (* denotes corresponding author):

- [3] Z. Wu, **Y. Wu**, et al., "Mechanism Design of Ancillary Service Market Considering Social Welfare and Fairness", in *CSEE Journal of Power and Energy Systems*. (**JCR Q1; Main Contributor** With Z. Wu Being Supervisor; To appear in Aug. 2023)
- [4] H. Ma, **Y. Wu***, et al., "Identification of Overcharge Characteristics of Energy Storage Batteries Based on MRSVD and Time-Frequency Grayscale Image", in *Chinese Journal of Power Sources*, vol. 44, no. 9, pp.1351-1355, 2020. (**Main Contributor** With H. Ma Being Supervisor; Chinese Core Journal)
- [5] X. Peng, H. Ma, H. Xu, C. Li, **Y. Wu**, et al., "A Novel Method of Early Warning for Abnormal Working Conditions of Energy Storage Batteries Based on Vibration", in *Electrical Measurement & Instrumentation*, vol. 60, no. 2, pp.167-171, 2020. (Chinese Core Journal)
- [6] **Y. Wu**, et al., "Chance-Constrained AC Optimal Power Flow Considering High Penetration Renewables: A Data-Driven Approach", *In Preparation*.

Conference Paper:

- [1] S. Zhao, Z. Wu, J. Wang, S. Zheng, J. Zhao, **Y. Wu**, "A Multi-Regional Coordinated Peer-to-Peer Energy Trading Market Mechanism in Distribution Networks", 2021 IEEE Sustainable Power and Energy Conference (iSPEC), Nanjing, China, 2021, pp. 1991-1996, doi: 10.1109/iSPEC53008.2021.9735624.

Teaching Experience

Teaching Assistant, Relay Protection of Power System

March 2022 – July 2022

School of Electrical Engineering, Southeast University

- Graded course assignments of 87 undergraduate students and reported common mistakes made by students.

Undergraduate Mentor, Advanced Mathematics

Feb. 2019 – June 2019

College of Water Conservancy and Hydropower Engineering, Hohai University

- Mentored more than 30 undergraduate students in advanced mathematics to prepare for mathematics competitions.

Extracurricular Activities

Reviewing:

- *Journal*: IET Generation, Transmission & Distribution

Volunteer Activities:

- Class president in Hohai University (Honored with Outstanding Student Leader)
- Student volunteer of "Young Elite Scientists Salon of China Association for Science and Technology" in 2021
- Community volunteer to conduct smartphone tutorials for senior citizens

Relevant Skills

English Proficiency: CET-6 601 (**Top 8%**), GRE 332 (Verbal 162, Quantitative 170, Writing 4)

Scientific Software: MATLAB, Mathematica, Gurobi, Mosek, MATPOWER, LaTeX, Origin, VS Code