

YUANXI WU

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Education

Southeast University

M. Sc. in Electrical Engineering

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

Sep. 2021 – June 2024

Jiangsu, China

Nanjing University

Jiangsu Postgraduate Summer School on Decision-Making and Algorithm

July 2023

Jiangsu, China

Hohai University

B. Sc. in Electrical Engineering and Automation

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

Sep. 2017 – June 2021

Jiangsu, China

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 Chinese Mathematics Competitions for College Students, Chinese Mathematical Society (**Top 0.05%**)

2019

Merit Graduate Student, Southeast University

2022

1st Prize Scholarship, Southeast University

2022

Top 100 Outstanding Students, Hohai University

2020

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.

Research Experience

Managing Stochastic OPF Facing High Renewable Penetration (Dissertation)

Nov. 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 the generalized unscented transform.
- Conducted data-driven surrogate modelling 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 2021 – 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

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.
- 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.
- Analyzed frequency-domain data to extract vibration signal features under different working conditions.

Publications & Manuscripts

Publications:

- [J1] 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*. (Accepted in May 2022; To appear in Aug. 2023)
- [J2] 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. (Chinese Core Journal)

Manuscripts:

- [M1] **Y. Wu**, et al., "Computationally Enhanced Approach for Chance-Constrained OPF Considering Voltage Stability", *Under Review*. (Available: [arXiv: 2306.14527](#))
- [M2] **Y. Wu**, et al., "Decentralized Energy Market Integrating Carbon Allowance Trade and Uncertainty Balance in Energy Communities", *Under Review*. (Available: [arXiv: 2301.12129](#))
- [M3] **Y. Wu**, et al., "Chance-Constrained AC Optimal Power Flow Considering High Penetration Renewables: A Data-Driven Approach", *In Preparation*.

Relevant Skills

Languages: CET-6 601, GRE 336 (Verbal 162, Quantitative 170, Writing 4)

Scientific Software: MATLAB, Mathematica, Gurobi, Mosek, LaTeX, Origin

Additional Information

Society Memberships:

- Institute of Electrical and Electronics Engineers (IEEE)
- Chinese Society for Electrical Engineering (CSEE)

Reviewing:

- *Journal:* IET Generation, Transmission & Distribution