

YUANXI WU

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Education

Southeast University (Project 985 University)

Sep. 2021 – June 2024

M. Eng. in Electrical Engineering (Graduated With Distinction)

Jiangsu, China

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

Hohai University (Project 211 University)

Sep. 2017 – June 2021

B. Eng. in Electrical Engineering and Automation (Graduated With Distinction)

Jiangsu, China

- GPA: 93.24/100 (4.93/5) | 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

Outstanding Postgraduate, Southeast University

2024

Merit Postgraduate, Southeast University

2022

Top 100 Outstanding Students, Hohai University

2020

1st Prize Scholarship, Southeast University

2022

Publications (Reverse Order)

Journal Papers (* denotes corresponding author):

- [1] **Y. Wu**, et al., "Computationally Enhanced Approach for Chance-Constrained OPF Considering Voltage Stability", in *IEEE Transactions on Power Systems*, vol. 39, no. 6, pp. 6998-7011, 2024.
- [2] **Y. Wu**, et al., "Decentralized Energy Market Integrating Carbon Allowance Trade and Uncertainty Balance in Energy Communities", in *Sustainable Energy, Grids and Networks*, vol. 39, 101453, 2024.
- [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*, vol. 10, no. 3, pp. 1000-1010, 2024 (**Main Contributor** With Z. Wu Being Supervisor)
- [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)

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.

Research Experience

Algorithm for Stochastic OPF Facing High Renewable Penetration (Dissertation)

Sep. 2022 – June 2024

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

Jiangsu, China

- Proposed an efficient two-stage iterative method for stochastic OPF to address the nonlinearity in power flow models and account for non-Gaussian uncertainties.
- Enhanced high-dimensional uncertainty quantification by extending the unscented transform methodology.
- Performed data-driven surrogate modeling under arbitrarily distributed and correlated uncertainties utilizing an adaptive 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 and synthesized data and reports from various government departments and organizations.
- Drafted three technical reports independently and contributed to the preparation of presentation slides.

Decentralized Energy Market Design and Implementation

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 balance social welfare and fairness.
- Developed an integrated market model for energy trading, uncertainty management, and carbon allowance transactions.
- Employed the multi-cut Benders decomposition, tightening McCormick envelope, and the alternating direction method of multipliers to formulate an inner-outer iterative framework for privacy-preserving market operation.

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.
- Applied the S transform for time-frequency analysis to extract prominent vibration signal features.

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

Journal Reviewer:

- 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

Research Skills: Optimization theory, Uncertainty quantification, Linear system control, Deep learning

Scientific Tools: Python, MATLAB, TensorFlow, Mathematica, Gurobi, Mosek, LaTeX (Beamer), Origin, VS Code

English Proficiency: TOEFL 111 (Reading 30, Listening 30, Speaking 25, Writing 26), GRE 332 (Verbal 162, Quantitative 170, Writing 4), CET-6 601 (Top 8%)

References

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Junpeng Zhu, Associate Professor

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