Yifan Zhou

Contact Information

Department of Electrical and Computer Engineering
Stony Brook University
Stony Brook, NY, 11790, USA
Email: yifan.zhou.1@stonybrook.edu
Homepage: https://yifanzhou.info/

Research Interests

AI-driven smart grids; Quantum computing in power grids; Formal verification of power grids; Power system dynamics and control; Networked microgrids.

Current Appointments

Stony Brook University Sep. 2022 – Present

Assistant Professor in Department of Electrical and Computer Engineering.

Professional Preparation

Stony Brook University Sep. 2019 – Aug. 2022

Postdoc in Department of Electrical and Computer Engineering.
Advisor: Prof. Peng Zhang

Tsinghua University Sep. 2014 – Jul. 2019

Ph.D. in Electrical Engineering.
Advisor: Prof. Yong Min.
Thesis: Integrated Power and Heat Dispatch Methodology Based on Operational Flexibility

Harvard University May. 2018 – Oct. 2018

Visiting Scholar in School of Engineering and Applied Sciences.
Advisor: Prof. Na Li

University of Birmingham Apr. 2016 – Jul. 2016

Visiting Scholar in Department of Electronic, Electrical and Systems Engineering.
Advisor: Prof. Xiao-Ping Zhang

Tsinghua University Sep. 2010 – Jul. 2014

B.S. in Electrical Engineering (Rank: 1/132).

Awards And Recognition

- NSF CAREER Award 2026
- Best Paper Award in 2026 IEEE PES General Meeting 2026
- Packard Fellowship Nomination at SBU 2025
  Two nominations each year at SBU
- Stony Brook University Discovery Prize Finalist 2025
  Three finalists biennially from all disciplines at SBU
- AI Youth Star Award in 2024 IEEE Big Data Conference 2024
- 2023 Young Academic Inventor's Award from the National Academy of Inventors (NAI) of the SBU Chapter 2023
- Moore Inventor Fellow Nomination at SBU 2023
  Two nominations each year at SBU
- Top-5 finalist in 2023 CIGRE Next Generation Network (NGN) 2023

- Outstanding Reviewer for IEEE Transactions on Power Systems 2021
- Outstanding Graduate of Tsinghua University (**1.5%**) 2014
- Tsinghua First-Class Scholarship for Integrated Excellence 2015,2013,2012
- Outstanding Graduate of Beijing 2014
- Outstanding Thesis Award, Tsinghua University 2014

Publications

Name: Students who I mentored or co-mentored. Name*: Corresponding author.

Peer-Reviewed Journals

36. Yao Xiao, **Yifan Zhou***, "Accelerating Multi-Contingency Simulation through Physics-Data-Hybrid Mode Decomposition", *IEEE Transactions on Power Systems*, accepted, Jan. 2026.
35. Yao Xiao, **Yifan Zhou***, "Parallel-in-Time Neural Simulation of Networked Microgrids with Low-Fidelity Physics Guidance", *IEEE Transactions on Industrial Application*, accepted, Oct. 2025.
34. Sijia Yu, **Yifan Zhou***, "Noise-Aggregation-Enhanced Quantum Federated Learning for Transient Stability Assessment of Networked Microgrids", *IEEE Transactions on Industrial Application*, accepted, Oct. 2025.
33. Fei Feng, **Yifan Zhou**, Mikhail A. Bragin, Yacov A. Shamash, Peng Zhang*, "Quantum contingency analysis for power system steady-state security identification", *Scientific Reports*, vol. 15, pp. 15148, Apr. 2025.
32. Qing Shen, **Yifan Zhou**, Peng Zhang*, Yacov A. Shamash, Roshan Sharma and Bo Chen, "Neuro-Modeling Infused EMT Analytics," in *IEEE Transactions on Consumer Electronics*, vol. 71, no. 1, pp. 1806-1818, Feb. 2025
31. Xuguo Fu, **Yifan Zhou***, "Learning-Based, Runtime Reachability Analysis of Microgrid Dynamics", *IEEE Transactions on Power Systems*, vol. 40, no. 1, pp. 1152-1155, Jan. 2025.
30. Fei Feng, **Yifan Zhou**, Peng Zhang*, "Neuro Dynamic State Estimation for Networked Microgrids", *IEEE Transactions on Industry Applications*, vol. 61, no. 1, pp. 1431-1441, Feb. 2025.
29. Qing Shen, **Yifan Zhou***, Peng Zhang, "Physics-Aware Neural Dynamic Equivalence of Power Systems", *IEEE Transactions on Power Systems*, accepted, Oct. 2023.
28. Zimin Jiang, Peng Zhang*, **Yifan Zhou**, "Differential Duffing Oscillator Based Cyberattack Detection for Inverters", *IEEE Transactions on Smart Grid*, vol. 39, no. 1, pp. 2341-2344, Jan. 2024.
27. Lizhi Wang, Songyuan Zhang, **Yifan Zhou***, Chuchu Fan, Peng Zhang, Yacov A. Shamash, "Physics-Informed, Safety and Stability Certified Neural Control for Uncertain Networked Microgrids", *IEEE Transactions on Smart Grid*, vol. 15, no. 1, pp. 1184-1187, Jan. 2024.
26. Heqing Huang, Yuzhang Lin*, **Yifan Zhou**, Yue Zhao, Peng Zhang, Lingling Fan, "Data-driven modeling of power system dynamics: Challenges, state of the art, and future work," in iEnergy, vol. 2, no. 3, pp. 200-221, September 2023.
25. Fei Feng, Peng Zhang*, Mikhail Bragin, **Yifan Zhou**, "Novel Resolution of Unit Commitment Problems through Quantum Surrogate Lagrangian Relaxation," in *IEEE Transactions on Power Systems*, vol. 38, no. 3, pp. 2460-2471, May 2023.

24. **Yifan Zhou**, Peng Zhang*, "Noisy Intermediate-Scale Quantum Electromagnetic Transients Program," in *IEEE Transactions on Power Systems*, vol. 38, no. 2, pp. 1558-1571, Mar. 2023.
23. Fei Feng, **Yifan Zhou**, Peng Zhang*, "Noise-Resilient Quantum Power Flow," in *iEnergy*, vol. 2, no. 1, pp. 63-70, Mar. 2023.
22. Fei Feng, Peng Zhang*, **Yifan Zhou**, Lizhi Wang, "Distributed Networked Microgrids Power Flow," in *IEEE Transactions on Power Systems*, vol. 38, no. 2, pp. 1405-1419, Mar. 2023.
21. **Yifan Zhou**, Peng Zhang*, "Noise-Resilient Quantum Machine Learning for Stability Assessment of Power Systems," in *IEEE Transactions on Power Systems*, vol. 38, no. 1, pp. 475-487, Jan. 2023.
20. Fei Feng, Peng Zhang*, **Yifan Zhou**, Zefan Tang, "Quantum Microgrid State Estimation," in *Electric Power Systems Research*, vol. 212, pp. 108386, Nov. 2022.
19. Dmitrii A. Etingov, Peng Zhang*, Zefan Tang, **Yifan Zhou**, "AI-Enabled Traveling Wave Protection for Microgrids," in *Electric Power Systems Research*, vol. 210, pp. 108078, Sep. 2022.
18. **Yifan Zhou**, Zefan Tang, Nima Nikmehr, Pouya Babahajiani, Fei Feng, Tzu-Chieh Wei, Honghao Zheng, Peng Zhang*, "Quantum Computing In Power Systems," in *iEnergy*, vol. 1, no. 2, pp. 1-18, Jul. 2022.
17. Fei Feng, Peng Zhang*, **Yifan Zhou**, "Authentic Microgrid State Estimation," in *IEEE Transactions on Power Systems*, vol. 37, no. 2, pp. 1657-1660, Mar. 2022.
16. **Yifan Zhou**, Peng Zhang*, "Neuro-Reachability of Networked Microgrids," in *IEEE Transactions on Power Systems*, vol. 37, no. 1, pp. 142-152, Jan. 2022.
15. Lizhi Wang, **Yifan Zhou**, Wenfeng Wan, Peng Zhang*, "Eigenanalysis of Delayed Networked Microgrids," in *IEEE Transactions on Power Systems*, vol. 36, no. 5, pp. 4860-4863, Sept. 2021.
14. **Yifan Zhou**, Fei Feng, Peng Zhang*, "Quantum Electromagnetic Transient Program," in *IEEE Transactions on Power Systems*, vol. 36, no. 4, pp. 3813-3816, Jul. 2021.
13. Fei Feng, **Yifan Zhou**, Peng Zhang*, "Quantum Power Flow," in *IEEE Transactions on Power Systems*, vol. 36, no. 4, pp. 3810-3812, Jul. 2021.
12. **Yifan Zhou**, Peng Zhang*, "Reachable Dynamics of Networked Microgrids with Large Disturbances," in *IEEE Transactions on Power Systems*, vol. 36, no. 3, pp. 2416-2427, May. 2021.
11. **Yifan Zhou**, Peng Zhang*, "Reachable Power Flow: Theory to Practice," in *IEEE Transactions on Power Systems*, vol. 36, no. 3, pp. 2532-2541, May. 2021.
10. **Yifan Zhou**, Peng Zhang*, "Reachable Eigenanalysis," in *IEEE Transactions on Power Systems*, vol. 35, no. 6, pp. 4936-4939, Nov. 2020.
9. **Yifan Zhou**, Peng Zhang*, "Reachable Power Flow," *IEEE Transactions on Power Systems*, vol. 35, no. 4, pp. 3290-3293, Jul. 2020.
8. **Yifan Zhou***, Wei Hu, Le Zheng, Yong Min, Lei Chen, Zongxiang Lu, Ling Dong, "Power and Energy Flexibility of District Heating System and Its Application in Integrated Power and Heat Dispatch," in *Energy*, vol. 190, Jan. 2020.
7. **Yifan Zhou**, Wei Hu, Yong Min*, Yuanhang Dai, "Integrated Power and Heat Dispatch Considering Available Reserve of Combined Heat and Power Units," in *IEEE Transactions on Sustainable Energy*, vol. 10, no. 3, pp. 1300-1310, Jul. 2019.

6. **Yifan Zhou**, Wei Hu*, Yong Min, Le Zheng, "Active Splitting Strategy Searching Approach Based on MISOCP with Consideration of Island Stability," in *Journal of Modern Power Systems and Clean Energy*, vol. 7, no. 3, pp. 475-490, May 2019.
5. **Yifan Zhou**, Wei Hu*, Yong Min, Xialing Xu, Yong Li, "Modeling and Optimization of Multitype Power Sources Stochastic Unit Commitment Using Interval Number Programming," in *Journal of Energy Engineering*, vol. 143, no. 5, 2017.
4. Wei Hu*, Yong Min, **Yifan Zhou**, Qiuyu Lu, "Wind Power Forecasting Errors Modelling Approach Considering Temporal And Spatial Dependence," in *Journal of Modern Power Systems and Clean Energy*, vol. 5, no. 3, pp. 489-498, Jan. 2017.
3. **Yifan Zhou**, Wei Hu*, Yong Min, "Peak Regulation Compensation Price Decision for Combined Heat and Power Unit and Profit Allocation Method," in *Proceedings of the Chinese Society for Electrical Engineering*, vol.39, no.18, pp. 5325-5335+5579, 2019.
2. **Yifan Zhou**, Wei Hu*, Yong Min, Ling Dong, Yanhe Li, "Coordinated Power and Heat Dispatch Considering Peak Regulation Initiative of Combined Heat and Power Unit," in *Automation of Electric Power Systems*, vol.43, no.19, pp. 42-51, 2019.
1. **Yifan Zhou**, Wei Hu*, Yong Min, *et al*, "Dynamic Comprehensive Evaluation of Chinese Power System Development Level Based on Provincial Data," in *Automation of Electric Power Systems*, vol.40, no.18, pp. 76-83, 2016.

Peer-Reviewed Conference Proceedings

21. Sijia Yu, **Yifan Zhou***, Bin Wang, Qiang Zhang, Xiaochuan Luo, Tongxin Zheng, "Stabilizing Quantum EMT on Noisy Hardware Using Multidimensional Richardson Extrapolation", 2026 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5. **Best Paper Award**.
20. Sijia Yu, **Yifan Zhou***, "Quantum Federated Learning Based Power System Stability Assessment: A Noise Robust Approach", The 57th North American Power Symposium (NAPS) 2025, pp. 1-6.
19. Sijia Yu, **Yifan Zhou***, "Quantum Shifted Frequency Analysis through Quantum Krylov Subspace", *2025 IEEE PES General Meeting*, 2025 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5.
18. Yao Xiao, **Yifan Zhou***, "Conformal Anomaly Detection for Data-Driven Dynamic Models in Power Systems", *2025 IEEE PES General Meeting*, 2025 IEEE Power & Energy Society General Meeting (PESGM), pp. 1-5.
17. Trisha Sabadra (high school student), Sijia Yu, **Yifan Zhou***, "Quantum Kernel Classification for Data-Driven Power System Stability Assessment", *2024 IEEE International Conference on Big Data (IEEE BigData 2024) - Undergraduate and High School Symposium*, Oct. 2024. **AI Youth Star Award**.
16. Sijia Yu, **Yifan Zhou***, "Distributed Quantum Machine Learning in Power System Transient Stability Assessment", *IEEE International Conference on Quantum Computing and Engineering (QCE)*, Sep. 2024.
15. Xuguo Fu, **Yifan Zhou***, "Learning-Based Uncertain Dynamic Verification of MMC-HVDC Offshore Wind Systems", *IEEE Power and Energy Society General Meeting (PESGM)*, July. 2024.
14. **Yifan Zhou***, Xuguo Fu, "Stochastic Dynamic Verification of Microgrids", *IEEE Power and Energy Society General Meeting (PESGM)*, July. 2024.

13. Sijia Yu, **Yifan Zhou***, "Quantum Adversarial Machine Learning for Robust Power System Stability Assessment", *IEEE Power and Energy Society General Meeting (PESGM)*, July. 2024.
12. Qing Shen*, **Yifan Zhou**, Huanfeng Zhao, Peng Zhang, Qiang Zhang, Slava Maslennikov, Xiaochuan Luo, "Powering the Future: Harnessing Neural Dynamic Equivalence for Enhanced Power System Applications", 2023 CIGRE Next Generation Network (NGN), May. 2023. **Top 5 in the NGN Paper Competition**.
11. Sijia Yu, Zefan Tang, Zimin Jiang, **Yifan Zhou***, "Scalable and Lightweight Distributed Local Routing for Quantum Network-Based Microgrids", *IEEE Power and Energy Society General Meeting (PESGM)*, 2023.
10. Lizhi Wang, Songyuan Zhang, **Yifan Zhou***, Chuchu Fan, Peng Zhang, Yacov A. Shamash, "Learning-Based, Safety and Stability-Certified Microgrid Control", *IEEE Power and Energy Society General Meeting (PESGM)*, 2023.
9. **Yifan Zhou**, Peng Zhang*, "Neural Electromagnetic Transients Program", *IEEE Power and Energy Society General Meeting (PESGM)*, 2022.
8. Zefan Tang, Peng Zhang*, **Yifan Zhou**, "Quantum Renewable Scenario Generation", *IEEE Power and Energy Society General Meeting (PESGM)*, 2022.
7. **Yifan Zhou**, Peng Zhang*, Yue Meng "An ODE-Enabled Distributed Transient Stability Analysis for Networked Microgrids", *IEEE Power and Energy Society General Meeting (PESGM)*, 2020.
6. **Yifan Zhou***, Wei Hu, Yong Min, *et al*, "A Semi-Supervised Anomaly Detection Method for Wind Farm Power Data Preprocessing", *IEEE Power and Energy Society General Meeting (PESGM)*, 2017.
5. Le Zheng, Wei Hu, **Yifan Zhou***, *et al*, "Deep belief network based nonlinear representation learning for transient stability assessment", *IEEE Power and Energy Society General Meeting (PESGM)*, 2017.
4. **Yifan Zhou***, Wei Hu, Yong Min, *et al*, "MILP-based Splitting Strategy Searching Considering Island Connectivity and Voltage Stability Margin", *IEEE Power and Energy Society General Meeting (PESGM)*, 2016.
3. **Yifan Zhou***, Wei Hu, Yong Min, *et al*, "A Novel Active Splitting Strategy Search Method with Modularity-based Network Partition", *IEEE Innovative Smart Grid Technologies - Asia (ISGT ASIA)*, 2015.
2. **Yifan Zhou***, Wei Hu, Yong Min, *et al*, "Coherency Feature Extraction based on DFT-based Continuous Wavelet Transform", *IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)*, 2015.
1. **Yifan Zhou***, Wei Hu, Yong Min, *et al*, "Modelization and Optimization of Multi-Type Power Generators Joint Scheduling based on Improved PSO", *IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)*, 2014.

Grants

External Grants as PI

3. "CAREER: Fully Quantum Power Grid Analysis: Fundamental Theory and Novel Algorithms"
   Sponsor: National Science Foundation (NSF)
   Total Amount: $565,470
   My Share: $565,470
   Period: 8/1/2026 - 7/31/2031
2. "ENG-QUANT: Scalable Quantum Electromagnetic Transient Analysis with Tensors and Singularity Transformation"

Sponsor: National Science Foundation (NSF)
Total Amount: $503,644
My Share: $300,000
Period: 10/1/2025 - 9/30/2028

1. "WINDPLUS: Accelerating Offshore Wind Integration in New York' s Digitally Enhanced, Modernized Power Grid"
Sponsor: New York State Research and Development Authority (NYSERDA)
Total Amount: $500,000
My Share: $250,000
Period: 7/1/2024 - 06/30/2026

Teaching and Mentoring

- **Teaching**
  - **ESE562 - AI-Driven Smart Grids, SBU**
    Fall 2025, Course Evaluation: 5.0/5.0.
    Fall 2024, Course Evaluation: 5.0/5.0.
  - **ESE352 - Electromechanical Energy Converters, SBU**
    Fall 2025, Course Evaluation: 5.0/5.0.
    Fall 2024, Course Evaluation: –/5.0.
    Fall 2023, Course Evaluation: 5.0/5.0.
    Fall 2022, Course Evaluation: 5.0/5.0.
  - **EEO425 - Electric Machinery and Energy Conversion, SBU**
    Fall 2025, Course Evaluation: 5.0/5.0.
    Fall 2024, Course Evaluation: 5.0/5.0.
    Fall 2023, Course Evaluation: 5.0/5.0.
    Fall 2022, Course Evaluation: 4.8/5.0.
  - **ESE586 - Microgrids, SBU**
    Fall 2023, Evaluation: 4.5/5.0.
    Fall 2022, Evaluation: 5.0/5.0.

- **Mentoring**
  - **PhD students**: Boyang Zhao (Fall 2025 -), Yao Xiao (Fall 2024 -), Xuguo Fu (Fall 2023 -), Sijia Yu (Spring 2023 -).
  - **Graduate students**: Gagan Sapkota (Spring 2026 -), Tarini Guttula (Spring 2026).
  - **Undergraduate students**: Alan Mani, Tasnim Harun, Eshan Shakrani, Tylon Guan, Saad Satter (through SBU ECE's Senior Design Project).
  - **High school students**: Trisha Sabadra, Asha Boyapati (through SBU's Computer Science and Informatics Summer Research Experience Program)

Service

Editorial and Review Services

- Reviewer of NSF ECCS, CISE 2026, 2025, 2024
- Chair of International Council on Large Electric Systems (CIGRE) Working Group JWG C4/D2.80 2026 – Present
  Title: Quantum Information Science and Technology (QIST) for Reliable and Secure Power Systems
- Lead Editor of IEEE Access (PES Section) 2026 – Present
  Associate Editor of IEEE Access (PES Section) 2023 –2026

- Associate Editor of IEEE Journal of Oceanic Engineering 2024 – Present
- Associate Editor of Energy Reports 2023 –Present
- Session Chair of two sessions "Quantum Computing and Learning" and "Benchmarking and Assessment" at 2024 IEEE International Conference on Quantum Computing and Engineering (QCE24)
- Technical program committee (TPC) member of QCE24.
- Reviewer of IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, IEEE PES Letters, Scientific Reports, Energy, Applied Energy, IEEE PES General Meeting, Power System Computing Conference, etc.

University and Department Service (Active)

- Committee member of the ad hoc Committee on Pathways and Potential at SBU. Jan. 2026-Present.
- Committee member of the Student Life Senate at SBU. Sep. 2025-Present.

University and Department Service (Past)

- Faculty search committee member for non-tenure-track Lecturer for Engineering AI at SBU ECE. Jun. 2025-Dec. 2025.
- Faculty search committee member for non-tenure-track Lecturer for Engineering AI at SBU ECE. Jun. 2024-Dec. 2024.
- Faculty search committee member for ECE Chair at SBU ECE. Oct. 2024-May. 2025.
- Faculty search committee member for tenure-track Assistant Professor for ML/AI at SBU ECE. Sep. 2023 - May. 2024.
- Faculty search committee member for tenure-track Assistant Professor for ML/AI at SBU ECE. Sep. 2022 - May. 2023.
- Member of the AI Research & Application Working Group at SBU.