



Yu Zhang

Ph.D. Candidate in Control Science & Engineering

Huazhong University of Science and Technology; visiting Nanyang Technological University

✉ N2505927K@e.ntu.edu.sg | yuzhang_hust@hust.edu.cn | 🏠 Homepage

Postdoctoral search: expecting to complete my Ph.D. in late 2026 and actively seeking opportunities in control, optimization, and energy systems starting in Spring 2027.

Profile

Ph.D. researcher working on predefined-time optimization, distributed control, and cyber-resilient operation for hybrid AC/DC microgrid clusters. My work connects rigorous convergence guarantees with practical energy-system objectives including economic dispatch, voltage/frequency restoration, power-flow optimization, and attack-resilient control.

Education

Nanyang Technological University

Visiting Scholar/Student, School of Electrical and Electronic Engineering

Advisors: Prof. Hung Dinh Nguyen and Prof. Changyun Wen

Singapore
2026–Present

Huazhong University of Science and Technology

Ph.D. in Control Science & Engineering

Advisor: Prof. Yan-Wu Wang

Wuhan, China
2020–Present

Taiyuan University of Technology

B.S. in Electrical Engineering

Advisor: Prof. Xiao-Ming Chang

Taiyuan, China
2016–2020

Research System

Economic dispatch	Smooth reconstruction penalty functions and distributed predefined-time economic dispatch for cost minimization, power balance, transmission loss, and generation constraints.
Cooperative control	Predefined-time voltage/frequency restoration and global power sharing for DC and hybrid AC/DC microgrids under unknown load power.
Power-flow optimization	Phase-angle and voltage-safe multi-objective optimization for networked AC/DC microgrids with local-information implementation.
Resilient control	Practical predefined-time resilient control against DoS and FDI attacks in single and networked DC microgrids.

Selected Publications

1. Yu Zhang, Yan-Wu Wang, Xiao-Kang Liu, Guan-Nan Yu, and Yuehua Huang. Optimal Phase Angle Control for Interconnected AC Microgrids. *Automatica (Regular Paper)*, 2026.
2. Yu Zhang, Yan-Wu Wang, Zhichun Yang, and Xiao-Kang Liu. From Single to Networked: Practical Predefined-Time Resilient Control of DC Microgrids under DoS and FDI Attacks. *IEEE Transactions on Industry Applications*, 2026.
3. Yu Zhang, Yan-Wu Wang, and Xiao-Kang Liu. Distributed Load-sharing and Loss Optimization within Voltage Safety Constraints for Meshed DC Microgrid. *IEEE/CAA Journal of Automatica Sinica*, 2025.
4. Yu Zhang, Yan-Wu Wang, Jiang-Wen Xiao, and Xiao-Kang Liu. Distributed Predefined-Time Optimal Economic Dispatch for Microgrids. *Automatica (Regular Paper)*, 2024.
5. Yan-Wu Wang, Yu Zhang, Xiao-Kang Liu, and Xia Chen. Distributed Predefined-Time Optimization and Control for Multi-Bus DC Microgrid. *IEEE Transactions on Power Systems*, 2024. Student first author.
6. Yu Zhang, Yan-Wu Wang, Xiao-Kang Liu, Wu Yang, and Shu-Ming Liang. Distributed Predefined-Time Control for Hybrid AC/DC Microgrid. *IEEE Transactions on Industrial Electronics*, 2023.
7. Yu Zhang, Yan-Wu Wang, Jiang-Wen Xiao, and Xiao-Kang Liu. Predefined-Time Secondary Control for DC Microgrid. *IEEE Transactions on Industrial Electronics*, 2022.

Additional Publications

1. **Ke-Xin Ma, Yu Zhang (corresponding author), et al.** FT-ESO Based Fixed-Time Secondary Control for DC Microgrids with Unknown External Disturbances. *IEEE Transactions on Smart Grid*, 2026.
2. **Yu Zhang, Hung Dinh Nguyen, Xiao-Kang Liu, and Yan-Wu Wang.** Multi-Scale Laplacian-Guided Decision Transformer for Hybrid Energy Storage Dispatch in Renewable-Rich Distribution Networks. *21st IEEE Conference on Industrial Electronics and Applications (ICIEA)*, 2026. [\[Best Paper Award in Energy and Environment\]](#).
3. **Yu Zhang, Xiao-Kang Liu, et al.** Energy-Like Stability of Interconnected Grid-Forming Inverters with Potential-Sensitive Virtual Inertia. *IEEE Power & Energy Society General Meeting*, 2026.
4. **Xiao-Kang Liu, Zi-Yi Xiong, Yu Zhang, et al.** Distributed Power Sharing Control for Islanded AC Microgrids With Quantized State. *IEEE Transactions on Industrial Electronics*, 2025.
5. **Ziyi Xiong, Lunbeng Pan, Yu Zhang, et al.** Distributed Event-Triggered Coordinated Voltage-Constrained and Current-Sharing Control for Islanded DC Microgrids. *IEEE Asia-Pacific Power and Energy Engineering Conference*, 2024.
6. **Yu Zhang, Ke-Xin Ma, et al.** Optimal Voltage Scheduling under Safety Constraints for Multi-bus DC Microgrid. *14th Asian Control Conference*, 2024.
7. **Yu Zhang, Xiao-Kang Liu, et al.** Distributed Predefined-Time Secondary Control for AC Microgrid. *49th Annual Conference of the IEEE Industrial Electronics Society*, 2023.

Projects

- **Hosted**, HUST Innovation Research Institute Technology Innovation Fund: optimal frequency control strategy of microgrid based on distributed energy storage, 2024.09–2025.09.
- **Participated**, Hubei Province Technology Innovation Plan Key R&D Project: coordinated control and optimization for smart microgrids based on energy storage clusters, 2025.08–2027.08. Responsible for multi-timescale cooperative control of energy storage under emergency scenarios.
- **Participated**, NSFC Key Project: distributed cooperative control and intelligent decision-making of regional energy Internet, 2023.01–2027.12.

Honors & Awards

2026	ICIEA 2026, Best Paper Award in Energy and Environment : Multi-Scale Laplacian-Guided Decision Transformer for Hybrid Energy Storage Dispatch in Renewable-Rich Distribution Networks.
2025	National Scholarship for Doctoral Students.
2025	"Huawei Cup" Artificial Intelligence Innovation Competition, Second Prize. Topic: AI-model-driven safety warning and health monitoring system for new-energy vehicle power batteries.
2025	Dual-Carbon Innovation and Creativity Competition, Third Prize. Topic: EV energy-storage multi-scale coordinated optimization and intelligent regulation.
2025	2024 Hubei Province Excellent Science and Technology Paper.
2024	20th National Conference on Complex Networks, Best Student Paper.
2024	Advances in Engineering, Key Scientific Article.
2024	Huichuan Cup National Intelligent Automation Innovation Competition, National Third Prize.
2022	National Scholarship for Master's Students; 34th China Control and Decision Conference, Most Popular Academic Work Award.
Patent	Five authorized Chinese invention patents, including ZL202110837323.6.

Skills

Theory: predefined-time control, distributed optimization, resilient control, multi-objective power-flow optimization.
Learning: reinforcement learning, PPO algorithms, reward scaling design, physics-informed reinforcement learning, decision transformers.
Tools: Python, MATLAB/Simulink, power electronics modeling, PCB design, high-precision industrial controller development.

Academic Travel

18 conference presentations and academic events across 14 cities, 2021–2026, including the IEEE Conference on Industrial Electronics and Applications, Annual Conference of the IEEE Industrial Electronics Society, Asian Control Conference, IEEE/CAA Journal of Automatica Sinica Conference, IEEE Active Disturbance Rejection Control Workshop, and other control/automation venues.