

Zhicheng ZHANG — CV

Department of Electrical Engineering
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“We Must Know, We Will Know.” — David Hilbert

Z. Zhang is currently a Specific Program Researcher at Department of Electrical Engineering, Kyoto University, Katsura, Japan. He received B.A. degree in Japanese from Changzhou Institute of Technology, Changzhou, China, in 2017 and the M.Sc. degree in Mathematics from Guilin University of Electronic Technology, Guilin, China, in 2020, and Ph.D. degree in Informatics from Osaka University, Suita, Japan, in 2024. From 2019 to 2020, he has been a visiting researcher at EECS at The University of Kitakyushu, Fukuoka, Japan. His research interests include *Sparse Modeling, Optimal Control, Data-Driven Robust Optimization, Nonlinear Dynamics, Control Theory and its Applications*. He is a member of SICE, IEEE, SIAM and INFORMS.

Position and Experience

Kyoto University

Specific Program Researcher (Postdoc), Dept. of Electrical Engineering
Fields: Koopman Operator on Weather Applications
Promotor: Prof. Yoshihiko Susuki

Kyoto, Japan
2024.04 – present

Osaka University

Graduate School of Information Science and Technology
Research Assistant (RA)
Teaching Assistant (TA)

Osaka, Japan
2020.10 – 2024.03

The University of Kitakyushu

Research Fellow (Visiting Researcher -Master Student), EECS
Fields: Sparse Modeling and Optimal Control
Host Advisor: Prof. Masaaki Nagahara

Fukuoka, Japan
2019.09 – 2020.09

Education

Osaka University

Ph.D, Informatics, Dept. of Information and Physical Sciences
Fields: Probabilistic Robustness for Sparse Control
Supervisor: Prof. Yasumasa Fujisaki

Osaka, Japan
2020.10 – 2024.03

Guilin University of Electronic Technology

M.S., Mathematics, School of Mathematics and Computing Science
Fields: Complex Dynamical Systems and Networks
Advisor: Prof. Zhongjun Ma

Guilin, China
2017.09 – 2020.06

Changzhou Institute of Technology

B.A., Japanese (Major)
B.S., Applied Mathematics (Minor)

Changzhou, China
2013.09 – 2017.06

Research Interests

- Decision Making under Uncertainty
- ♣ Data-Driven Robust Optimization
- ♣ Stochastic Programming

- Sparse Modeling
 - ♣ Sparse Optimal Control ♣ Sparsity-Promoting Methods
- Control Theory
 - ♣ Nonlinear and Linear Control ♣ Networked Control Systems

Honors and Awards

- 2020 Guangxi Outstanding Graduates, China, 2020 (top 1%)
- Outstanding Master's Thesis of GUET, China, 2020 (top 3%)
- Postgraduate Scholarship, First Prize, GUET, China, 2019, 2020 (top 3%)
- Graduate Fellowship for Study Abroad, GUET, China, 2019
- National Scholarship for Master's Student, China, 2019 (top 3%)

Research Projects and Academic Foundations

Practical Stability of Nonlinear Dynamical Systems

Collaborator, School of Mathematics and Computing Science, GUET 2017.10 – 2018.06
 ○ The Innovation Project of GUET Graduate Education, Grant No. 2017YJCX79 (CNY 10,000)

Stability of Impulsive Ordinary Differential Equations and its Applications

Co-Investigator (CI), School of Mathematics and Computing Science, GUET 2018.10 – 2019.06
 ○ The Innovation Project of GUET Graduate Education, Grant No. 2018YJCX60 (CNY 10,000)

Intermittent Feedback Control of Nonlinear Multi-Agent Systems

Principal Investigator (PI), School of Mathematics and Computing Science, GUET 2018.12 – 2020.06
 ○ Cultivation of Excellent Thesis Project of GUET Graduate Education, Grant No. 2018YJSPY01 (CNY 10,000)

Cooperative Control of Multi-Agent Networked Systems

Principal Investigator (PI), School of Mathematics and Computing Science, GUET 2019.09 – 2020.08
 ○ The Study Abroad Program for Graduate Student of GUET, Grant No. GDYX2019015 (JPY 1,800,000)

Partial Component Synchronization of Nonlinear Networks and its Applications

Collaborator, School of Mathematics and Computing Science, GUET 2019.01 – 2021.12
 ○ Guangxi Natural Science Foundation, China, Grant No. 2018GXNSFAA281068 (CNY 50,000)

Positions of Responsibility

- **Teaching Assistant** for Undergraduate courses like *Mathematical Analysis*, *linear Algebra*, *matrix computation*, *control theory*, and *Calculus*.
- **Research Assistant** for Graduate courses like *operations research*, and *research seminars*.

Professional Service

Reviewer (Journals & Conferences)

- *International Journal of Robust and Nonlinear Control (IJRNC)*, *IEEE Transactions on Systems, Man and Cybernetics (IEEE TSMC)*, *IEEE Transactions on Automation Science and Engineering (IEEE T-ASE)*, *Physics of Fluids - AIP*
- *IFAC Symposium on Robust Control Design (IFAC ROCOND'22)*, *IFAC World Congress (IFAC WC'23)*, *European Control Conference (ECC'24)*, *IEEE Int. Conf. Advanced Robotics and Mechatronics (ICARM'24)*

Publications

Peer Reviewed Journals

[J2] Z. Zhang and Y. Fujisaki, "Sparse feedback controller: From open-loop solution to closed-loop realization," *SICE Journal of Control, Measurement, and System Integration*, 2023, Vol. 16, No. 1, 286–296. (Doi: [10.1080/18824889.2023.2237234](https://doi.org/10.1080/18824889.2023.2237234); [arXiv:2303.15175](https://arxiv.org/abs/2303.15175))

[J1] Z. Zhang, Z. Ma and Y. Wang, "Partial component consensus of leader-following multi-agent systems via intermittent pinning control," *Physica A: Statistical Mechanics and its Applications*, 2019, 536: 122569. (Doi: [10.1016/j.physa.2019.122569](https://doi.org/10.1016/j.physa.2019.122569)).

Refereed International Conference Proceedings

[C8] Z. Zhang, Y. Susuki and A. Okazaki, "Koopman mode decomposition of transient weather dynamics: A case study on humidity ratio data field," *2025 Int. Sympos. on Nonlinear Theory and Its Applications (NOLTA 25)*, IEICE, Okinawa, Japan, Oct. 27-31, 2025 (accepted for presentation)

[C7] Z. Zhang, Y. Susuki and A. Okazaki, "Sparsity-promoting dynamic mode decomposition applied to sea surface temperature fields," *Proc. SICE Festival with Annual Conference (SICE FES25)*, Chiang Mai, Thailand, Sep. 9-12, 2025 (accepted; [arXiv:2507.05711](https://arxiv.org/abs/2507.05711))

[C6] Z. Zhang and Y. Fujisaki, "Data-driven sparse feedback control with Schur- α stability," *SICE International Symposium on Control System (ISCS'24)*, SICE, Mar., 2024, p. 3M1-2.

[C5] Z. Zhang and Y. Fujisaki, "Risk assessment for sparse optimization with relaxation," *Proc. of the 55th ISCIE Int. Sympos. on Stochastic Systems Theory and its Applications*, ISCIE, Nov., 2024, pp. 20-23.

[C4] Z. Zhang and Y. Fujisaki, "Risk-aware sparse predictive control", *Preprint of the 22nd IFAC World Congress*, Paper MoBT1.2., July 2023, pp. 1477-1480.

[C3] Z. Zhang and Y. Fujisaki, "Sparse feedback control realization using linear dynamic compensator," *SICE International Symposium on Control System (ISCS'23)*, SICE, Mar. 2023, p. 3M1-4.

[C2] Z. Zhang and Y. Fujisaki, "Sparse robust control design via scenario optimization", *Proc. of the 53rd ISCIE Int. Sympos. Stochastic System Theory and Its Applications (SSS'21)*, ISCIE, Oct., 2022, pp. 61-64.

[C1] Z. Zhang and M. Nagahara, "Linear quadratic tracking control with sparsity-promoting regularization," *2021 American Control Conference (ACC'21)*, IEEE, May 2021, pp. 3812–3817.

International Conference Presentations

[CP1] Z. Zhang, Y. Susuki, and A. Okazaki, "Koopman analysis of large-scale transient simulation data on weather dynamics," *SIAM Conference on Applications of Dynamical Systems (SIAM DS'25)*, Denver, USA, May 11-15, 2025. (Oral Presentation)

[CP1] Z. Zhang and Y. Susuki, "Koopman analysis of weather dynamics using SCALE simulation data," *International Symposium on Weather Controllability*, Tokyo, October 6, 2024 (Poster Session)

Refereed Domestic Conference

[D1] Z. Zhang, Y. Susuki, and A. Okazaki, "Exploring SCALE weather data via Koopman modes," *The 67th Japan Joint Automatic Control Conference (Rengo'24)*, Himeji, Nov., 2024, 11J-5, pp. 274-275.

Preprints

[P2] Z. Zhang, Y. Susuki and A. Okazaki, "Extracting transient Koopman modes from short-term weather simulations with sparsity-promoting dynamic mode decomposition," (Under Review) ([arXiv:2506.14083](https://arxiv.org/abs/2506.14083))

[P1] Z. Zhang, Z. Ma, and X. Gan, "Wait-track consensus for nonlinear multi-agent system under control input failures," (revised-under review)

Thesis

[T1] Master's Thesis: Consensus of Classes of Nonlinear Multi-agent Network Systems via Intermittent Control, *China National Knowledge Infrastructure (CNKI)*, June, 2020 (in Chinese)

Technical Strengths

- **Languages:** Chinese (native), Japanese (N2), and English (fluent).
- **Skills:** \LaTeX , Matlab, Python, Julia, Multimodel Ensemble Prediction System (MEPS)
- **Certificate:** eAPRIN Learning, JLPT (N2)

Personal Information

- Born in December 19, 1994, Wuxi, China
- ⊗ Citizenship: Chinese

Referees

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| <ul style="list-style-type: none">○ Prof. Yasumasa Fujisaki
Department of Information and Physical Sciences
The University of Osaka
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