

HAN WANG

☎: (+41) 7679-68607 | ✉: hanwang1@ethz.ch | 🏠: <https://hanchwang.github.io/>
Physikstrasse 3, 8092 Zürich, Switzerland

RESEARCH INTERESTS

Building safe and intelligent autonomy by certified control and learning.

EMPLOYMENT

ETH Zürich

Postdoctoral Researcher
Advisor: Florian Dörfler

Zürich, Switzerland
Feb. 2025 – Present

EDUCATION

University of Oxford

Ph.D. in Control Engineering
Advisor: Antonis Papachristodoulou & Kostas Margellos

Oxford, UK
Oct. 2020 – Sept. 2024

Shanghai Jiao Tong University

B.S. in Cyber Security
Advisor: Jianping He

Shanghai, China
Sept. 2016 – July 2020

PUBLICATIONS

*: Equal contribution

Book Chapters

- (B-1) **H. Wang**, K. Margellos, and A. Papachristodoulou, “Assessing safety for control systems using sum-of-squares programming,” *Polynomial Optimization, Moments and Applications*, ed. C. Riener, M. Kocvara and B. Mourrain, Nature Springer, Switzerland, 2023.

Journal Papers and Journal-level AI Conferences Papers

- (J-9) **H. Wang**, K. Miao, D. Madeira, and A. Papachristodoulou, “Learning Neural Controllers with Optimality and Stability Guarantees Using Input-Output Dissipativity,” *Automatica*, to appear.
- (J-8) K. Miao*, **H. Wang***, X. Ding, K. Gatsis, A. Krause, and A. Papachristodoulou, “Learning Koopman Representations with Controllability Guarantees,” *International Conference on Learning Representations (ICLR)*, 2026.
- (J-7) Y. Wang, **H. Wang**, K. Zhuang, K. Moffat, and F. Dörfler, “Model-Free Power System Stability Enhancement with Dissipativity-Based Neural Control,” *Electric Power Systems Research*, 2026.
- (J-6) **H. Wang**, K. Margellos, and A. Papachristodoulou, “Convex Co-Design of Control Barrier Functions and State Feedback Controllers for Linear Systems With Input Constraints,” *IEEE Transactions on Automatic Control*, 2025.
- (J-5) **H. Wang**, A. Papachristodoulou, and K. Margellos, “Distributed Safe Control Design and Probabilistic Safety Verification for Multi-Agent Systems,” *Automatica*, 2025.
- (J-4) A. Nascimento*, **H. Wang***, A. Papachristodoulou, and K. Margellos, “Constraint Horizon in Model Predictive Control,” *IEEE Control Systems Letters*, 2025.
- (J-3) X. Ding, **H. Wang**, J. He, C. Chen, and X. Guan, “On the Sample Complexity of Observers for Unknown Linear Systems with Biased Dynamics Estimations,” *International Journal of Robust and Nonlinear Control*, 2025.
- (J-2) X. Ding, **H. Wang**, Y. Ren, Y. Zheng, C. Chen, and J. He, “Online Control Barrier Function Construction for Safety-Critical Motion Control of Manipulators,” *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2024.
- (J-1) **H. Wang**, K. Margellos, and A. Papachristodoulou, “A Time-Triggered Dimension Reduction Algorithm for the Task Assignment Problem,” *European Journal of Control*, 2022.

Conference Proceedings

- (C-11) G. Guidone, L. Monegaglia, E. Raimondi, **H. Wang**, M. Bianchi, and F. Dörfler, “A Spatially Informed Gaussian Process UCB Method for Decentralized Coverage Control,” in *European Control Conference (ECC)*, 2026.

- (C-10) Z. Xiong, Z. Yuan, K. Miao, **H. Wang**, J. Cortés, and A. Papachristodoulou, “Data-Enabled Predictive Control for Nonlinear Systems Based on a Koopman Bilinear Realization,” in *IEEE Conference on Decision and Control (CDC)*, 2025.
- (C-9) X. Ding, **H. Wang**, B. Zhang, Z. Ma, and C. Chen, “Safety-Aware Optimal Control for Motion Planning of Inspection Robots in Nuclear Power Plants Using Backward Receding SCA,” in *Chinese Control Conference (CCC)*, 2025.
- (C-8) J. Huang, **H. Wang**, K. Margellos, and P. Goulart, “Predictive Control Barrier Functions: Bridging Model Predictive Control and Control Barrier Functions,” in *European Control Conference (ECC)*, 2025.
- (C-7) K. Miao, L. Zhao, **H. Wang**, K. Gatsis, and A. Papachristodoulou, “Opt-ODENet: Neural ODE Controller Design with Differentiable Optimization Layers for Safety and Stability,” in *Learning for Dynamics & Control Conference (L4DC)*, 2025.
- (C-6) **H. Wang**, K. Margellos, A. Papachristodoulou, and C. De Persis, “Convex Co-Design of Mixed-Relative Degree Control Barrier Functions and Feedback Controllers for Linear Systems,” in *IEEE Conference on Decision and Control (CDC)*, 2024.
- (C-5) C. Ming, J. Lin, P. Fong, **H. Wang**, X. Duan, and J. He, “HiCRISP: An LLM-Based Hierarchical Closed-Loop Robotic Intelligent Self-Correction Planner,” in *China Automation Congress (CAC)*, 2024.
- (C-4) **H. Wang**, K. Margellos, and A. Papachristodoulou, “Safety Verification and Controller Synthesis for Systems with Input Constraints,” in *IFAC World Congress*, 2023.
- (C-3) **H. Wang**, K. Margellos, and A. Papachristodoulou, “Explicit Solutions for Safety Problems Using Control Barrier Functions,” in *IEEE Conference on Decision and Control (CDC)*, 2022.
- (C-2) Y. Li, Q. Jiao, **H. Wang**, and J. He, “Consensus and Approximation-Based Distribution Statistics in Network Systems,” in *American Control Conference (ACC)*, 2021.
- (C-1) **H. Wang**, Y. Li, W. Yu, J. He, and X. Guan, “Moving Obstacle Avoidance and Topology Recovery for Multi-Agent Systems,” in *American Control Conference (ACC)*, 2019.

Working Journal Papers

- (W-5) **H. Wang**, F. Zhao, and F. Dörfler, “A Data-Enabled Primal-Dual Approach for Adaptive Control with SDP Formulations,” *IEEE Transactions on Automatic Control*, under review.
- (W-4) **H. Wang**, K. Margellos, and A. Papachristodoulou, “Safe and Stable Filter Design Using a Relaxed Compatibility Control Barrier–Lyapunov Condition,” *Automatica*, under review.
- (W-3) M. Fochesato, **H. Wang**, A. Papachristodoulou, and P. Goulart, “Synthesis of Safety Certificates for Discrete-Time Uncertain Systems via Convex Optimization,” *Automatica*, under review.
- (W-2) A. Nascimento, **H. Wang**, A. Papachristodoulou, and K. Margellos, “Model Predictive Control with Multiple Constraint Horizons,” *IEEE Transactions on Automatic Control*, under review.
- (W-1) M. Newton, Z. Xiong, **H. Wang**, and A. Papachristodoulou, “On the Design of Rational Polynomial State Feedback Controllers,” *Automatica*, under review.

Dissertations

- (D-1) **H. Wang**, “Convex and distributed safety analysis and design for control systems,” Ph.D. thesis, *University of Oxford*, 2024. Available at [Oxford Library](#).

INDUSTRIAL PROJECT EXPERIENCES

Optimal control for the particle accelerator
 Research Assistant (with Idris Kempf, Paul Goulart, and Stephen Duncan)

Diamond Light Source Ltd., UK
 May. 2024 – Sept. 2024

MENTORING EXPERIENCES

At ETH Zürich:

Yifei Wang, Master Student (w/K. Zhuang, K. Moffat, and F. Dörfler) Spring 2025
Model-Free Power System Stability Enhancement with Dissipativity-Based Neural Control \rightarrow (J-7)

Xian Li, Master Student (w/J. Eising, and F. Dörfler) Fall 2025
Gradient Flow for Online Semi-definite Programming

Papa Kwabena Nyameskye Odum, Master Student (w/V. Häberle, and F. Dörfler) Fall 2025
Remote Monitoring and Control of Voltage Cells at the 90kV Cimencam Cement Plant Electrical Inlet Station

Emmanuel Korankye, Master Student (w/F. Zhao, and F. Dörfler) Fall 2025
Direct Adaptive Control for Racing Cars

Marius Baumann, Master Student (w/T. Nakanto, V. Häberle, and F. Dörfler) Spring 2026
Enhancing Stability of Large-Scale Power Systems via Learning Dissipativity

Lorenzo Pasini, Visiting Ph.D. Student from Univ. Padova (w/F. Zhao, and F. Dörfler) Spring 2026
Adaptive Policy Gradient Control for Nonlinear Systems

Anshuman Barnwal, Master Student (w/P. Stocco, and L. Lindemann) Spring 2026
Safe Manipulation in Complex Environment

Nilesh Balu, Master Student (w/K. Miao (Univ. Oxford), and L. Lindemann) Spring 2026
Safe Flow Matching Using Control Barrier Functions

At University of Oxford:

Jacob Holmes, Master Student (w/A. Papachristodoulou) Spring 2023
Safe Motion Planning for Racing Drones

PROFESSIONAL SERVICES

Reviewer for Journals & Conferences:

- IEEE Transactions on Automatic Control; Automatica, IEEE Transactions on Control of Network Systems; IEEE Transactions on Robotics; IEEE Control Systems Letters; IEEE Robotics and Automation Letters; IEEE Open Journal of Control Systems; Systems & Control Letters; International Journal of Robust and Nonlinear Control; etc.
- IEEE Conference on Decision and Control (CDC); American Control Conference (ACC); European Control Conference (ECC); Learning for Dynamics & Control Conference (L4DC), IFAC World Congress, etc.

Professional Memberships:

- IEEE Member; IEEE CSS Member