

TAO XU (徐韬)

Academic Curriculum vitae

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RESEARCH INTERESTS

I am devoted to understanding, overcoming, and exploiting uncertainties in dynamical systems.

My research lies at the intersection of control, game theory, optimization, and learning. Particular foci are on probabilistic prediction of stochastic dynamical systems, decision-aware (predict-then-optimize) learning, and mixed-strategy differential games. These ideas anchor in networked and multi-agent systems, where they have found their way into practical applications.

EDUCATION

2022–current Ph.D. Candidate in Control Science and Engineering at Shanghai Jiao Tong University

Zhiyuan Honor Program

Advisor: Jianping He

2018–2022 B.S. in Mathematics at Shanghai Jiao Tong University

Wu Wenjun Class

Thesis: Continuous-time Model of Stochastic Variance Reduced Gradient

Advisor: Jingwei Liang and Tao Luo

PUBLICATIONS

JOURNAL PAPERS

- 2026 1. **Tao Xu**, Wang Xi, and Jianping He, Near-Optimal Mixed Strategy for Zero-Sum Linear-Quadratic Differential Games, IEEE Transactions on Automatic Control, 2026. (Full Paper) [\[doi\]](#)
- 2026 2. **Tao Xu** and Jianping He, Distributionally Robust Probabilistic Prediction for Stochastic Dynamical Systems, IEEE Transactions on Automatic Control, 2026. (Full Paper) [\[doi\]](#)
- 2025 3. **Tao Xu**, Yushan Li, and Jianping He, Probabilistic Predictability of Stochastic Dynamical Systems, Automatica, 2025. [\[doi\]](#)

CONFERENCE PAPERS

- 2026 4. Wenxiao Du, **Tao Xu**, Xiaoyu Luo, Chongrong Fang, Jianping He, Decision-Aware Learning for Context-Dependent LQR: A Smart Predict-then-Optimize Approach, 2026 IEEE 65th Conference on Decision and Control (CDC), 2026. (To Appear)
- 2026 5. Ling Yao, Xiangyun Rao, **Tao Xu**, Pangkit Fong, Jianping He, High-Efficiency Distributed Non-convex Optimization Design with Certified Stopping Rule, 2026 IEEE 65th Conference on Decision and Control (CDC), 2026. (To Appear)
- 2023 6. **Tao Xu**, Wang Xi, and Jianping He, Differential Game with Mixed Strategies: A Weak Approximation Approach, 2023 IEEE 62nd Conference on Decision and Control (CDC), 2023. [\[doi\]](#)
- 2023 7. Yushan Li, **Tao Xu**, Jianping He, Cailian Chen, and Xinping Guan, Inferring State-Feedback Cooperative Control of Networked Dynamical Systems, IFAC-PapersOnLine, 2023. [\[doi\]](#)
- 2022 8. **Tao Xu** and Jianping He, Predictability of Stochastic Dynamical System: A Probabilistic Perspective, 2022 IEEE 61st Conference on Decision and Control (CDC), 2022. [\[doi\]](#)

PREPRINTS

- 2026 9. **Tao Xu**, Wang Xi, and Jianping He, Near-Optimal Mixed Strategy for Zero-Sum Differential Games, [arXiv:2308.01144](#), 2026.
- 2025 10. Xuyang Wang, Xinzhe Zhou, **Tao Xu**, Xiaoming Duan, Jianping He, A General and Efficient SE (3)-Equivariant Graph Framework: Encoding Symmetries with Complete Differential Invariants and Frames, 2025. [\[link\]](#)
- 2024 11. Jixian Liu, **Tao Xu**, Jianping He, Chongrong Fang, Smart Predict-then-Optimize Method with Dependent Data: Risk Bounds and Calibration of Autoregression, [arXiv:2411.12653](#), 2024.

FUNDING

- Jan'26–Dec'27 • NSFC, Young Student Basic Research Program (Doctoral Candidate), Weak Approximation Theory and Near-Optimal Algorithm Design for Mixed Strategies in Differential Games (Grant No. 625B2117), **Principal Investigator**.

HONORS & AWARDS

- 2022–2024 • Rongchang Technology Innovation Scholarship, awarded by Shanghai Rongchang Public Welfare Foundation (~10 Recipients University-wide).
- 2022 • Outstanding Graduate of Shanghai Jiao Tong University.
- 2021 • Meritorious Winner, Mathematical Contest in Modeling (MCM) (Top 7%).
- 2020 • First Prize at the Shanghai Regional Level, Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM) (Top 5%).
- 2020 • Second Prize at the Shanghai Regional Level (Category A, Mathematics Major), The Chinese Mathematics Competitions (CMC) (Top 10%).
- 2020 • Global Finalist, HackAsia Hackathon (Hong Kong).
- 2019 • Third Prize at the National Finals, China Society for Industrial and Applied Mathematics (CSIAM) Shenzhen Cup Mathematical Modeling Challenge (Top 0.2%, Only 3 Winners Per Track).
- 2017 • First Prize at the Provincial Level (Hubei Division), Chinese Mathematical Olympiad (CMO) - High School League (Top 0.5%, ~70 Winners Province-wide).

TEACHING

- 2023–current Modern Control Theory, Teaching Assistant, Shanghai Jiao Tong University.

SERVICE

- 2022-current Reviewer for IEEE Transactions on Automatic Control (TAC) ° Automatica ° IEEE Transactions on Control of Network Systems (TCNS) ° IEEE Transactions on Vehicular Technology (TVT) ° American Control Conference (ACC) ° IEEE Conference on Decision and Control (CDC) ° IFAC World Congress ° Learning for Dynamics and Control Conference (L4DC).
- Apr'2026 Organizer for 2026 Discover Intelligence Via Engineering (DIVE) Forum. [\[link\]](#)