Shuxing Xuan

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Current Position

University of Electronic Science and Technology of China Chengdu, China

Currently, I am a 4th-year Ph.D. student in Control Science and Engineering. My research interests include consensus control of multi-agent systems, reinforcement learning, and swarm/cluster control.

Education

University of Electronic Science and Technology of China (UESTC) Chengdu, China
Ph.D. in Control Science and Engineering (Supervisor: Prof. Hongjing Liang) *Sept. 2022 - Present*

Lanzhou University of Technology (LUT) Lanzhou, China
M.S. in Control Theory and Control Engineering (Supervisor: Prof. Ce Li) *Sept. 2019 - Jun. 2022*

Lanzhou University of Technology (LUT) Lanzhou, China
B.S. in Automation (Supervisor: Prof. Ce Li) *Sept. 2015 - Jun. 2019*

Publications

Journal Papers

[1] **Xuan, S.**, Liang, H., Huang, S., Li, T., and Sun, J. Distributed optimal consensus problem of input constrained nonlinear discrete-time MASs: A mode-free reinforcement learning approach. *IEEE Transactions on Cybernetics*, 2025, 55(6): 2910–2923. (CAS Q1, TOP)

[2] **Xuan, S.**, Liang, H., Sun, J., and Li, T. Fully distributed adaptive fault-tolerant tracking control for nonlinear MASs: A multi-hop neighborhood partition approach. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, doi:10.1109/TSMC.2026.3660633s.(CAS Q1, TOP)

[3] **Xuan, S.**, Ren, X., Liang, H., Li, T., and Guo, Q. Adaptive prescribed-time fuzzy fault-tolerant control of robotic manipulators with bounded gain: Theory and implementation. *Information Sciences*, 2025: 122578. (CAS Q1, TOP)

[4] **Xuan, S.**, Liang, H., Li, T., and Yang, C. Practical prescribed-time bipartite time-varying formation control for multi-agent systems with adaptive self-triggered mechanism. *IEEE Transactions on Automation Science and Engineering*, 2025, 22: 16838–16850. (CAS Q2, TOP)

[5] **Xuan, S.**, Liang, H., and Huang, T. Practical prescribed-time fuzzy tracking control for uncertain nonlinear systems with time-varying actuator faults. *Journal of Automation and Intelligence*, 2024, 3(1): 40–49. (China Excellence Action Plan Journal, EI Indexed)

[6] **Xuan, S.**, Liang, H., Chen, L., and Hossin, M. Adaptive connectivity-preserving consensus tracking of nonlinear strict-feedback multi-agent systems with input hysteresis and communication range constraints. *International Journal of Robust and Nonlinear Control*, 2025, 1–14. (CAS Q3)

[7] **Xuan, S.**, Liang, H., and Ahn, C. Global consensus tracking control of nonlinear multi-agent systems under quantitative performance constraints: A low-complexity approach. *IEEE Systems Journal*, under review (Manuscript ID: ISJ-RE-25-20254R1).

[8] Wu, Y., Liang, H., **Xuan, S.**, and Zhang, X. Reinforcement learning H_∞ optimal formation control for perturbed multi-agent systems with nonlinear faults. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2025, 55(3): 1935–1947.

[9] Wu, Y., Liang, H., **Xuan, S.**, and Li, T. Extended state observer-based finite-time fault-tolerant formation control for multi-UAVs. *Journal of the Franklin Institute*, 2024, 361(16): 107158.

[10] Li, C., **Xuan, S.**, Liu, F., Chang, E. and Wu, H. Global attention network for collaborative saliency detection. *International Journal of Machine Learning and Cybernetics*, 2023, 14(2): 407–417. (Supervisor as the First Author, CAS Q2)

[11] Li, C., Li, L., and **Xuan, S.** Live face detection algorithm based on hypercomplex wavelet generative adversarial network. [J] *Journal of Xi'an Jiaotong University*, 2021, 55(5): 113–122. (EI Indexed)

Conference Papers

[12] **Xuan, S.**, Liang, H., and Yang, J. Optimal formation motion planning and control for multi-UAVs based on deep reinforcement learning. *Proceedings of the 2025 American Control Conference (ACC)*, IEEE, 2025, pp. 3652–3657. (Top-tier A Conference in Control)

[13] **Xuan, S.**, Liang, H., and Chen, L. Neural network-based nonlinear multi-agent systems tracking control with dynamic connectivity preservation. *Proceedings of the 2024 6th International Conference on Electronic Engineering and Informatics (EEI)*, IEEE, 2024, pp. 723–728. (EI Indexed)

[14] Li, C., Gao, W., Liu, F., Chang, E., and **Xuan, S.** GAMSNet: Deblurring via generative adversarial and multi-scale networks. *Proceedings of the 2020 Chinese Automation Congress (CAC)*, IEEE, 2020, pp. 3631–3636.(EI Indexed)

[15] Li, C., Jin, S., Chang, E., and **Xuan, S.** SCANet: Person re-identification with semantically consistent attention. *Proceedings of the 2020 Chinese Automation Congress (CAC)*, IEEE, 2020, pp. 3424–3428. (EI Indexed)

[16] Li, C., Chang, E., Liu, F., and **Xuan, S.** Tiny-FASNet: A tiny face anti-spoofing method based on tiny module. *Proceedings of the 2021 Chinese Conference on Pattern Recognition and Computer Vision (PRCV)*, Cham: Springer International Publishing, 2021, pp. 362–373. (EI Indexed)

Research Projects and Academic Service

- Clustered Intelligent Control of Multi-Agent Systems, Sichuan Science and Technology Program (Outstanding Young Talent), Jan. 2023–Dec. 2025, 520,000 CNY, Student First Participant, Rank 3/8.
- Event-Triggered Hierarchical Resilient Frequency Control of Multi-Source Heterogeneous Power Systems, Sichuan Natural Science Foundation, Jan. 2025–Dec. 2026, 100,000 CNY, Student First Participant, Rank 3/6.
- Research on Generative Boltzmann Networks Based on Sparse Coherent Ising Machines, Chinese Association for Artificial Intelligence – Bose Quantum Computing Application Innovation Project, Sept. 2025–Mar. 2026, 200,000 CNY, Student First Participant, Rank 2/4.
- Intelligent Adaptive Control of Unmanned Autonomous Systems, National Natural Science Foundation of China (NSFC) Youth Science Fund (Category B, formerly Excellent Youth Science Fund), Jan. 2024–Dec. 2026, 2,000,000 CNY, Participated in theoretical research on adaptive control systems.

- Academic Service: Independent reviewer for *IEEE Transactions on Cybernetics*, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, and *International Journal of Fuzzy Systems* Ongoing

Awards and Honors

- Awarded National Scholarship for Doctoral Students, UESTC Oct. 2025
- Awarded First-Class Academic Scholarship, UESTC Oct. 2025
- Awarded Second-Class Academic Scholarship, LUT Oct. 2021
- Awarded Gold Award, "Internet+" Competition, LUT Jul. 2021
- Recognized with Second Prize, "Zhaoyi Innovation Cup" 16th Chinese Graduate Electronic Design Competition, LUT Sept. 2021
- Awarded Silver Award, 7th China International "Internet+" University Student Innovation and Entrepreneurship Competition, Gansu Province Division Sept. 2021
- Awarded First-Class Academic Scholarship, LUT Oct. 2020
- Recognized with Second Prize, "Huawei Cup" 17th National Graduate Mathematical Modeling Competition (1/3) Sept. 2020
- Recognized with Third Prize, "Huawei Cup" 16th National Graduate Mathematical Modeling Competition (2/3) Sept. 2019
- Awarded First Prize, Mathematical Modeling Competition, LUT Oct. 2019
- Recognized for Outstanding Undergraduate Thesis, LUT Jun. 2019