Junkai Tan

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Education

- **Xi'an Jiaotong University (C9 & 985 Project University)** *Sep 2023 - Jun 2026*
  M.S. in Electrical Engineering, School of Electrical Engineering Xi'an, China
  - GPA: **90.74**/100 (3.65/4.0)
  - Rank: **#1**/617 (**Top 1%** in Major)
  - IELTS: **7.0** (Reading 9.0)
  - **Top 15 Graduate Student Award** (top 15 among 30,000+ Students)
  - **National Scholarship**
- **Xi'an Jiaotong University (C9 & 985 Project University)** *Sep 2019 - Jun 2023*
  B.E. in Electrical Engineering and Automation, School of Electrical Engineering Xi'an, China
  - GPA: **90.51**/100 (3.86/4.3)
  - Rank: **#19**/356 (**Top 5%** in Major)
  - **Honorable Graduate of Xi'an Jiaotong University**
- **Peking University (C9 & 985 Project University)** *July 2025*
  "Data and Operations Intelligence" Summer School, College of Engineering Beijing, China

First-Author/Student-First Journal Publications

J=Journal

[J.1] **J. Tan**, S. Xue, Z. Guo, et al., "Fixed-time hierarchical game-based unmanned aerial-ground vehicle docking control," ***IEEE/CAA Journal of Automatica Sinica***, 2025. **[Accepted, IF: 19.2, JCR Q1]**

[J.2] **J. Tan**, S. Xue, Q. Guan, et al., "Fixed-Time Stochastic Learning from Human-UAV Interaction with State-Input Constraints," ***IEEE Transactions on Industrial Electronics***, early access, 2025. **[IF: 7.2, JCR Q1]**

[J.3] **J. Tan**, S. Xue, Z. Guo, et al., "Adaptive safe control of quadcopter: a hierarchical safe reinforcement learning approach." ***Engineering Applications of Artificial Intelligence***, 2025. **[IF: 8.0, JCR Q1]**

[J.4] **J. Tan**, S. Xue, H. Li, et al., "Prescribed Performance Robust Approximate Optimal Tracking Control via Stackelberg Game," ***IEEE Transactions on Automation Science and Engineering***, vol. 22, pp. 12871–12883, 2025. **[ESI, IF: 6.4, JCR Q1]**

[J.5] **J. Tan**, S. Xue, H. Li, et al., "Hierarchical Safe Reinforcement Learning Control for Leader-Follower Systems With Prescribed Performance," ***IEEE Transactions on Automation Science and Engineering***, vol. 22, pp. 19568–19581, 2025. **[IF: 6.4, JCR Q1]**

[J.6] **J. Tan**, S. Xue, Q. Guan, et al., "Finite-time safe reinforcement learning control of multi-player nonzero-sum game for quadcopter systems," ***Information Sciences***, vol. 712, p. 122117, 2025. **[IF: 6.8, JCR Q1]**

[J.7] **J. Tan**, S. Xue, Q. Guan, et al., "Unmanned aerial-ground vehicle finite-time docking control via pursuit-evasion games," ***Nonlinear Dynamics***, vol. 113, no. 13, pp. 16757–16777, 2025. **[ESI, IF: 6.0, JCR Q1]**

[J.8] **J. Tan**, S. Xue, T. S. Niu, et al., "Fixed-time concurrent learning-based robust approximate optimal control," ***Nonlinear Dynamics***, vol. 113, no. 16, pp. 21455–21475, 2025. **[IF: 6.0, JCR Q1]**

[J.9] **J. Tan**, S. Xue, Z. Guo, et al., "Data-driven optimal shared control of unmanned aerial vehicles," ***Neurocomputing***, vol. 622, p. 129428, 2025. **[ESI, IF: 6.5, JCR Q1]**

[J.10] **J. Tan**, J. Wang, S. Xue, et al., "Human-machine shared stabilization control based on safe adp with bounded rationality," ***International Journal of Robust and Nonlinear Control***, vol. 35, no. 11, pp. 4638–4657, 2025. **[IF: 3.2, JCR Q1]**

[J.11] S. Xue, **J. Tan**, T. S. Niu, et al., "Prescribed Performance Optimized Control of UAV With Robust Approximate Dynamic Programming Under Disturbance," ***IEEE Transactions on Industrial Electronics***, early access, 2025. **[IF: 7.2, JCR Q1]**

[J.12] S. Xue, **J. Tan**, Z. Guo, et al., "Dynamic event-triggered finite-time actor-critic-identifier-based approximate optimal control for unknown nonlinear drifted systems," ***Information Sciences***, vol. 723, p. 122651, 2026. **[IF: 6.8, JCR Q1]**

In Revision/Submitted Journal Manuscripts

R=In Revision, S=In Submission

[R.1] **J. Tan**, S. Xue, H. Cao, et al., "Fixed-Time Convergent Resilient Critic-Learning Control with Asymmetric Input-State Constraints under Hybrid FDI-DoS Attacks," ***IEEE Transactions on Industrial Informatics***, 2025. **[Revision, IF: 11.7, JCR Q1]**

[S.1] **J. Tan**, S. Xue, H. Cao, et al., "Finite-Time Stackelberg Game-Based Hybrid Attack-Defense Control for Cyber-Physical Systems," ***IEEE/CAA Journal of Automatica Sinica***, 2025. **[Under Review, IF: 19.2, JCR Q1]**

[S.2] S. Xue, **J. Tan**, Z. Guo, et al., "Composite learning-based fixed-time optimized shared prescribed-performance control for human-robotics cooperative game," ***Information Sciences***, 2025. **[Revision, IF: 6.8, JCR Q1]**

[S.3] **J. Tan**, S. Xue, H. Cao, et al., "Data-driven Fixed-time Inverse Optimal Shared Control for Human-UAV Interaction," ***IEEE Transactions on Systems, Man, and Cybernetics: Systems***, 2025. **[Under Review, IF: 8.7, JCR Q1]**

[S.4] **J. Tan**, S. Xue, H. Cao, et al., "Predefined-Time Learning-Based Optimal Stabilization Control for Nonlinear Systems," ***IEEE Transactions on Cybernetics***, 2025. **[Under Review, IF: 11.8, JCR Q1]**

Conference Proceedings, Patents & Thesis

C=Conference, P=Patent, T=Thesis

[C.1] **J. Tan**, S. Xue, H. Li, et al., "Safe stabilization control for interconnected virtual-real systems via model-based reinforcement learning," in ***Proc. 14th Asian Control Conf. (ASCC)***, 2024, pp. 605–610. **[EI, CAA-A]**

[C.2] **J. Tan**, S. Xue, H. Cao, et al., "Safe human-machine cooperative game with level-k rationality modeled human impact," in ***Proc. IEEE Int. Conf. Dev. Learn. (ICDL)***, 2023, pp. 188–193. **[EI]**

[C.3] **J. Tan**, S. Xue, H. Cao, et al., "Nash equilibrium solution based on safety-guarding reinforcement learning in nonzero-sum game," in ***Proc. Int. Conf. Adv. Robot. Mechatron. (ICARM)***, 2023, pp. 630–635. **[EI, CAA-A]**

[T.1] **J. Tan**, "Research on Safety-Guarding Control of Interconnected Systems Based on Adaptive Dynamic Programming," ***Bachelor's Thesis***, Xi'an Jiaotong University, 2023. **[Outstanding]**

[P.1] S. Xue, **J. Tan**, H. Cao, et al., "A pilot-UAV hierarchical reinforcement learning tracking control method," Patent CN202410717333.X, 2024. **[Pending]**

[P.2] S. Xue, **J. Tan**, H. Cao, et al., "An optimal control method for suppressing chaotic phenomena in nonlinear permanent magnet synchronous motors," Patent CN202410856259.X, 2024. **[Pending]**

[P.3] S. Xue, **J. Tan**, X. D. Zheng, et al., "A UAV reinforcement learning tracking control method with prescribed performance under disturbance," Patent CN202411079828.0, 2024. **[Pending]**

Projects

- **Precise Sequence Synchronization Control of Multi-Intelligent System with Human-Machine Collaboration** *Aug 2023 - Present*
  China Postdoctoral Science Foundation (General Program) [| |]
  - Developed Stackelberg game-based reinforcement learning framework for robust optimal control
  - Implemented prescribed performance constraints for efficient tracking control in nonlinear systems
  - Created novel game-theoretic optimization method for high-dimensional nonlinear systems
- **Precise Sequence Intelligent Control of Distributed Energy System for Human-Machine Consistency** *May 2022 - Dec 2024*
  Xi'an Young Talent Support Program (Class A) [ ]
  - Developed safety-guarding RL method for optimal shared control in pilot-UAV interactive systems
  - Implemented Nash equilibrium and level-k rationality model to enhance human-machine collaboration stability
  - Created data-driven interaction modeling approach to optimize human-machine cooperative strategies

Internship Experience

- **Electric Power Research Institute, China Southern Power Grid** *Jul 2025 - Aug 2025*
  *Research Intern (**Outstanding Intern**)* Guangzhou, China
  - Investigated AI-driven acceleration for power system simulations, focusing on Quantum Computing and Physics-Informed Neural Networks (PINN) for power flow analysis.
  - Authored a comprehensive literature review on Quantum-Power Flow Calculation and researched PINN-based acceleration methods. Contributed to research expected to result in one conference paper and 1-2 patents.

Journal Review Activity

Over 200 papers reviewed for 10+ top-tier journals and conferences in control systems and robotics.

- Reviewer for **IEEE Transactions on Automation Science and Engineering** (100+ reviews)
- Reviewer for **Expert Systems with Applications** (20+ reviews)
- Reviewer for **Engineering Applications of Artificial Intelligence** (10+ reviews)
- Reviewer for **Applied energy**
- Reviewer for **Chinese Journal of Aeronautics**
- Reviewer for **Knowledge-Based Systems**
- Reviewer for **Applied Soft Computing**
- Reviewer for **Information Sciences**
- Reviewer for **Neurocomputing**
- Reviewer for **Journal of the Franklin Institute**
- Reviewer for **Applied mathematical modelling**
- Reviewer for **Operations research perspectives**
- Reviewer for **Measurement**
- Reviewer for **Acta Astronautica**

Skills

- **Programming Languages:** MATLAB/Simulink, Python, C++, LaTeX, Git, ROS
- **Control & Simulation:** Gazebo, V-REP, AirSim, PX4, ArduPilot, QGroundControl
- **Hardware Experience:** Nvidia Jetson, Raspberry Pi, Pixhawk, UAV/UGV Platforms
- **Specialized Knowledge:** Optimal Control, Game Theory, System Identification, Nonlinear Control
- **Soft Skills:** Teamwork, Communication, Leadership, Problem-Solving

Honors and Awards (Importance Order)

- **Top 15 Graduate Student Award** *Nov 2025*
  Xi'an Jiaotong University
  ◦ Recognized as one of the top 15 graduate students among over 30,000 students for exceptional academic performance and contributions
- **National Scholarship** *Nov 2025*
  Ministry of Education of the People's Republic of China
  ◦ Recognized as one of the top graduate students nationwide for outstanding academic achievements
- **National Second Prize** *Dec 2023*
  The 20th China Post-Graduate Mathematical Contest in Modeling
  ◦ Achieved second prize in national finals of graduate-level mathematical modeling competition
- **First Prize, Shaanxi Province** *Oct 2021*
  National College Student Mathematical Modeling Competition
  ◦ Led team to develop innovative mathematical models for real-world problems
- **First Prize, Shaanxi Province** *Nov 2022*
  National College Students' Electronic Design Competition
  ◦ Developed innovative electronic systems and solutions
- **Second Prize, Shaanxi Province** *Nov 2021*
  National College Students' Electronic Design Competition
  ◦ Developed innovative electronic systems and solutions
- **Second Prize, Shaanxi Province** *Oct 2020*
  12th National College Students Mathematics Competition
  ◦ Demonstrated advanced mathematical problem-solving abilities
- **Special Grade Scholarship** *Oct 2024*
  Xi'an Jiaotong University
  ◦ Highest academic scholarship awarded to top-performing graduate students
- **Honorable Graduate** *Jun 2023*
  Xi'an Jiaotong University
  ◦ Recognized for overall excellence in academic performance and contributions
- **State Grid UHV Scholarship** *Sep 2020*
  State Grid Corporation of China
  ◦ Merit-based scholarship awarded for academic excellence
- **Outstanding Student Award** *Sep 2020 & Sep 2021, Sep 2022*
  Xi'an Jiaotong University
  ◦ Recognized for exceptional academic performance in 2019-2020
- **Second-Class University Scholarship** *Oct 2021 & Oct 2022*
  Xi'an Jiaotong University
  ◦ Awarded for consistent academic excellence
- **Honorable Mention** *Apr 2021*
  Mathematical Contest in Modeling (MCM/ICM)
  ◦ International recognition for mathematical modeling capabilities
- **Bronze Award** *Jul 2021*
  7th China International College Students' "Internet+" Innovation and Entrepreneurship Competition
  ◦ Developed innovative internet-based entrepreneurial project

Leadership Experience

- **Session Chair** *Jul 2023*
  2023 International Conference on Advanced Robotics and Mechatronics (ICARM)
  ◦ Chaired technical session at Class A conference of Chinese Association of Automation
  ◦ Organized and moderated academic presentations and discussions
- **Fitness Team Leader** *Sep 2023 - Present*
  School of Electrical Engineering, Xi'an Jiaotong University
  ◦ Manage gym facilities and equipment maintenance
  ◦ Provide scientific fitness guidance and instruction to students
  ◦ Organize fitness activities and training programs

Additional Information

Languages: English (Professional working proficiency), Chinese (Native)
Interests: Robotics and Control Systems, Machine Learning, Fitness and Sports, Travel and Photography

REFERENCES

1. **Prof. Hui Cao**
   Professor, School of Electrical Engineering
   Xi'an Jiaotong University
   Email: huicao@mail.xjtu.edu.cn
   Phone: +86-139-9119-3207
   Relationship: Thesis Advisor & Research Supervisor

2. **Prof. Dongyu Li**
   Professor, School of Cyber Science and Technology
   Beihang University
   Email: dongyuli@buaa.edu.cn
   Phone: +86-185-1473-1105
   Relationship: Collaborator