Haokai Ding

Shanghai, China

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Summary

Robotics researcher working across underactuated manipulation, aerial robotics, and deployment-focused robot learning. Building hardware prototypes, analytical mechanisms, and reinforcement-learning systems, with a focus on understanding and closing sim-to-real gaps.

Education

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) — *Abu Dhabi, UAE*

M.Sc. in Robotics — *Aug. 2026 – Present*

Tsinghua University | Shenzhen X-Institute — *Shenzhen, China*

Tsien Excellence in Engineering Program (TEEP) – X Scholar — *Sep. 2023 – Jul. 2026*

- Joint training program in underactuated robotics and mechanism design.

Shenzhen Technology University – Future Technology School — *Shenzhen, China*

B.Eng. in Electronic Science and Technology — *Sep. 2022 – Jul. 2026*

- GPA: 85.08/100. Research focus: robotics and mechanism design. Top 10 Outstanding Graduate.

Research Experience

State Key Lab of Mechanical Systems & Vibration, Shanghai Jiao Tong University — *Shanghai, China*

Visiting Student – UAV Perching and Aerial Manipulation — *Feb. 2026 – Present*

- Advisor: Prof. Wei Dong.
- Working on UAV perching and contact-rich aerial manipulation.

Independent Research Project (Remote GPU Workstation) — *Shanghai, China*

Independent Researcher – Reinforcement Learning for Agile Quadrotor Flight — *Spring 2026 – Present*

- Trained PPO policies with recurrent memory and staged specialization in Isaac Sim / OmniDrones for a 13-gate course containing a climbing split-S maneuver.
- Conducted a 31-factor sim-to-real audit across dynamics, sensing, and latency; identified unmodeled aerodynamic drag, observation delay, and state-estimation drift as deployment blockers.
- Built and ground-tested a deployment stack with Jetson, PX4, and Intel RealSense T265, including motion-capture-based drift characterization.

Shenzhen X-Institute, Tsinghua University — *Shenzhen, China*

Undergraduate Researcher – Underactuated Robotic Grippers — *2023 – 2026*

- Designed and tested underactuated grippers based on semi-Peaucellier linkages.
- Developed idle-stroke and delay-triggering mechanisms; validated prototypes via simulation and physical experiments.

Publications

† Co-first author * Corresponding author

Selected Conference Papers (Robotics)

[P1] A Novel Gripper with Semi-Peaucellier Linkage and Idle-Stroke Mechanism for Linear Pinching and Self-Adaptive Grasping

H. Ding, W. Zhang* — *IEEE/RSJ IROS 2025*

[P2] Semi-Peaucellier Linkage and Differential Mechanism for Linear Pinching and Self-Adaptive Grasping

H. Ding, Z. Chen, T. Yang*, W. Zhang* — *IEEE CASE 2025*

[P3] BioCrest – A Flexible Adaptive Robotic Hand Based on Idle-Stroke Mechanism

H. Ding, X. Zhong, W. Huang, T. Yang*, W. Zhang* — *IEEE ROBIO 2025*

[P4] GLINT: An Idle-Stroke Grasp-and-Lift Hand for In-Hand Manipulation

H. Ding, H. Luan, T. Yang*, W. Zhang* — *IEEE ICCMA 2025*

[P5] Peaucellier Gripper: A Novel Underactuated Gripper for Linear Pinching and Self-Adaptive Grasp

H. Ding, J. Fan, Z. Zhu, Y. Zhao, K. Chen*, W. Zhang* — *IEEE ICARM 2025*

[P6] An Underactuated Gripper with Grasshopper-Inspired Linkages and Delay Triggering for Pinching and Adaptive Grasping

H. Ding†, Y. Chen†, D. Jia, W. Zhang* *IEEE ICIA 2025*

[P7] An Idle-Stroke Underactuated Gripper with Independent Double-Parallelogram Linkages for Pinching and Adaptive Grasping

Y. Chen, H. Luan, **H. Ding**, W. Zhang* *IEEE RAAI 2025*

Other Publications

[P8] Recent Progress on the Research of 3D Printing in Aqueous Zinc-Ion Batteries

Y. Liu†, **H. Ding**†, H. Chen, H. Gao, J. Yu, F. Mo, N. Wang* *Polymers (MDPI), 2025*

[P9] Rapid Analysis of Heavy-Metal Element Adsorption by SCG Based on LIBS Technology

H. Xie, L. You, X. Fang, L. Li, **H. Ding**, Z. Zhou, G. Zhang, D. Zhang *E3S Web of Conferences, 2025*

Honors & Awards

2026 **Top 10 Outstanding Graduate**, Shenzhen Technology University *Shenzhen, China*

2025 **Undergraduate Champion**, ASME Student Mechanism & Robot Design Competition *USA*

2025 **National Scholarship**, Ministry of Education of China *China*

2024 **President's Award**, Shenzhen Technology University *Shenzhen, China*

2023 **Gold Prize**, 9th China "Internet+" Innovation Competition (Guangdong Division) *Guangdong, China*

2023 **Second Prize**, 17th "Challenge Cup" Extracurricular Science Competition (Guangdong Division) *Guangdong, China*

Professional Service

2025 **Conference Reviewer**, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

2025 **Session Chair**, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

2025 **Conference Reviewer**, IEEE International Conference on Automation Science and Engineering (CASE)