

Xudong Han

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Education

Southern University of Science and Technology

Ph.D. Student in Intelligent Manufacturing and Robotics

Shenzhen, China

Sep 2022 – Present

- Advisors: Dr. Fang Wan and Dr. Chaoyang Song

Southern University of Science and Technology

Bachelor of Engineering (B.Eng.) in Mechanical Engineering

Shenzhen, China

Sep 2018 – Jul 2022

- Advisors: Dr. Chaoyang Song

Journal Articles

Equal contributions, * Corresponding Authors

1. **Xudong Han**, Haoran Sun, Ning Guo, Sheng Ge, Jia Pan, Fang Wan*, Chaoyang Song*. “Lessons Learned from the euROBIN Manipulation Skill Versatility Challenge at IROS 2024”. *IEEE Robotics and Automation Practice*, 1:18-22, 2026
2. Shuqiao Zhong, Wanghongjie Qiu, **Xudong Han**, Chaoyang Song, Zhiyuan Zhou, Fang Wan*, Jian Lin*. “Bio-inspired rigid-Soft interaction for robust picking underwater”. *Ocean Engineering*, 346:123774, 2026
3. **Xudong Han**, Ning Guo, Ronghan Xu, Fang Wan*, and Chaoyang Song*. “Anchoring Morphological Representations Unlocks Latent Proprioception in Soft Robots”. *Advanced Intelligent Systems*, 2500444, 2025
4. Ning Guo#, **Xudong Han**#, Shuqiao Zhong#, Zhiyuan Zhou, Jian Lin, Jiansheng Dai, Fang Wan*, and Chaoyang Song*. “Proprioceptive State Estimation for Amphibious Tactile Sensing”. *IEEE Transactions on Robotics*, 40:4684–4698, 2024
5. Xiaobo Liu#, **Xudong Han**#, Wei Hong, Fang Wan*, and Chaoyang Song*. “Proprioceptive Learning with Soft Polyhedral Networks”. *The International Journal of Robotics Research*, 54(12):1916–1935, 2024
6. **Xudong Han**, Ning Guo, Yu Jie, He Wang, Fang Wan*, and Chaoyang Song*. “On Flange-Based 3D Hand-Eye Calibration for Soft Robotic Tactile Welding”. *Measurement*, 238(10):115376, 2024
7. Ning Guo, **Xudong Han**, Shuqiao Zhong, Zhiyuan Zhou, Jian Lin, Fang Wan*, and Chaoyang Song*. “Reconstructing Soft Robotic Touch via In-Finger Vision”. *Advanced Intelligent Systems*, 6(10):2400022, 2024
8. Tianyu Wu#, Yujian Dong#, Xiaobo Liu#, **Xudong Han**, Yang Xiao, Jinqi Wei, Fang Wan*, and Chaoyang Song*. “Vision-based Tactile Intelligence with Soft Robotic Metamaterial”. *Materials & Design*, 238(2):112629, 2024
9. Ning Guo, **Xudong Han**, Xiaobo Liu, Shuqiao Zhong, Zhiyuan Zhou, Jian Lin, Jiansheng Dai, Fang Wan*, and Chaoyang Song*. “Autoencoding a Soft Touch to Learn Grasping from On-land to Underwater”. *Advanced Intelligent Systems*, 6(1):2300382, 2023
10. Xiaobo Liu, **Xudong Han**, Ning Guo, Fang Wan*, and Chaoyang Song*. “Bio-inspired Proprioceptive Touch of a Soft Finger with Inner-Finger Kinesthetic Perception”. *Biomimetics*, 8(6):501, 2023
11. Linhan Yang, **Xudong Han**, Weijie Guo, Fang Wan, Jia Pan, and Chaoyang Song*. “Learningbased Optoelectronically Innervated Tactile Finger for Rigid-Soft Interactive Grasping”. *IEEE Robotics and Automation Letters*, 6(2):3817–3824, 2021

12. Haiyang Jiang, **Xudong Han**, Yonglin Jing, Ning Guo, Fang Wan, and Chaoyang Song*. “Rigid-Soft Interactive Design of a Lobster-Inspired Finger Surface for Enhanced Grasping Underwater”. *Frontiers in Robotics and AI*, 8:787187, 2021

Conference Papers

Equal contributions, * Corresponding Authors

1. **Xudong Han**, Sheng Liu, Fang Wan*, and Chaoyang Song*. “Vision-based Tactile Sensing for an Omni-adaptive Soft Finger”. In *IEEE International Conference on Development and Learning (ICDL)*, Macau SAR, China, November 09-11 2023
2. Fang Wan, Xiaobo Liu, Ning Guo, **Xudong Han**, Feng Tian, and Chaoyang Song*. “Visual Learning Towards Soft Robot Force Control using a 3D Metamaterial with Differential Stiffness”. In *Conference on Robot Learning (CoRL)*, London, U.K., November 8-11 2021

Extended Abstract

Equal contributions, * Corresponding Authors

1. **Xudong Han**, Tianyu Wu, Haoran Sun, Bangchao Huang, Zishang Zhang, Chaoyang Song*, Fang Wan*. “Towards Universal Action Embodiment with MagiClaw”. In *Conference on Robot Learning (CoRL) 2025 Demos*, Seoul, Korea, September 27-30 2025
2. Tianyu Wu, **Xudong Han**, Haoran Sun, Zishang Zhang, Bangchao Huang, Chaoyang Song*, Fang Wan*. “MagiClaw: A Dual-Use, Vision-Based Soft Gripper for Bridging the Human Demonstration to Robotic Deployment Gap”. In *Workshop on Making Sense of Data in Robotics: Composition, Curation, and Interpretability at Scale at CoRL 2025*, Seoul, Korea, September 27-30 2025

Patents

1. Chaoyang Song, Fang Wan, **Xudong Han**, Ning Guo, Xiaobo Liu, Feng Tian, CN114043507B, China, Force Sensor, Robot and Application Method of Force Sensor.
2. Chaoyang Song, Fang Wan, Linhan Yang, **Xudong Han**, CN215471206U, China, Photoelectric Touch Sensing Flexible Robot Finger.

Honors and Awards

Fastest Automated Task Board Solution Award Competition on the euROBIN Manipulation Skill Versatility Challenge at IROS 2024	2024
Silver Award 14th “Challenge Cup” Guangdong College Student Entrepreneurship Competition	2024
Second Prize Soft Robotics Innovation Design Competition at the 8th Conference on Soft Robotics	2023
National Scholarship for Doctoral Students Ministry of Education of China	2025
Outstanding Graduate Student Award Southern University of Science and Technology, Academic Year 2023–2024	2024
Outstanding Graduate Student Award Southern University of Science and Technology, Academic Year 2022–2023	2023

Professional Affiliations

Student Member of IEEE	2023 - Present
Member of Design Society	2023 - Present