

Ruohan Zhang

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Education

University of Illinois Urbana-Champaign, IL, US

Sept 2023 – present

Ph.D. in Electrical and Computer Engineering; Advisor: Wenzhen Yuan

M.S. in Electrical and Computer Engineering, May 2025

University of Science and Technology of China, Hefei, China

Sept 2019 – June 2023

B.Sc. in Electronic Engineering and Information Science; GPA: 4.05/4.30; Rank: 1/96; Advisor: Chong Luo

Publications

- **Zhang, R.**, Mirzaee, M. A., Yuan, W. "FruitTouch: A Perceptive Gripper for Gentle and Scalable Fruit Harvesting," *IEEE Robotics and Automation Letters (RA-L)*, 2026 [[Webpage](#)]
- Crowder, D., **Zhang, R.**, Block, A. E., Yuan, W. "Requirement-Driven Design of Whole-Body Social Tactile Sensing via Virtual Human-Robot Interaction," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2026 [[arXiv](#)]
- **Zhang, R.**, Yoo, U., Li, Y., Agarwal, A., Yuan, W. "PneuGelSight: Soft Robotic Vision-Based Proprioception and Tactile Sensing," *Sage, The International Journal of Robotics Research (IJRR)*, 2025 [[Webpage](#), [arXiv](#)]

Academic Services

Reviewer: Journals: IJRR, RA-L, T-RL; **Conferences:** ICRA, IROS

Teaching Assistant: ECE 205 (Spring 2025), ECE 206 (Fall 2025), UIUC

Research Experience

RoboTouch Lab, UIUC, IL, US

Sept 2023 – present

Director: Wenzhen Yuan, Associate Professor, CS

- **Active touch exploration for manipulation with reinforcement learning.**
- Developing reinforcement learning policies for tactile exploration using Isaac Lab; integrating visuo-tactile feedback for physical property inference; co-optimizing perception, exploratory actions, and manipulation models for fine-grained control.
- **Sensorized gripper with in-hand tactile perception for scalable, damageless harvesting.**
- Compact optical-mechanical design with an optimized optical path, accommodating a wide range of fruit sizes; ROS-based real-time pipeline for force estimation, slip detection, and softness prediction, validated in real-world cherry tomato harvesting.
- **Vision-based proprioception and tactile sensing for soft robotics.**
- Embedded-camera pipeline for proprioception and tactile sensing via photometric stereo and deep learning; 5.35 mm mean Chamfer distance for shape reconstruction (down from 8.85 mm) and sub-0.2 mm depth error for surface texture, with inference under 0.05 s.
- **Haptic glove for VR-based social touch data collection.**
- Designed and built a wearable haptic feedback glove for a VR-based platform used to capture whole-body social touch interaction between humans and robots.

Intelligent Multimedia Lab, MSRA, Beijing, China

Sept 2022 – July 2023

Director: Chong Luo, Principal Researcher

- **Generative AI for video processing and object tracking.**
- Developed a diffusion-model-based object tracking pipeline under heavy occlusion, reaching state of the art at the time; improved computational speed and memory usage for large-scale datasets.

Projects

Design and Innovation of a Quadrotor UAV

Mar 2021 – July 2021

Course project, EEIS, USTC; advised by Wei Lu

- Built a quadrotor from scratch achieving stable hovering within ± 3 cm drift.
- Designed logic control circuits and power management systems, and optimized flight algorithms.

Honors and Awards

- **Guo Moruo Scholarship**, 2023 — highest honor for undergraduates at USTC (top 1%).
- **China National Scholarship**, 2021 and 2022.
- **USTC Talented Students Program Scholarship**, 2020, 2021, and 2022.

Technical Skills

Programming: Python, C++, C, MATLAB, LaTeX, embedded systems

Robotics: ROS, MuJoCo, Isaac Lab, PyTorch

Simulation & CAD: Blender, Abaqus, COMSOL, SOFA, SolidWorks, Onshape, Fusion 360, Altium Designer

Languages: Chinese (native), English (professional working proficiency)