Ruohan Zhang

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EDUCATION

University of Illinois Urbana-Champaign Champaign, USA
Ph.D. in Electrical and Electronics Engineering; GPA: 3.64/4 Sept. 2023 – Present

University of Science and Technology of China Hefei, China
B.Sc. in Electronic Engineering and Information Science GPA: **4.05**/ 4.30 Rank: **1**/ 96 Sept. 2019 – Jun. 2023

RESEACH INTEREST

Robot Perception · Tactile Sensing and Perception · Design and Fabrication of Tactile Sensors

RESEARCH EXPERIENCE

Active Touch Exploration for Manipulation with Reinforcement Learning
Advised by Professor Wenzhen Yuan, RoboTouch Lab, UIUC Aug. 2025 – Now

- Developing reinforcement learning policies for tactile exploration using IsaacLab.
- Integrating visuo-tactile feedback for physical property inference.
- Implementing a co-optimization approach that jointly refines perception, exploratory actions, and manipulation models for fine-grained control.

Towards Scalable and Damageless Harvesting: A Sensorized Gripper with In-Hand Tactile Perception
Advised by Professor Wenzhen Yuan, RoboTouch Lab, UIUC Oct. 2024 – Aug. 2025

- Designed and fabricated compact optical-mechanical components that enabled seamless integration of sensing and actuation in a robotic gripper.
- Developed a ROS-based real-time control pipeline with tactile algorithms for force prediction, slip detection, and fruit softness estimation.
- Integrated perception modules into a unified pipeline, achieving 100% grasp success with ±0.1 N force variation, enabling consistent, damage-free handling in agricultural trials.
- Work under review of **IEEE Robotics and Automation Letters** (RAL). [Project Page]

Vision-based Proprioception and Tactile Sensing for Soft Robotics
Advised by Professor Wenzhen Yuan, RoboTouch Lab, UIUC Sept. 2023 – Sept. 2024

- Developed a novel embedded-camera pipeline that enabled sub-millimeter tactile reconstruction of contact surfaces using photometric stereo and deep learning.
- Implemented real-time proprioception algorithms for soft grippers, allowing precise geometry reconstruction from minimal contact with latency under 40 ms.
- Published in the **International Journal of Robotics Research 2025** (IJRR); selected as a keynote talk at ICRA 2025. [arxiv] [Project Page]

Design and Innovation of Quadrotor UAV
Advised by Professor Wei Lu, USTC Mar. – Jul. 2021

- Built a Quadrotor UAV from scratch, achieving stable hovering within ±3 cm drift.
- Designed logic control circuits, power management systems, and optimized flight algorithms.
- Implemented real-time parameter adjustments, improving response time and flight speed.

INDUSTRY EXPERIENCE

Research Assistant, Microsoft Research Asia
Advised by Professor Chong Luo, Intelligent Multi-media Lab, MSRA Sept. 2022 – Jul. 2023

- Researched on generative AI techniques, focusing on enhancing machine learning algorithms for video processing and generation.
- Developed a novel object tracking pipeline based on diffusion model under heavy occlusion scenarios, reaching state of the art at the time.
- Collaborated with a team to design and implement efficient code, enhancing computational speed and memory usage for large-scale datasets.

PROFESSIONAL & ACADEMIC ACTIVITIES

- Reviewer for IEEE International Conference on Robotics and Automation (ICRA) and IEEE Robotics and Automation Letters (RAL)
- Teaching Assistant: ECE205 (Spring 2025), ECE206 (Fall 2025), UIUC. Led lab sessions, graded assignments, and supported students in embedded system design.

HONORS AND AWARDS

- Guo Moruo Scholarship 2023 (Highest Honor for Undergrads, 1%)
- China National Scholarship 2021, 2022
- USTC Talented Students Program Scholarship 2020, 2021, 2022

TECHNICAL SKILLS

- **Programming:** Python, C++, C, MATLAB, LaTeX, Embedded systems.
- **Languages**: Chinese: Native, English: Professional Working Proficiency.
- **Robotics:** ROS, Issac Lab, PyTorch
- **Simulation & CAD:** Blender, Abaqus, Comsol, SOFA, SolidWorks, Onshape, Fusion 360, Altium Designer.