

Tianrun Hu

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[GitHub](#) | [LinkedIn](#) | [Personal Page](#)

RESEARCH INTERESTS

My research spans robotic system design, integrated task and motion planning, and robot learning. Currently, I focus on improving open-world planning capability for service robots performing *mobile manipulation* in unstructured environments.

EDUCATION

Nanyang Technological University (NTU), Singapore

July 2020 – July 2024

- *B.Eng. in Computer Engineering, Distinction Honours*
- *Awards & Honours: Dean's List (Top 5%); Science and Engineering Undergraduate Scholarship (SM2) Scholarship*

PUBLICATIONS

- [1]. Chain-of-Action: Trajectory Autoregressive Modeling for Robotic Manipulation | *NeurIPS 2026* [[arxiv](#), [website](#), [code](#)]
- [2]. MimicFunc: Imitating Tool Manipulation from a Single Human Video via Functional Correspondence | *CoRL 2025* [[arxiv](#), [video](#), [website](#)]
- [3]. Robi Butler: Remote Multimodal Interactions with Household Robot Assistant | *ICRA 2025* [[arXiv](#), [video](#), [website](#)]
- [4]. ManiFoundation Model for General-Purpose Robotic Manipulation of Contact Synthesis with Arbitrary Objects and Robots | *IROS 2024* [[arXiv](#), [website](#), [code](#)]

RESEARCH EXPERIENCES

Research Engineer @ Adaptive Computing Lab, NUS (Full-Time)

Aug 2024 – Aug 2025

Advised by [Prof. David Hsu](#)

- Leading research on mobile manipulation under partial and inaccurate observations in dynamic environments. Designed a keyframe-guided perception-planning framework for mobile manipulators to proactively and continuously estimate critical non-stationary regions (ongoing).
- Initiated an imitation learning system supporting multiple data-collection modalities (GELLO, VR controllers, joysticks, hand tracking), diverse robot embodiments (Fetch, Kinova, Franka), and behavior cloning algorithms (ACT, diffusion policy) [[code](#)]. This infrastructure contributes to several research projects. ([P.1] NeurIPS'26, [P.2] CoRL'25 [P.3] ICRA'25)
- Contributing to the development of full stack mobile manipulation system ([P.3] ICRA'25). Integrated SIMD acceleration, enabling 10 Hz whole-body motion planning on the Fetch robot.

Research Assistant Internship @ LinS Lab, NUS (Part-Time)

Sep 2023 – Jun 2024

Advised by [Dr. Lin Shao](#)

- Led development of an enhanced Gaussian Splatting-to-mesh pipeline for indoor 3D reconstruction, introducing multi-regularization strategies to achieve state-of-the-art mesh quality [[code](#), [doc](#)]. Built a high-fidelity Gazebo simulation platform to benchmark 3D reconstruction and robotic manipulation systems [[code](#)].
- Contributing to the data generation and processing of the Manipulation Foundation Model. ([P.4] IROS'24)

Machine Learning Engineer Internship @ Continental AG (Full-Time)

Jan 2023 – Jun 2023

- Developed the core SLAM modules for an autonomous forklift project, focusing on robust localization and mapping in complex industrial environments.

RELEVANT COURSE PROJECTS

Intelligent Agents [[code](#)]; Neural Network [[code](#)]; Embedded Programming [[code](#)]; Signal Processing [[code](#)]; Advanced Algorithms [[code](#)]; Microprocessor [[code](#)]; Digital System Design [[code](#)]; Object Oriented Design and Programming [[code](#)]; Data Science [[code](#)]; Data Structure and Algorithm [[code](#)];

SKILLS

Languages: Chinese (Native), English (Fluent);

Programming: Python, C, C++, Java, HTML.

Softwares & Tools: ROS1&ROS2, PyTorch, CasADi, OpenCV, Isaac Sim, Gazebo

Hardware: Multiple Motors and Sensors, Arduino, Basic Mechanical Design