

ZHAOYU MU

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EDUCATION

University of California, San Diego Sep 2026 – Jun 2028 (Expected)

Master of Science in Electrical and Computer Engineering

- Track: Intelligent Systems, Robotics and Control (EC80)

National University of Singapore

Aug 2022 – Jun 2026

Bachelor of Computing (Computer Science) with Honours

- Minor in Mathematics | Cumulative GPA: 4.63/5.0 (Highest Distinction)

TECHNICAL SKILLS

- Programming: Python | C++ | C | Java | JavaScript | SQL
- Robotics & Simulation: ManiSkill | Genesis-world | OpenCV | OMPL | Fusion 360
- Framework & Tools: PyTorch | CUDA | Linux | Git | TMUX | Weights & Biases | TensorBoard

RESEARCH EXPERIENCE

Benchmark Manipulation Tasks with Difficulty Categorization [paper], NUS

Supervisor: Prof. Lin SHAO

Jun 2025 - Present

- Developed standard and parallel simulation environments in Genesis with **multi-view 3D point cloud fusion** and **parallel rendering**; integrated **xArm**, **LEAP hand**, and **Franka panda**.
- Developed **robot manipulation tasks** across multiple difficulty levels, collected demonstrations, trained and evaluated **Diffusion Policy**, **3D Diffuser Actor**, and **Flow Matching** baselines.
- Conducted **end-to-end real-world experiments** on 8 manipulation tasks involving rigid and deformable objects, covering **teleoperation-based demonstration collection**, **policy training**, and **real-robot evaluation**.

Cross-Embodiment Dexterous Grasp Generation in Cluttered Environment, NUS

Supervisor: Prof. Lin SHAO

Jun 2025 – Sep 2026

- Implemented and validated AnyDexGrasp in ManiSkill, **adapting a real-world dexterous grasping method into simulation** as a baseline for cluttered-scene experiments.
- Constructed a **dexterous grasp dataset** using six-direction grasp stability and environment-collision checks; investigated collision-avoidance strategies based on D(R, O) and T(R, O) Grasp.

Functional D(R, O) Grasp, NUS

Supervisor: Prof. Lin SHAO

Jan 2025 - Jun 2025

- Reproduced **Scene-Diffuser**, a diffusion-based dexterous grasp generation baseline, in simulation.
- Conducted **real-world grasping experiments** with xArm6 and LEAP Hand, including 3D printing, hardware assembly, camera calibration, and grasp execution.

PUBLICATIONS & PREPRINTS

* REPRESENTS EQUAL CONTRIBUTION

- X. Fei, Z. Xu, H. Fang, F. Chen, **Z. Mu**, et al., "T(R, O) Grasp++: Cross-Embodiment Dexterous Grasping in Cluttered Environments at Scale," **CoRL 2026**. [website]
- C. Gao*, J. Shi*, **Z. Mu***, Y. Lin, X. Liu, et al., "ManiLadder: Benchmarking Robot Manipulation Through a Categorized and Multi-Level Task Ladder," **IROS 2026 Workshop** on Rethinking Bimanual Manipulation Beyond Single-Arm Policies (**Outstanding Paper Award**). [website]
- W. Zhong*, Z. Xu*, C. Gao, **Z. Mu**, Y. Low, L. Shao, "Functional D(R, O) Grasp: A Language-Guided Cross-Embodiment Functional Dexterous Grasping" (preprint) [website] [paper]

INTERNSHIP & WORK EXPERIENCE

Research Intern, A*STAR Centre for Frontier AI Research (CFAR), Singapore

May 2024 - Aug 2024

- Reproduced **MinimaxDiffusion**, a diffusion-based dataset distillation baseline, and implemented experiments combining real and synthetic images.
- Investigated **privacy-preserving dataset distillation** for person re-identification, evaluating image synthesis methods using CE loss, Gaussian noise, uniform noise, and knowledge distillation.

Software Engineer (part time), Asian Institute of Digital Finance, Singapore

Oct 2023 - May 2024

- Led **frontend development** of an LLM-based legal case analysis system, supporting both web and mobile interfaces.
- Developed and maintained the frontend of an **LLM-based contract management system**.

AI Intern, Tencent, Beijing, China

Feb 2022 - Jun 2022

- Improved **video black/blur detection** by reducing false positives, increasing model recall and accuracy by approximately **5%** after deployment.
- Optimized **multi-label news classification** through loss-function and sampling experiments, improving model precision by **3%**.

SOFTWARE DEVELOPMENT PROJECTS

Project Initiator & Developer, NUS Orbital project, Singapore

May 2023 - Aug 2023

- Designed, developed, and tested *RememberMe*, a genealogy web application built with **React** and **Next.js**, within three months.

Developer, NUS Source Academy (CP3108), Singapore

Feb 2023 - Jul 2023

- Collaborated in a two-person team to implement **import statement detection** and resolve **step-counting bugs** in a program stepper, improving system reliability and program interpretability.

AWARDS & ACHIEVEMENTS

- **Outstanding Paper Award**, IROS workshop on Rethinking Bimanual Manipulation Beyond Single-Arm Policies, 2026
- **Certificate of Distinction in Artificial Intelligence Focus Area**, NUS School of Computing, 2025
- **Best Course Project, CS4248 Natural Language Processing**, NUS School of Computing, 2025.
- **CFAR Internship Award for Research Excellence**, A*STAR, Singapore, 2024
- **Venture Initiation Programme (SoC) Award**, NUS Enterprise, 2024

TEACHING & MENTORING

Teaching Assistant, Tencent Xinghuo Challenge Week, Singapore

Jul 2026

- Served as a TA for the project on scaling up **advertising recommendation models**.
- Guided participants through machine learning fundamentals and **PyTorch**; explained the **HyFormer** model architecture and supported participants in troubleshooting implementation and model-training issues.