MU ZHAOYU

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EDUCATION

National University of Singapore **Aug 2022 - Present**
Bachelor of Computing in Computer Science (Hons)

- Minor in Mathematics
- Current GPA: 4.64/5.0 (Expected First Class)

RESEARCH INTERESTS

- I have a broad interest in embodied AI with current focus on **robot learning** and **dexterous manipulation**. I am passionate about creating robots that can truly augment human capabilities.

RESEARCH EXPERIENCE

Benchmark Manipulation Tasks with Difficulty Categorization [paper]**, NUS**
Supervisor: Prof. Lin SHAO **Jun 2025 - Present**

- Developed standard and parallel simulation environment on genesis-world, integrating xArm, LEAP hand, and panda manipulator with multi-view point cloud fusion and parallel rendering for robot learning.
- Integrated 2D Diffusion Policy, 3D Diffuser Actor, and PPO algorithms as primary baselines for benchmarking and task difficulty adjustment.
- Developed a keyboard-based teleoperation interface for efficient data collection, enabling rapid testing and expert demonstration recording.

Cross Embodiment Dexterous Grasp Generation in Cluttered Environment, NUS
Supervisor: Prof. Lin SHAO **Jun 2025 - Present**

- Designed a method that generates environment-collision-free grasps and enhances grasp robustness through local reinforcement learning.
- Built GraspNet scenes in ManiSkill and tested AnyDexGrasp, a dexterous grasping strategy; Constructed a cluttered-scene dataset by performing six-direction firmness and collision checks to filter high-quality, collision-free grasps.

Functional D(R, O) Grasp [paper]**, NUS**
Supervisor: Prof. Lin SHAO **Jan 2025 - Jun 2025**

- Reproduced baseline method Scene-Diffuser, a diffusion based dexterous grasp generation method for diverse objects in simulation.
- Contributed to the full real-world experiment pipeline, from 3D printing and assembling the Leaphand hand to performing camera calibration and running grasping trials.
- Organized and conducted functional evaluation by sampling grasp results from different objects and instructions, creating evaluation sheets, and collecting human ratings.

INTERNSHIP & WORK EXPERIENCE

Research Intern, Agency For Science and Technology, CFAR, Singapore May 2024 - Aug 2024

- Reproduced a diffusion-based dataset distillation baseline MinimaxDiffusion.
- Authored and deployed code for experimenting effect of mixing original and synthesized images.

Developer (part time), Asian Institute of Digital Finance, Singapore Oct 2023 - May 2024

- Led development of complete frontend for a large language model-based legal case analysis system; ensuring a robust solution adaptable to both web and mobile platforms.

- Engineered and maintained a high-performance frontend for a large language model-based contract management system.

AI Intern, Tencent, Beijing, China **Feb 2022 - Jun 2022**

- Proposed and implemented a solution to reduce false positive rates in Tencent Video AI-based Black/Blurred screen detection network; improved model's recall and accuracy by about 5% after deployment online.
- Conducted in-depth research and experimentation on diverse loss functions and sampling methods for Tencent News' large-scale multi-label text classification network, leading to a 3% improvement in precision.

PUBLICATIONS

* REPRESENTS EQUAL CONTRIBUTION

- X. Huang*, C. Gao*, J. Shi*, **Z. Mu***, B. Zheng, Z. Li, N. T. Chan, L. Shao, "ManiLadder : Benchmarking Manipulation Intelligence Frontier via a Categorized and Multi-Level Task Ladder" (In Submission)
- 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” (In Submission)

AWARDS & ACHIEVEMENTS

- Certificate of Distinction in the Artificial Intelligence Focus Area @ School of Computing
- Best Term Project for CS4248 (Project Title: “Distribution-Aware Sarcasm Detection”) in the 26th STEPS @ School of Computing, April 2025 (1/13 teams from a class of 200 students)
- Awardee of NUS Venture Initiation Programme @ School of Computing, April 2024
- NUS Orbital “Apollo 11” Level of Achievement @ School of Computing, 2023
- 2nd place in the CS1101S SUMOBOT contest in AY2022/23 Sem 1 (2/21 teams from a class of 500 students)

TECHNICAL SKILLS

- Programming Languages: Python | C++ | C | JAVA | Javascript | SQL | HTML | CSS
- AI & Robotics: PyTorch | Maniskill | Genesis-world | CUDA | Multithreading (OpenMP)
- Experimentation & Tools: Git | TMUX | Weights & Biases | TensorBoard
- Web Development: React | Next.js
- Language: Chinese (Native), English (Proficient)

SOFTWARE DEVELOPMENT PROJECTS

Project Initiator & Developer, NUS Orbital project, Singapore **May 2023 - Aug 2023**

- Designed and delivered a comprehensive, robust Next.js and React-based website, RememberMe, for building family genealogy; ideated, developed, and tested entire system in 3 months.

Developer, NUS Source Academy (CP3108), Singapore **Feb 2023 - Jul 2023**

- Collaborated with a team of 2 to design and construct import statement detection in stepper.
- Resolved critical stepper bugs, including step counting inaccuracies, enhancing system reliability, and ensuring secure, error-free operation.