

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: 4.65/5.0 (Expected First Class)
- Focus Area: Artificial Intelligence

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 and 3D Diffuser Actor 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, Technology and Research (A*STAR), Centre for Frontier AI Research (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.

- Investigated dataset distillation application in privacy protection for person re-identification data; Experimented with image synthesis 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 development of the complete frontend for a large language model-based legal case analysis system; Ensured 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 the 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 & PREPRINTS

* 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" (under review) [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]

AWARDS & ACHIEVEMENTS

Certificate of Distinction in the Artificial Intelligence Focus Area, School of Computing, NUS, July 2025

- Awarded for meritorious performance in the following courses: Foundations of Artificial Intelligence (A), Intelligent Robots: Algorithms and Systems (A), and Natural Language Processing (A).

Best Project for CS4248 (Natural Language Processing) in the 26th SoC Term Project Showcase, School of Computing, NUS, April 2025

- Project Title: Distribution-Aware Sarcasm Detection.
- Monetary award of SGD 200.
- Among 13 teams selected from a class of 200 students.

CFAR Internship Award for Research Excellence, Agency for Science, Technology and Research, Centre for Frontier AI Research, Singapore, August 2024

- Total Stipend of \$3600.

Venture Initiation Programme (SoC) Award, NUS Enterprise, March 2024

- Grant of SGD 10,000 and a duration of one year, supporting the commercialization of the product LegalExpert, an LLM-based legal consultant and drafting system.

Orbital "Apollo 11" (Advanced) Level of Achievement, School of Computing, NUS, August 2023

- For the satisfactory completion of the non-profit project RememberMe, a React-based website for building family genealogy.

- Certification confirmed the complex features and the application of software engineering skills, including testing and documentation.

Second place in the CS1101S SUMOBOT contest in AY2022/23 Sem 1, October 2022

- Among 21 teams selected 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.

COMMUNITY INVOLVEMENT

Service-Learning Volunteer, Allkin AAC @ AMK 420, Singapore Mar 2025 - Oct 2025

- Designed and conducted weekly life-enriching activities for seniors, such as Bingo and Coloring.
- Coordinated with center staffs to run weekly coffee-chat sessions.
as part of NUS GEN2062Y Community Activities for Seniors with SG Cares

Finance, NUS Night-Runners, Singapore Jun 2024 - Mar 2025

- Managed and maintained accurate financial records for team, ensuring budget adherence and efficient allocation of resources.
- Collaborated with 4 Executive Committee members to facilitate daily running events on Tuesday, Thursday, and Friday; Took charge of attendance recording.
- Facilitated Welcome Event 2024, a 2-day event with over 100 participants.