

Kai Cheng

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RESEARCH INTERESTS

Robot Perception, 3D Vision, Dexterous Manipulation, World Models, Representation Learning

EDUCATION

Zhejiang University

B.Eng. in Mechanical Engineering, School of Mechanical Engineering; GPA: 3.57/4.00

Relevant Coursework: Machine Learning, Data Structures & Algorithms, Automatic Control, Mechanisms & Machine Theory.

Aug. 2024 – Present

Hangzhou, China

RESEARCH EXPERIENCE

Research Intern

X-Dimensional Representations Lab, Zhejiang University, Supervised by Prof. [Yiyi Liao](#)

- Designed ReRoPE for dexterous robot policy learning to encode end-effector geometry in OpenPI/ $\pi_0.5$ VLA action tokens.
- Implemented geometry-aware and context-gated ReRoPE variants in the OpenPI/ $\pi_0.5$ LoRA training stack.

May. 2026 – Present

Hangzhou, China

Research Intern

State Key Laboratory of CAD&CG, Zhejiang University, Supervised by Prof. [Hao Chen](#)

- Developed a stereo-video pipeline for temporally consistent 6D pose estimation in hand-object interaction scenes.
- Leveraged multi-view spatiotemporal cues from stereo video to improve pose-tracking robustness under occlusions.

Mar. 2026 – Present

Hangzhou, China

Research Intern

State Key Laboratory of CAD&CG, Zhejiang University, Supervised by Prof. [Zhaopeng Cui](#)

- Worked on learning-based local planning for mobile robots, focusing on safe trajectory generation and robust navigation.
- Built training and evaluation pipelines and visualized planned trajectories in simulated navigation environments.

Sep. 2025 – Feb. 2026

Hangzhou, China

SELECTED PROJECTS

Awesome Dexterous Hands

- Curated a robot-hand-first resource list covering papers, datasets, simulators, hardware, and open-source tools for dexterous robotic hands and hand-object manipulation.

Open-Source Resource

Stereo HOI Object Pose Estimation

- Built a stereo-video pipeline for temporally consistent 6D object pose tracking in hand-object interaction sequences, integrating stereo depth, multi-view fusion, and temporal smoothing.

Research Project

AWARDS & TRAINING

AI4Math Summer School: Lean4 and Mathematical Formalization

Shanghai Jiao Tong University (SJTU)

- Awarded “Excellent Participant” for outstanding performance in coursework and assessment.
- Gained hands-on experience with mathematical formalization using the Lean 4 theorem prover.

Jul. 2025

Shanghai, China

Mathematical Contest in Modeling (MCM/ICM) – Honorable Mention

COMAP

- Awarded Honorable Mention for a team project involving mathematical modeling, data analysis, and technical writing.

May. 2026

International

TECHNICAL SKILLS

Programming

Python, C++, MATLAB, \LaTeX

Machine Learning / CV

PyTorch, OpenCV, NumPy, scikit-learn

Robotics / 3D Vision

ROS, stereo vision, camera calibration, motion planning

Tools

Git, Linux, Lean 4