# Chenhao Li

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## Education

**Carnegie Mellon University**, MS in Mechanical Engineering                    Aug 2024 – May 2026
- **Relevant Courses:** Modern Control Theory, Robot Learning, Robot Dynamics and Analysis, Computer Vision, Machine Learning

**Worcester Polytechnic Institute**, BS in Mechanical Engineering                    Aug 2021 – May 2024
- **Relevant Courses:** Control Engineering, Kinematic Analysis, Mechanical Design, Embedded Systems

## Skills

- **Programming:** Python (PyTorch, TensorFlow, OpenCV, Scikit-learn), C++, MATLAB, Git, Bash
- **Tools:** IsaacSim, IsaacLab, ROS, Mujoco, PyBullet, Gym, Jupyter, Docker, SolidWorks, Onshape, Creo, FEA, ANSYS, LaTeX
- **Methods:** Reinforcement Learning, Imitation Learning, PID, LQR, Computer Vision, Model Evaluation, Serial, CAN, Embedded Systems (STM32, Arduino, Raspberry Pi), CAD, CNC, 3D Printing, GD&T

## Work Experience

**SafeWorld Robotics**                    May 2025 – Present
*Robotics Software Engineer Intern*
- Focused on human-robot interaction safety by training reinforcement learning policies in IsaacLab across real-to-sim and sim-to-real settings.
- Developed safety protection mechanisms using behavior trees and finite state machines (FSMs) to enforce safety constraints during runtime.
- Built a simulation-based evaluation system to score robot policies under diverse physical interaction scenarios, including contact dynamics and proximity thresholds.

**Autovigle**                    May 2024 – Feb 2025
*Co-founder, Robotics Engineer – Autonomous Cat Food Dispensing System*
- Led the end-to-end development of an autonomous cat can food dispensing device for home use, featuring dual-arm operation, timed feeding, and multi-can management.
- Designed and implemented a control architecture combining a custom 6-DOF robotic arm (STM32-based) and a SO100 arm using the open-source LeRobot framework.
- Developed FSM-based motion control system for both robotic arms, executing fixed grasping and feeding routines using IK and joint-level PID control.
- Developed a reliable feeding cycle with stacked-can retrieval logic, enabling unattended, multi-round feeding with 90% mechanical success rate in home testing.
- Directed full system integration across hardware and control modules, coordinating two teammates through three product iterations from prototype to stable closed-loop system.

## Experience

**Human2Locoman — RSS 2025**                    Dec 2024 – Apr 2025
- Built and calibrated a vision-based teleoperation pipeline, including data collection from VisionPro for human hand tracking and teleoperation demonstrations on both VisionPro and Locoman platforms.
- Conducted multi-round evaluation of MXT and HIT policies, analyzing robustness under embodiment shift and generalization across unseen tasks.
- Gained deep understanding of project architecture, including teleoperation pipelines, whole-body controllers, policy training and inference workflows.

**Autonomous Measurement and Straightening of Endoscopes**                    Aug 2023 – May 2024
*Sponsored by Henke Sass Wolf of America*
- Led a engineering team in collaboration with Henke Sass Wolf engineers to design, implement, and validate an endoscope recycling system, coordinating tasks across software, mechanical design, and testing.
- Developed an OpenCV-based algorithm to detect endoscope bends, reducing processing time from 49s to under 2s and improving detection accuracy by 35%.
- Designed a roller-based straightening mechanism that corrected over 80% of bend deformation in physical tests.
- Replaced manual factory processes for inspection and correction, increasing processing throughput by 2.5×.