Jiayi Zhu

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Education

University of California, Berkeley Expected Dec 2026
B.S. in Electrical Engineering and Computer Sciences Berkeley, CA
Coursework: Robotics, Deep Learning, Machine Learning, Convex Optimization, Probability & Random Processes, Operating Systems, Signals & Systems, Computer Architecture, Data Structures, Algorithms.

Experience

Berkeley Artificial Intelligence Research Sep 2026 – Present
Research Lead advised by Prof. Allen Yang UC Berkeley, CA
- Led the development of HOPE, an open-source humanoid table-tennis platform spanning perception, planning, RL control, and hardware deployment; mentored five Berkeley MEng students.
- Trained and deployed 31-DoF humanoid table-tennis policies, integrating ONNX inference, ball tracking, and strike planning into a ROS 2/AimRT control pipeline on the AgiBot A3.
- Developed an autonomous serving pipeline using ball-flight optimization, racket-impact dynamics, DLS inverse kinematics, and collision-checked trajectory generation for the AgiBot A3.
- Built ROS 2 interfaces for OptiTrack (NatNet) and ChingMu (VRPN), integrating high-frequency motion capture, timestamp synchronization, and physics-based ball trajectory prediction.

AgiBot May 2026 – Sep 2026
Robotics Engineering Intern Shanghai, China
- Refactored AgiBot A3's RL deployment framework to run custom PPO policies on real hardware.
- Investigated sim-to-real discrepancies across Isaac Sim, MuJoCo, and A3 hardware, identifying actuator-model and PD-control mismatches affecting joint tracking and whole-body stability.
- Developed runtime safety mechanisms for hardware deployment, including joint-command limits, tracking-error monitoring, smooth motion transitions, and automatic safe-halt on unsafe policy outputs.

Embodied Intelligence & Robotics Center Research Jan 2026 – Present
Undergraduate Researcher with Prof. Shankar Sastry and C. K. Wolfe UC Berkeley, CA
- Built an autonomous cube-cleanup pipeline combining visual object search, mobile-base alignment, IK-validated grasping, wrist-camera verification, and target placement. Developed a self-evolving VLM agent for embodied manipulation, integrating closed-loop task execution, failure diagnosis, and strategy refinement from real-world robot feedback. Built an end-to-end mobile manipulation pipeline combining visual exploration, base alignment, IK-validated grasping, wrist-camera verification, and object placement; analyzed perception, reachability, and execution failures to improve task recovery.
- Developed an Isaac Sim/OmniDrones racing environment with multi-gate tracks, Iris quadrotor dynamics, and body-rate control for reinforcement learning. Designed reward functions, crash termination logic, and gate-passing criteria; built trajectory visualization, lap-time metrics, and video-based diagnostics to evaluate policy behavior and training regressions.

Handshake AI March 2026 – May 2026
AI Model Evaluation Intern United States
- Reviewed robotic-action video descriptions and generated images for grounding and factual correctness; authored adversarial search/reasoning prompts to evaluate hallucinations.

Yunrui Technology May 2024 – Aug 2024
Computer Vision Intern Guilin, China
- Developed Gaussian and median filtering pipelines in Python/OpenCV and cleaned image datasets, reducing storage by approximately 30% at comparable recognition performance.
- Investigated camera connection failures and improved reproducibility with logging and standardized test instructions.

Projects

Dexterous Hand Policy Training
- Built an Isaac Sim reinforcement-learning pipeline for multi-finger grasping, object reorientation and stable in-hand rotation.
- Created observation/action spaces and reward functions using finger states, object/target poses and contact feedback; analyzed slip and unstable contact.

Full-Stack Mobile Robotics
- Built a TurtleBot autonomy stack for navigation and object-reaching tasks using ROS 2, YOLO perception, LiDAR mapping, grid search and waypoint control.
- Localized targets using depth, camera intrinsics and TF transformations; implemented A* and Dijkstra with obstacle inflation and tuned PID tracking for physical runs.

Skills

Programming Languages: Python, C++, C, Java
Robotics: ROS 2, Isaac Sim, MuJoCo, OmniDrones, OptiTrack, AimRT, ONNX, IK, SLAM, PID
ML/Tools: PPO, reinforcement learning, vision-language models, OpenCV, YOLO, NumPy, Pandas, Linux, Git