

JIANMING XING

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EDUCATION

Harbin Institute of Technology, Shenzhen 2025.09 - 2027.06
Second Bachelor's Degree, Computer Science and Technology

Harbin Institute of Technology, Weihai 2021.09 - 2025.06
B.Eng. in Mechanical Design, Manufacturing and Automation

Selected coursework: Linear Algebra and Analytic Geometry (94), Calculus (90), Theoretical Mechanics (92), Engineering Drawing A (98), C Programming (92)

PROJECT EXPERIENCE

VLA/OpenPI Real-Robot Data Collection and Inference Loop for CR5 2026.01 - 2026.03
Hand-eye calibration, teleoperation, data collection, time alignment and safety validation, OpenPI fine-tuning and deployment

- Built a ROS2 real-robot closed loop for a Dobot CR5, RGB-D camera, and electric gripper, covering end-effector pose servoing, gripper control, teleoperation recording, and eye-to-hand calibration.
- Designed an HDF5 collection and synchronization pipeline using RGB image timestamps as the master clock; aligned robot states, target actions, and gripper feedback with binary search and linear interpolation, and reduced frame drops from 27.15% to 2.57%-4.74% by enabling Fast DDS shared memory and RGB-only capture.
- Established data quality, safety, and format-conversion checks covering schema completeness, frame drops, pose jumps, workspace bounds, start-pose validation, and slow replay; converted HDF5 episodes to LeRobot v2.0 datasets.
- Completed OpenPI adaptation with 7-D state/action mapping, training configuration, WebSocket inference server, and CR5 client; adopted action-chunk replanning with sequential short-horizon execution to improve trajectory stability and real-machine safety.

Robot Digital-Twin HMI for Weld-Seam Recognition 2024.09 - 2025.06
C++/Qt, PyTorch, OpenGL, analytical kinematics and simulation

- Compared baseline U-Net, VGG-U-Net, and a VGG16-pretrained variant; raised weld-seam segmentation accuracy from 64% to 96.8% through transfer learning, data augmentation, and dataset expansion, then integrated image selection, inference calls, and result display into the Qt HMI.
- Modeled the LeArm manipulator in MATLAB Robotic Toolbox with modified DH parameters, derived and verified analytical forward/inverse kinematics, and applied forward kinematics in the HMI to map joint angles to end-effector and link poses in real time.
- Embedded an OpenGL simulation scene in C++/Qt, loaded binary STL link models, and used matrix-stack transforms to render the robot digital twin with slider control, mouse rotation/zoom/pan, and pose linkage after weld-seam recognition.

EXPERIENCE

Xbotics Embodied AI Community Internship 2025.10 - 2026.01
MotrixLab, Isaac Lab, quadruped robotics, reinforcement learning

- Migrated Isaac Lab's ANYmal-C navigation task to a MotrixLab NumPy environment, rebuilding reset/step, command sampling, observation assembly, reward calculation, and termination checks while preserving the 12-D joint-position action space, 54-D policy observation, and goal position/yaw navigation interface.
- Implemented MuJoCo Heightfield terrain height/slope queries with Y-axis frame correction, spawn/goal filtering by elevation and slope, spawn Z alignment, and boundary termination; added vertical-velocity, body-attitude, and foot-contact rewards plus registry, RL config, zero-action rollout, and reward/termination regression tests.

HIT Weihai HERO Robomaster Team, Vision Group 2023.09 - 2024.02
ROS2 vision-framework migration and communication development

- Contributed to the ROS2 migration of the Robomaster vision framework, splitting image acquisition, vision processing, and communication synchronization into node-based modules to reduce coupling in the original native C++ multithreaded framework.
- Implemented the host-MCU communication link, including data reception, ROS2 Topic messaging, and time synchronization, so vision outputs and control messages shared a consistent timeline.
- Updated communication protocols and message structures for new-season requirements, providing stable interfaces for perception, aiming, and debugging modules.

HONORS & AWARDS

National Second Prize, 18th National Undergraduate Intelligent Vehicle Competition 2023.08

University-level Second-class Scholarship, Harbin Institute of Technology (ranked 11/132) 2022.11

TECHNICAL SKILLS

Programming C/C++, Python, MATLAB

Robotics & Vision ROS/ROS2, OpenCV, PyTorch, robot kinematics, Gazebo

Tools Qt, OpenGL, Git, CMake

English TOEFL 93, CET-4, CET-6