Zhenhao Ni

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EDUCATION

Soochow University Sep.2022-Present

Bachelor of Engineering in Robotics Engineering (GPA: 3.7 / 4.0) *Suzhou, China*

- **Core Coursework:** Python Program Design (96),Probability & Statistics (96),Digital Signal (93),Principle of Automatic Control(93),Robot Operating System and Programming(91) ,Sensors and Detection Technology of Robotics(90)
- **other:** CMU 16.745 Optimal Control,CS285 Reinforcement Learning,SNU Modern Robotic,CS231n,CS61a,CS61b

RESEARCH INTEREST

Humanoid loco-manipulation; Robot Learning; Simulation; Dexterous Manipulation

INTERNSHIP EXPERIENCE

Physical Superintelligence (PSI) Lab, University of Southern California

*Remote Research Intern; collaborating with **Songlin Wei**; supervised by **Prof. Yue Wang*** *Jul. 2025 – Present*

- Engineered a comprehensive benchmarking framework for manipulation and loco-manipulation in Isaac Sim and MuJoCo, streamlining a unified pipeline for data generation, trajectory replay, and policy evaluation across four distinct robotic embodiments: single-arm Franka, dual-arm ALOHA, legged-humanoid Unitree G1, and wheeled-humanoid DexMate.
- Benchmarked state-of-the-art imitation learning and Vision-Language-Action models—including ACT, Diffusion Policy, InternVLA, and PSI0—to establish baseline success rates and assess algorithmic robustness across diverse tasks.

HRI Lab, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences

*Research Intern supervised by **Prof. Yuyi Liu*** *Oct. 2024 – Jun. 2025*

- Explored control- and learning-based methods for socially aware navigation on wheeled humanoids, enabling adaptive sidestepping in dense and spatially constrained crowds.
- Integrated LiDAR, RGB-D, and IMU streams in ROS to build a multimodal data collection pipeline that improved training quality and model robustness.

ACADEMIC PROJECTS

Ψ_0: An Open Foundation Model Towards Universal Humanoid Loco-Manipulation

*Core Member; supervised by **Prof. Yue Wang*** *Jul. 2025 – Feb. 2026*

- Developed a comprehensive humanoid loco-manipulation benchmark suite in Isaac Sim and MuJoCo to evaluate the Ψ_0 foundation model, with 50+ complex tasks across 50 simulated scenes and 70+ interactive objects; integrated two dexterous hand configurations (Dex3-1 and Inspire) for Unitree G1.
- Conducted policy evaluations across the full benchmark, comparing Ψ_0 success rates against state-of-the-art VLA methods (GROOT, InternVLA, ACT, and Diffusion Policy).

SIMPLE: SIMulation-based Policy Learning and Evaluation

*Core Member; supervised by **Prof. Yue Wang*** *Jul. 2025 – Present*

- Processed 1,600+ assets and 50 scenes for cross-engine simulation in MuJoCo and Isaac Sim; synthesized precise grasp poses via GraspNet for parallel grippers and BoDEX for dexterous hands to enable cuRobo motion planning.
- Built a comprehensive data generation and trajectory replay framework, constructing dozens of manipulation tasks across four diverse robot embodiments (Franka, ALOHA, Unitree G1, DexMate).
- Conducted comprehensive evaluations of various Imitation Learning and VLA algorithms across all supported embodiments and manipulation tasks.

Sideways or Away? Socially Aware Robot Navigation via Vision-Based Human-Inspired Imitation Learning

Leader *Oct. 2024 – jun 2025*

- Collected and integrated multi-sensor data (LiDAR, RGB-D, odometry) with ROS for imitation learning applications.
- Implemented CVAE-based models for adaptive, human-like navigation in narrow and dynamic spaces, demonstrating superior adaptability and natural HRI compared to Nav2.

PATENT

- **Invention Patent**: “A Three-Barrel Launching Robot”
  Patent No. CN120027644B, Aug. 1, 2025

SKILLS

Languages: English (B2), German(B1), Mandarin(native)
Programming: Python,Java
Development Tools: Git,VS Code,PyCharm,Intellij,ROS,Julia,Mujoco,Isaac sim
Packages: NumPy,PyTorch,CuRobo,Gym