

Zhiyao He

zhiyaohe@outlook.com | <https://github.com/zhiyaohe>

Robot Learning · Reinforcement Learning · Vision-Language-Action Models · SLAM · Robotics Simulation

Profile

I am an AI engineer working on embodied AI systems. I build robot pipelines that connect perception, language models, planning and control, from simulation (Gazebo, MuJoCo, Isaac Gym) to real hardware. My recent work is a voice-controlled navigation and manipulation system on the Unitree Go2-W quadruped robot. My goal is to do a PhD in robot learning, especially on how robots can learn manipulation skills that work reliably in the real world.

Education

M.S. in Signal and Information Processing Hohai University, Nanjing, China Sep 2015 to Jul 2018

Honors: Outstanding Graduate Student (Research-Based Degree)

- Thesis work on machine learning for runoff forecasting; published two peer-reviewed journal papers and obtained one Chinese invention patent.
- Relevant courses: Information Acquisition and Processing, Optimization. Certificate: Deep Learning Specialization (DeepLearning.AI).

B.Eng. in Electrical Engineering and Automation Anhui Agricultural University, China Sep 2011 to Jul 2014

CGPA: 3.65 / 4.00

- Finished the four-year program in three years - the only student in my cohort to do so.
- Relevant courses: Control Theory, Circuit Design, C Programming, Digital Signal Processing.

A.S. in Computer Science University of the People, USA Nov 2021 to Nov 2024

CGPA: 4.00 / 4.00

- President's List for 12 terms.
- Relevant courses: Python, Java, Databases, Operating Systems, Software Engineering, Computer Networks.

Standardized Tests

TOEFL: 5 / 6 (equivalent to 100 / 120), CEFR C1, Sep 2026

Publications and Patent

- **Zhiyao He**, Mingxiang Yang, Hao Wang, et al. "Annual Average Runoff Ensemble Forecast for Jinping I-Stage Hydropower Station Based on Elman Neural Network." Water Resources and Power, 2017.
- **Chenming Li**, **Lei Zhu**, **Zhiyao He**, et al. "Runoff Prediction Method Based on Adaptive Elman Neural Network." Water, 2019.
- **Zhiyao He** (Patent holder). "Medium- and Long-term Runoff Forecasting Method Based on Mutual Information, Kernel PCA, and Elman Neural Network." Chinese National Invention Patent, CN107463993B, granted 2020.

Work Experience

AI Engineer WellWin Technology Co., Ltd., Hengqin & Macau, China Mar 2026 to Present

- Built the perception and grasping pipelines for voice-controlled navigation and manipulation on the Unitree Go2-W quadruped robot with a D1 arm. This was a team project (details in Projects).
- Built a fully offline agent for the AgiBot Lingxi X2 robot on Jetson (ASR, LLM, RAG, TTS) that stays reliable during live shows and other events where network signal is unstable.
- Built an online agent for the AgiBot Lingxi X2 robot and integrated it with third-party business systems, so the robot can pull and act on live backend data.
- Set up simulation environments and ran locomotion training for the AKI and Unitree G1/R1 humanoid robots in Gazebo, MuJoCo and Isaac Gym.
- AKI humanoid robot (a company education product; team reproduction of Unitree's open-source Qmini): responsible for the control system, power system, code debugging, and simulation training.

Independent Study and Research Nanjing, China Jul 2019 to Feb 2026

- After Huawei, I planned to return to research. During this period my second journal paper (Water, 2019) was published and my invention patent was granted (2020).

- From 2021 to 2024, I completed a full computer science degree at University of the People (GPA 4.00/4.00, see Education) to strengthen my foundation in computer science and dive deeper into AI. Part of this period overlapped with the COVID-19 lockdowns in China.
- Admitted to the M.Sc. in Data Science at Trinity College Dublin (2025 intake), but declined the offer for funding reasons.
- After declining the offer, I prepared for AI engineering interviews and joined WellWin Technology in March 2026.

Software Engineer Huawei Technologies Co., Ltd., Nanjing R&D Institute, China Jul 2018 to Jun 2019

- Worked in the intelligent security systems team on face, vehicle, and other recognition products. My work covered system development, deployment, and feature validation (not algorithm development).
- Cross-team debugging and system-level testing.

Research Intern China Institute of Water Resources and Hydropower Research, Beijing, China Jun 2016 to Jun 2017

- Built a complete runoff prediction pipeline: data collection and cleaning, feature engineering, model development, hyperparameter tuning, training and evaluation.
- This work produced two journal papers and one invention patent (listed above).

Selected Projects

Voice-Controlled Navigation and Manipulation on Unitree Go2-W team project with Macau Millennium College

- Perception (my work): fine-tuned YOLO11 by transfer learning to detect a specific bottle, using a wrist-mounted depth camera and 2D-to-3D coordinate transformation to locate the target in the world frame.
- Manipulation (my work): a grasping pipeline built on MoveIt 2 (KDL inverse kinematics, OMPL/RRTConnect planning, FCL collision checking) that plans a collision-free path and executes the grasp.
- Navigation and language (teammates): SLAM-based navigation and the ASR/LLM/OpenClaw/TTS pipeline; we defined the interfaces and integrated the full system together.
- Developed in ROS 2, tested in MuJoCo and Gazebo simulation and on the real robot.

AKI Humanoid Robot company education product; team reproduction of Unitree's open-source Qmini

- My parts: brought up and debugged the control system and power system on the reproduced robot, and ran the RL locomotion training in Isaac Gym. Hardware and assembly were shared team work.
- ASR/LLM/TTS pipeline for natural voice interaction.

Voice RAG Assistant on AgiBot Lingxi X2 industry project for CTM (Macau Telecom)

- An in-store retail assistant: customers ask about products, plans, and pricing by voice.
- Built the full pipeline to run offline on a Jetson: a bridge node streams the X2's microphone audio to a local FastAPI backend, which runs local ASR (FunASR/Paraformer-zh), a local LLM (Qwen2.5-7B via Ollama), and pgvector RAG over the product database (PostgreSQL); answers are spoken through the X2's built-in offline TTS.

Technical Skills

- Programming & Systems: Python, C++, Linux, Docker, Git
- Robotics: ROS/ROS 2, MoveIt 2, Nav2, Gazebo, MuJoCo, Isaac Gym, SLAM, Navigation, Perception
- AI & Robot Learning: PyTorch, Machine Learning, Computer Vision, Reinforcement Learning, LLMs, RAG, VLA
- Robot Platforms: Unitree G1, Unitree B2/Go2/Go2-W, AgiBot Lingxi X2

Research Interests

- Robot Learning and Reinforcement Learning
- Vision-Language-Action Models
- Robot Manipulation and Grasping
- Robotics Simulation, SLAM and Navigation

Honors and Awards

- President's List, University of the People (12 terms) | 2021 to 2024
- Outstanding Contribution Award, Huawei Nanjing R&D Institute | 2019
- Outstanding Graduate Student, Hohai University | 2017
- Hohai University Scholarship | 2015 to 2017
- Anhui Agricultural University Scholarship | 2012