Wentao **Guo**

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"Talk is cheap. Show me the code."

Summary

My research focuses on **Embodied AI**. With hands-on experience in **both software and hardware**, I have contributed to hardware projects, including the design of two underactuated robotic hands (submitted to IROS 2025 and ROBIO2025) and the development of robot cars. On the software side, I have explored large model fine-tuning and its applications. This integrated expertise in both domains continuously fuels my drive to advance embodied intelligence research.

Education

Beijing Institute of Technology   *Beijing, China*

Computer Science(Xu Teli Honor Program)   *Aug. 2022 - Jun. 2026*

- Score: **89.69/100**, GPA: **3.73/4**
- Professional Grade Rank: **8/118**, English: CET-6 **583**
- Overall Assessment Rank: **3/118**

Research Experience

Hockens-A Hand: Environment-Constrained Adaptive Gripping Robot Hand   *Shenzhen, China*

Accepted by IROS 2025 as first author   *Oct. 2024 - Mar. 2025*

- Designed a robotic hand based on the Hoeckens mechanism, coupling dual parallelogram structures with a four-bar linkage system.
- Enabled adaptive scooping and enveloping using springs, limit blocks, and silicone bands.
- Validated environment-constrained adaptive gripping through simulations and experiments.
- Advanced to the global finals of the **ASME Student Mechanism & Robot Design Competition (SMRDC)** as one of four undergraduate teams worldwide and **the sole team from China**.

Hocken-D Hand: Robotic Hand for Linear Parallel Pinching and Self-Adaptive Grasping   *Beijing, China*

Submitted to ROBIO 2025 as first author   *Mar. 2025 - July. 2025*

- Designed a robotic hand with Hoeckens linkage and dual-parallelogram mechanism for straight-line parallel pinching.
- Achieved automatic transition to adaptive enveloping using differential linkages and passive springs.
- Built and tested a full-scale 3D-printed prototype, validating robust performance across diverse grasping tasks.

Adaptive Robotic Hands for Pinch–Lifting Operations   *Shenzhen, China*

In preparation for ICRA 2026 as first author   *Aug. 2025 - Present*

- Explored adaptive strategies for pinch–lifting primitives, analyzing how different linkage mechanisms enable robust upward lifting under contact constraints.
- Designed and prototyped two complementary hands: a rotation-driven mechanism with trajectory compensation for active enveloping, and a linear-driven mechanism with inclined passive opening for exploratory lifting.

Project Experience

JiuGe-End Model-Based Conference Assistant (CCF Open Source Innovation Competition)   *Beijing, China*

Project Lead & Finalist   *Sep. 2024 - Nov. 2024*

- Developed "YiBao", an on-device meeting agent with summarization and retrieval-augmented Q&A functionalities.
- Integrated FunASR and SenseVoice for efficient real-time speech-to-text.
- Handled long meeting inputs with MapReduce-style summarization and incremental vector knowledge base updates.
- Optimized query planning via DPO/GRPO to align retrieval with answer quality in long-meeting RAG settings.
- Improved robustness with confidence-gating (GECE) and adversarial training against noisy contexts.
- Open-sourced the project and **won third prize nationally (10,000 RMB)**.

Personalized Adaptation and Bias Elimination Sleep Assistant

Shenzhen, China

AI MODEL DEVELOPER

Jul. 2024 - Aug. 2024

- Developed a full AI sleep advisory system with staging, scoring, and large-model recommendation modules.
- Proposed and implemented an automatic scoring system for subjective and objective data collection.
- Used reinforcement learning to fine-tune models based on real-time data at the individual level.
- Introduced UAR-based clustering to evaluate group-level adaptability and applied reinforcement learning to build bias-reducing models.
- Awarded the **Disruptive Innovation Project AWARD**. Delivered a presentation at **Tsinghua Sigs**.

MoYiXing: Modular and RL-Based Commercial Community Robot Car

Beijing, China

PROJECT LEAD & ALGORITHM ENGINEER

Nov. 2023 - Nov. 2024

- Led the development of a multifunctional service robot featuring LIDAR, a 6-DOF arm, and fisheye cameras.
- Built software modules including 360° vision stitching, YOLOv8-based detection, ASR+TTS-powered AI dialogue system, and LIDAR navigation.
- Modularized functionalities of video processing, conversational AI, and driving systems for plug-and-play integration.
- Integrated DQN reinforcement learning models to build habit learning and behavior setting functions.
- Led team to win **2 national first prizes** and **nearly 10 provincial awards**.

Honors & Awards

INTERNATIONAL

Aug. 2025 **Finalists (4 teams only)**, ASME Student Mechanism and Robot Design Competition (SMRDC)   *California, USA*

Feb. 2025 **Meritorious Winner**, Mathematical Contest in Modeling (MCM), COMAP

Feb. 2024 **Honorable Mention**, Mathematical Contest in Modeling (MCM), COMAP

DOMESTIC

Aug. 2024 **National First Prize**, 7th China University Intelligent Robot Creative Competition   *Zhejiang, China*

Oct. 2024 **National First Prize**, RoboCup China Open — "Robot+" Competition   *Xi'an, China*

Nov. 2024 **National Grand Prize**, 19th "Challenge Cup" National Final — Problem-Driven Special Track (Jiebang Gua Shuai)   *Beijing, China*

Nov. 2024 **National Second Prize**, 2024 China Intelligent Robot Combat and Competition — Vision-based Antagonism   *Beijing, China*

Dec. 2024 **National Second Prize**, 6th International Youth Artificial Intelligence Competition   *Hebei, China*

Nov. 2024 **National Third Prize**, 7th Open Source Innovation Competition   *Shenzhen, China*

Extracurricular Activity

Laboratory of Robotics, X-Institute

Shenzhen, China

STUDENT RESEARCHER

Dec. 2023 - Feb. 2024

- Studied under the supervision of Prof. Wenzeng Zhang, focusing on robotic hands and underactuated mechanisms.
- Independently designed and built the Hockens-A Hand from scratch, applying knowledge of robotic mechanics and fabrication.

Network Pioneers Association, Beijing Institute of Technology

Beijing, China

VICE DIRECTOR, TECHNOLOGY DEPARTMENT

Jun. 2024 - Jun. 2025

- Organized and livestreamed dozens of technical sharing sessions, with over 500 total attendees.
- Collaborated with BIT Library to conduct data crawling and related technical tasks.

Teli Academy, Beijing Institute of Technology

Beijing, China

PEER MENTOR

Sep. 2023 - Aug. 2024

- Guided and supported students in both academic and daily life matters, helping freshmen adapt to campus life.
- Organized and participated in peer-led Q&A and review sessions for college computer fundamentals and C programming courses.

School of Mechanical Engineering, Beijing Institute of Technology

Beijing, China

TEACHING ASSISTANT

Jul. 2023 - Aug. 2023

- Served as a TA for the 2023 "Intelligent Unmanned Systems +" Cross-Strait, Hong Kong and Macao College Student Innovation Training Camp.
- Assisted in designing and advancing project topics; supported students by answering technical and project-related questions.