



Zihong Luo

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Profile

Research-driven undergraduate transitioning from **Multimodal Perception to Embodied Intelligence**. Possesses a strong track record in representation learning (publications in **AAAI**, **BIBM**, **ICPR**) and recent hands-on experience in **VLA policy learning** and **robotic manipulation**. Seeking a **Master's program** to bridge the gap between high-level AI reasoning and low-level **control/dynamics**, aiming to build generalizable robotic agents that interact robustly with the physical world.

Education

University of Liverpool (UoL) Liverpool, UK
Expected Jun 2026
BSc in Computing Science — GPA: 3.87/4.0 — Major GPA: 3.93/4.0 Top 5%

Xi'an Jiaotong-Liverpool University (XJTLU) Suzhou, China
Sep 2022 – Jun 2026
BSc in Information & Computing Science — GPA: 3.87/4.0 — Major GPA: 3.93/4.0 Top 5%

Relevant Coursework: Machine Learning, Deep Learning, Computer Vision, Knowledge Representation.

Research Experience

SmartLab, University of Liverpool Liverpool, UK
Oct 2025 – Present
Research Assistant (Advisor: Prof. Trednaferov)

- **Project:** High-level trajectory reasoning for robotic end-effectors (Final Year Project).
- Proposed **GVLA**, a gripper-aware Vision-Language-Action policy using Mixture-of-Experts to fuse gripper morphology with visual input.
- Engineered a unified text bottleneck to align natural language instructions with **kinematic constraints**, demonstrating zero-shot transfer to unseen tools on real-robot benchmarks (Franka)

Jifu Medical (AI Algorithm Group) Shenzhen, China
Jun 2025 – Aug 2025
Algorithm Intern — Multimodal Robotics & Perception

- Led the feasibility study for extending clinical workflow from recognition to **robotic manipulation**.
- Deployed **ACT** and **ALOHA** frameworks; built a full control loop using **LeRobot** for data logging and teleoperation on SO-101 dual-arm robots.
- Prototyped a Sim-to-Real pipeline using **NVIDIA Isaac Sim**, mapping perception data to actionable policies.

MBZUAI Abu Dhabi, UAE
Dec 2024 – Jul 2025
Research Assistant (Remote, Advisor: Prof. Imran Razzak)

- Developed a **Modality Prior Aligner** leveraging Medical LLMs to guide pixel-level segmentation.
- Designed a fusion decoder with iterative mask optimization, bridging the gap between semantic reasoning and dense prediction (relevant to robotic affordance detection).
- Outcome: Paper submitted to **BIBM 2025**.

University of Exeter Exeter, UK
Mar 2024 – Aug 2024
Summer Research Assistant (Advisor: Prof. Yanda Meng)

- Contributed to **IMDR**, a framework for disentangling shared vs. specific modalities in noisy environments.

- Implemented proxy-learning modules to ensure robust representation under missing data, a key challenge in sensor fusion.
- Outcome: Accepted at **AAAI 2025** (Oral/Poster).

Tongji University School of Medicine (TUSM)

Research Contributor (Prof. Xiaoyun Xie)

Shanghai, China

Nov 2023 - Jan 2024

- Built interpretable ML models for **DPN/LEAD** prediction; applied **SHAP** for risk factor analysis aiding DFU prevention.

XJTLU

Research Assistant

Suzhou, China

Sep 2023 – Nov 2023

- Developed encoder-decoder with Deep Belief Network for **modality completion**; dual losses for accuracy and integration; accepted at **ICPR 2024**. (Prof. Xiaobo Jin)
- Integrated **image + temporal** signals via spiking networks for anomaly detection; published at **ICPR 2024**. (Prof. Shuliang Zhao)

Publications

PG-SAM: Prior-Guided SAM with Medical for Multi-organ Segmentation (BIBM)	<i>2025</i>
– Yiheng Zhong*, Zihong Luo*, et al. [arXiv].	
Incomplete Modality Disentangled Representation for Ophthalmic Diagnosis (AAAI)	<i>2024</i>
– Chengzhi Liu*, Zile Huang*, Zihong Luo, et al. [Project].	
ARIF: Adaptive Attention-Based Cross-Modal Representation Integration (ICANN)	<i>2024</i>
– Chengzhi Liu*, Zihong Luo*, et al. [SpringerLink].	
MTSA-SNN: Multimodal Time Series via Spiking Neural Networks (ICPR)	<i>2024</i>
– Chengzhi Liu*, Zihong Luo*, et al. [SpringerLink].	
MC-DBN: Modality Completion with Deep Belief Networks (ICPR)	<i>2024</i>
– Zihong Luo*, Chengzhi Liu*, et al. [SpringerLink].	
Interpretable ML for Peripheral Neuropathy & LEAD (BMC Medical Informatics)	<i>2024</i>
– Ya Wu, Danmeng Dong, Zihong Luo, et al. [SpringerLink].	

Robotics & Hardware Projects

LeRobot SO-101 Implementation Python, PyTorch, LeRobot	<i>2025</i>
– Implemented dual-arm teleoperation and data collection pipelines; synchronized dual-camera streams for imitation learning.	
– Recorded and validated 50+ episodes for manipulation tasks, contributing to the open-source robot learning community.	
Bipedal Wheeled Robot Reproduction C++, Arduino, ESP32	<i>2025</i>
– Built a self-balancing wheel-legged robot from scratch. Implemented Inverse Kinematics (IK) for 5-link leg structure.	
– Designed cascaded PID controllers for balance and velocity control using IMU feedback; achieved stable RC locomotion.	
– <i>This project demonstrates capability in embedded systems and classical control theory.</i>	

Skills

AI & Compute: Python, PyTorch, TensorFlow, OpenCV, Transformers, LLMs

Robotics & Sim: ROS/ROS2, Isaac Sim, MuJoCo, LeRobot, URDF, Kinematics (IK/FK)

Hardware & Embedded: C++, Arduino, Raspberry Pi, Sensors (IMU, LiDAR)

Awards: International Quant Championship (Top 0.1%, UK Finals), Biology Olympiad (Provincial 1st Prize)