YILEI ZHONG

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Research Interests: Embodied AI, Robotics, Generative AI

EDUCATION

Northwestern Polytechnical University *Xi'an, Shaanxi, China*
Bachelor of Astronautics Engineering (A+ Discipline) *Sep 2020 – July 2024*
• GPA: 3.37/4.1

PAPERS AND PROJECTS

Evo-1: Lightweight Vision-Language-Action Model with Preserved Semantic Alignment

SJTU, Shanghai, China
Second Author, supervised by Prof. Bo Zhao *Aug 2025 – Nov 2025*
• Purpose: Design an efficient VLA framework to reduce computational cost and enable real-time control.
• Content:
Propose a 0.77B lightweight VLA framework achieving 12 Hz inference with 2.3GB GPU Memory usage.
Introduce a two-stage training strategy with a novel bridging module to preventVLM catastrophic forgetting.
Achieve State-Of-The-Art performance on the MetaWorld benchmark with an 80% task success rate.
• Outcome: Under review at CVPR 2026.
• Website: https://arxiv.org/abs/2511.04555

Evo-0: Vision-Language-Action Model with Implicit Spatial Understanding

SJTU, Shanghai, China
Second Author, supervised by Prof. Bo Zhao *Jun 2025 – Sep 2025*
• Purpose: Embed implicit 3D representations into VLA models to enhance spatial perception and understanding.
• Content:
Propose a plug-and-play module based on VGGT to enhance VLA's 3D perception and spatial understanding.
Achieve ~10% performance improvement over the base model on LIBERO and Real-World evaluations.
• Outcome: Under review at ICRA 2026.
• Webset: https://arxiv.org/abs/2507.00416

Digital Twin-Based Teleoperation Scheme for Assembly-Oriented Robotic Manipulation

NWPU, Shaanxi, China
Undergraduate Technical Project Lead, supervised by Prof. Zhiqiang Ma *Apr 2022 – May 2024*
• Purpose: Leverage Digital Twin to enhance human‑machine interaction in teleoperated assembly tasks.
• Content:
Adopt a PVNet-based Pose Etimation network to estimate object poses and bounding boxes.
Propose an observer-based logarithmic sliding mode control scheme for physical human–robot interaction.
Synchronize real-world assembly tasks with virtual environments in Unity.
• Outcome: National Second Prize, 2023 National Undergraduate IoT Design Competition (China).
Involved in an SCI-indexed journal publication (IEEE SMC, Q1).
• Website: https://ieeexplore.ieee.org/document/10585331

Integrated Reconnaissance‑Strike Fixed-Wing Intelligent UAV System

NWPU, Shaanxi, China
Technical Project Lead, supervised by Prof. Qing Guo *Nov 2020 – May 2022*
• Purpose: Design a UAV system with autonomous reconnaissance, navigation, and simulated munition delivery.
• Content:
Adopt an Object Detection–based approach for target tracking, recognition, and detection.
Design an STM32 and ArduPilot-based flight control system enabling autonomous navigation and delivery.
• Outcome: CADC Competition First Prize, 2021.

SELECTED AWARDS

- China Aerospace Science and Technology Corporation Scholarship, Third Prize *Nov 2023*
- China College Student Computer Design Competition, National Second Prize *Aug 2023*
- National University IoT Design Competition, National Second Prize *Aug 2023*
- China Marine Vehicle Design and Production Competition, National First Prize *Aug 2023*
- 'Internet+' Innovation and Entrepreneurship Competition, Provincial Gold Award *Jul 2023*
- Shaanxi Province Engineering Innovation Competition, Provincial First Prize *Jul 2022*
- China International Aircraft Design Challenge, National First Prize *Oct 2021*

EXTRACURRICULAR ACTIVITIES

- Research Assistant, Shanghai JiaoTong University, School of Artificial Intelligence *Apr 2025 – Present*
- Nanyang Technological University Summer Visiting Program *Jul 2024 – Aug 2024*
- Member, Photography Group, New Media Center, NWPU *Jun 2023 – Apr 2024*
- Tech Lead, Air-to-Ground Task Group, Aviation Technology Innovation Base, NWPU *Oct 2021 – Jun 2022*
- Northwestern Polytechnical University Student Union, Officer *Sep 2021 – Jun 2022*
- Member, Traditional Chinese Music and Astronomy Club, NWPU *Sep 2020 – Sep 2022*