Yanjia Huang

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Summary

Research Interests: My research focuses on **Embodied AI** and **World Models** with two thrusts: (1) **Manipulation** learning skills from video with explicit spatial reasoning for long-horizon tasks; (2) **Navigation** building predictive world models that imagine and evaluate future states to select the next step like human.

Highlight: 4 years of research experience with solid mathematical and theoretical background; 3 years of experience with **real robotic platforms**: Kinova gen2, Franka and Realman compound robot.

Education

Texas A&M University — *College Station, Texas, United States*
M.S. in Engineering Technology — *Aug. 2024 - Present*

Liverpool John Moores University — *Liverpool, England*
B.Eng.(Hons) in Mechanical Engineering (**First Class Honours**) — *Sep. 2020 - Jun. 2024*

University of Shanghai for Science and Technology — *Shanghai, China*
B.Eng. in Mechanical Engineering — *Sep. 2020 - Jun. 2024*

Publications

(*equal contribution)

[1] Zero-shot Object Navigation with Vision-Language Models Reasoning — *ICPR 2024*
Congcong Wen[1*], Yisiyuan Huang[2*], **Yanjia Huang[2*]**, Wenyu Han[2], Shuaihang Yuan[1], Yu-Shen Liu[3], Yi Fang[1]

[2] A self-healing composite actuator for multifunctional soft robot via photo-welding — *Composites Part B: Engineering*
Mingxia Liu[1,2], Shu Zhu[3], **Yanjia Huang[1]**, Zihui Lin[2], Weiping Liu[1,4], Lili Yang[1], Dengteng Ge[2]

[3] PANDORA: Diffusion Policy Learning for Dexterous Robotic Piano Playing with Oracle Reward Assessment — *IROS 2025, NeurIPS 2025 Workshop*
Yanjia Huang[1], Renjie Li[1], Zhengzhong Tu[1]

[4] Lock, Forecast, Act: End-to-End Object-Centric 3-D Gaussian Splatting and Diffusion Trajectory Prediction for Dynamic Grasping — *ICCV Workshop 2025*
Yanjia Huang[1*], Mingyang Wu[1*], Ruijie Ye[2], Renjie Li[1], Zhengzhong Tu[1]

[5] MXene-Based Hydrogel Biosensors for Oral Inflammation and Lump Detection — *Society of Engineering Science 2025*
Weijia Liu[1*], **Yanjia Huang[1*]**, Zhengzhong Tu[1], Chenglin Wu[1]

Preprints

(under review / in submission)

[P1] Can Large Vision Language Models Read Maps like a Human? — *NeurIPS 2025 (under review)*
Xing Shuo[1*], Shuangyu Xie[2*], Zezhou Sun[3*], Kaiyuan Chen[2], **Yanjia Huang[1]**, Yuping Wang[4], Jiachen Li[5], Dezhen Song[3], Zhengzhong Tu[1]

[P2] VISTA: Visual Imagination with Scheduler for Task-Aware Navigation — *CoRL 2025 (under review)*
Yanjia Huang[1], Mingyang Wu[1], Renjie Li[1], Zhengzhong Tu[1]

[P3] FORGE-Tree: Diffusion-Forcing Tree Search for Long-Horizon Robot Manipulation — *ICRA 2026 (under review)*
Yanjia Huang[1*], Shuo Liu[2*], Sheng Liu[3], Qingxiao Xu[1], Mingyang Wu[1], Xiangbo Gao[1], Zhengzhong Tu[1]

[P4] VISTAv2: World Imagination for Indoor Vision-Language-Navigation — *ICRA 2026 (under review)*
Yanjia Huang[1*], Xiangbo Gao[1], Xianshun Jiang[3], Mingyang Wu[1], Renjie Li[1], Zhengzhong Tu[1]

Research Experience

University of California, Los Angeles — *Los Angeles, CA, U.S.A*
Research Assistant, AIVC Lab, Advised by Prof. Chenfanfu Jiang — *Nov. 2025 - Present*
- **Research Topics:** Deformable Object Manipulation
- Building a robotic origami system that learns folding from human videos, enabling few-shot generalization to new shapes.

Reality Inc. — *Berkeley, CA, U.S.A*
ML Agent Team Tech Lead, Scam.AI — *April. 2025 - Nov. 2025*
- Successfully secured a **$300K angel round**
- As ML Agent Team Lead, spearheading the development of AI-driven SMS phishing attack agents to validate and strengthen our defense capabilities.

Texas A&M University — *College Station, TX, U.S.A*
Research Assistant, TACO Group, Advised by Prof. Zhengzhong Tu — *Aug. 2024 - Present*
- **Research Topics**: Robotics, Embodied Agent, Computer Vision, Vision-Language-Model(VLM)
- Developed world model for robot manipulation and navigation learning with explicit geometric reasoning, and imaginative next step planning via predictive models.

Noah's Ark Lab — *Shanghai, China*
Research Intern — *Oct. 2023 - Aug. 2024*
- **Research Topics**: Real-World Embodied AI, Voice Command-Driven Robotics
- Creating a compound robot that can perform complex tasks like pouring water in challenging settings such as offices and can navigate to objects all through voice commands.

New York University — *New York, U.S.A*
Research Assistant at Multimedia and Visual Computing Lab, Advised by Prof. Yi Fang — *May. 2023 - Sept. 2023*
- **Research Topics**: Autonomous Vehicle Navigation, Vision-Based Navigation, Motion and Path Planning
- Proposed a novel Vision Language model named VLTNet for Language-driven Zero-Shot Object Navigation (L-ZSON).

Fudan University — *Shanghai, China*
Research Assistant, Advised by Prof. Yanwei Fu — *Sept. 2022 - Present*
- **Research Topics**: Dexterous Robotic Hand Manipulation, Machine Learning in Robotic Control
- Contributed into a pioneering method for approximating the 3D shape of liquid using the 6-DoF pose of source containers and the estimated liquid mask. This approach is innovative in that it models 3D liquid from a single image without relying on temporal information.

Academic Service

Reviewer	ICRA, CoRL, IROS, NeurIPS Datasets & Benchmarks
Teaching Assistant	MMET 303: Fluid Mechanics and Power, Fall 2024
Teaching Assistant	ESET 329: Six Sigma & Applied Statistics, Spring & Fall 2025

Skills

Programming	C, C++, Python, Linux, MATLAB, ROS, LaTeX, SQL
Platforms	Kinova, Franka, Realman
Design	Solidworks, CAD, ArtCAM, COMSOL, Arduino

Honors & Awards

2021	**First Prize,** RoboMaster University Technical Challenge (RMUT) 2021 Regional Competition (Central Region)	*Jiangsu, China*
2021	**First Prize (Top 5%),** Internet+ Innovation and Entrepreneurship Competition	*Shanghai, China*
2023	**the Dean's Scholarship,** Sino-British College, University of Shanghai for Science and Technology	*Shanghai, China*