

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.

Publications

(*equal contribution)

ROBOTIC NAVIGATION

★ [N1] VISTAv2: World Imagination for Indoor Vision-and-Language Navigation

CVPR 2026 (under review) Rating:
454

YANJIA HUANG¹, XIANSHUN JIANG¹, XIANGBO GAO¹, MINGYANG WU¹, RENJIE LI¹, ZHENGZHONG TU¹

★ [N2] VISTA: Visual Imagination with Scheduler for Task-Aware Navigation

ICRA 2026

YANJIA HUANG¹, MINGYANG WU¹, RENJIE LI¹, ZHENGZHONG TU¹

[N3] Can Large Vision Language Models Read Maps like a Human?

TRB Annual Meeting 2025 Presenter

XING SHUO^{1*}, SHUANGYU XIE^{2*}, ZEZHOU SUN^{3*}, KAIYUAN CHEN², YANJIA HUANG¹, YUPING WANG⁴, JIACHEN LI⁵, DEZHEN SONG³, ZHENGZHONG TU¹

[N4] Map2VLM: Improving Vision Language Model Map Interpretation with Map Space Scene Graph

arXiv preprint

YANJIA HUANG^{1*}, SHUANGYU XIE^{2*}, SHUO XING^{1*}, KAIYUAN CHEN², ZEZHOU SUN³, DEZHENG SONG³, ZHENGZHONG TU¹

[N5] Zero-shot Object Navigation with Vision-Language Models Reasoning

ICPR 2024

CONGCONG WEN^{1*}, YISIYUAN HUANG^{2*}, YANJIA HUANG^{2*}, WENYU HAN², SHUAIHANG YUAN¹, YU-SHEN LIU³, YI FANG¹

ROBOTIC MANIPULATION

★ [M1] Diverse Dexterous Manipulation Data Generation and Policy Training

RSS 2026 (under review)

HAORAN GENG^{1*}, KIAFENG ZHANG^{1*}, YANJIA HUANG^{3*}, PEIRAN LI^{2*}, HAORAN LIU⁴, JIAGENG MAO³, MARCO PAVONE², JITENDRA MALIK², PIETER ABBEEL¹

★ [M2] FORGE-Tree: Diffusion-Forcing Tree Search for Long-Horizon Robot Manipulation

ICRA 2026 (under review)

YANJIA HUANG^{1*}, SHUO LIU^{2*}, SHENG LIU³, QINGXIAO XU¹, MINGYANG WU¹, XIANGBO GAO¹, ZHENGZHONG TU¹

[M3] 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 YE², RENJIE LI¹, ZHENGZHONG TU¹

[M4] MXene-Based Hydrogel Biosensors for Oral Inflammation and Lump Detection

Society of Engineering Science 2025

WEIJIA LIU^{1*}, YANJIA HUANG^{1*}, ZHENGZHONG TU¹, CHENGLIN WU¹

[M5] A self-healing composite actuator for multifunctional soft robot via photo-welding

Composites Part B: Engineering

MINGXIA LIU^{1,2}, SHU ZHU³, YANJIA HUANG¹, ZIHUI LIN², WEIPING LIU^{1,4}, LILI YANG¹, DENGTEG GE²

ROBOTICS FOR ART (ROBO4ART)

★ [A1] Learn2Fold: Structured Origami Generation with World Model Planning

Siggraph 2026 (under review)

YANJIA HUANG^{1,2*}, YUNUO CHEN^{1*}, YING JIANG^{1*}, JINRU HAN¹, ZHENGZHONG TU², YIN YANG³, CHENFANFU JIANG¹

[A2] RoboPainter: Real-World Robotic Painting via Differentiable Brushstroke Reconstruction

IROS 2026 (under review)

YANJIA HUANG^{1,2*}, YUMENG HE^{1,3*}, YING JIANG^{1*}, YUNUO CHEN¹, ZHENGZHONG TU², YIN YANG⁴, CHENFANFU JIANG¹

Education

Texas A&M University

M.S. IN ENGINEERING TECHNOLOGY

College Station, Texas, United States

Aug. 2024 - Present

Liverpool John Moores University

B.ENG.(HONS) IN MECHANICAL ENGINEERING, DUAL DEGREE (FIRST CLASS HONOURS)

Liverpool, England

Sep. 2020 - Jun. 2024

University of Shanghai for Science and Technology

B.ENG. IN MECHANICAL ENGINEERING

Shanghai, China

Sep. 2020 - Jun. 2024

Research Experience

Axis.AI

RESEARCH ADVISOR

- Leading a research team to support web-based teleoperation and Sim2Real transfer development.

Berkeley, CA, US

Dec. 2025 - Present

University of California, Los Angeles

RESEARCH ASSISTANT, AIVC LAB, ADVISED BY PROF. CHENFANFU JIANG

- Research Topics:** Deformable Object Manipulation
- Building a robotic origami system that learns folding from human videos, enabling few-shot generalization to new shapes.

Los Angeles, CA, US

Nov. 2025 - Jan. 2026

Texas A&M University

RESEARCH ASSISTANT, TACO GROUP, ADVISED BY PROF. ZHENGZHONG TU

- 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.

College Station, TX, US

Aug. 2024 - Present

Reality Inc.

ML AGENT TEAM TECH LEAD

- Successfully secured a **\$300K angel round**
- As ML Agent Team Lead, spearheaded the development of AI-driven SMS phishing defense agents and built the largest-scale scam narrative dataset to date.

Berkeley, CA, US

April. 2025 - Nov. 2025

Noah's Ark Lab

RESEARCH INTERN

- 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.

Shanghai, China

Oct. 2023 - Aug. 2024

New York University

RESEARCH ASSISTANT AT AI4CE LAB, ADVISED BY PROF. CHEN FENG

- Research Topics:** Autonomous Vehicle Navigation, Vision-Based Navigation, Motion and Path Planning
- Proposed a novel Vision Language model named VLNet for Language-driven Zero-Shot Object Navigation (L-ZSON).

New York, US

May. 2023 - Sept. 2023

Fudan University

RESEARCH ASSISTANT, ADVISED BY PROF. YANWEI FU

- 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.

Shanghai, China

Sept. 2022 - June. 2024

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