Yuanhang Zhang

yuanhanz@andrew.cmu.edu | yuanhangz.com | hang0610 | yuanhangz | Yuanhang Zhang

Education

Carnegie Mellon University — *Pittsburgh, USA*
M.S. in Robotics, GPA: 3.96 — *Aug. 2024 - Present*

Shanghai Jiao Tong University — *Shanghai, China*
B.S. in Automation, GPA: 3.78 — *Aug. 2019 - Jun. 2023*

Research Interest

My research focuses on advancing **robotic loco-manipulation with complex and dynamic physical interaction** in the real world. I integrate **deep learning and model-based control** to achieve **agility, adaptivity, and generalizability** for robots in cluttered environments. I am also interested in large scale planning in multi-robot systems.

Experience

Amazon, Frontier AI & Robotics (FAR) — *San Francisco, USA*
Applied Scientist Intern, advised by Pieter Abbeel and Rocky Duan — *May. 2025 - Present*
- **Topic**: perceptive and adaptive humanoid loco-manipulation

Carnegie Mellon University — *Pittsburgh, USA*
Research Assistant at LeCAR Lab, advised by Guanya Shi — *Oct. 2024 - Present*
- **Topic**: adaptive humanoid whole-body control, aerial manipulation

Shanghai Qi Zhi Institute — *Shanghai, China*
Research Assistant, advised by Huazhe Xu — *Dec. 2023 - Jun. 2024*
- **Topic**: agile and dynamic mobile manipulation with dexterity

Shanghai Jiao Tong University — *Shanghai, China*
Research Intern at RAP Lab, advised by Zhongqiang Ren — *Jul. 2023 - Nov. 2023*
- **Topic**: multi-agent combinatorial path finding

Publications (*equal contribution)

PREPRINTS

[P2] FALCON: Learning Force-Adaptive Humanoid Loco-Manipulation.
Yuanhang Zhang, Yifu Yuan, Prajwal Gurunath, Tairan He, Shayegan Omidshafiei, Ali–akbar Agha–mohammadi, Marcell Vazquez-Chanlatte, Liam Pedersen, Guanya Shi
Under review, 2025 [Paper]

[P1] ViTaS: Visual Tactile Soft Fusion Contrastive Learning for Reinforcement Learning.
Yufeng Tian*, Shuiqi Cheng*, Tianming Wei, Tianxing Zhou, Yuanhang Zhang, Zixian Liu, Zhecheng Yuan, Huazhe Xu
Under review, 2025 [Paper]

CONFERENCE PROCEEDINGS

[C5] ASAP: Aligning Simulation and Real-World Physics for Learning Agile Humanoid Whole-Body Skills.
Tairan He*, Jiawei Gao*, Wenli Xiao*, Yuanhang Zhang*, Zi Wang, Jiashun Wang, Zhengyi Luo, Guanqi He, Nikhil Sobanbab, Chaoyi Pan, Zeji Yi, Guannan Qu, Kris Kitani, Jessica Hodgins, Linxi "Jim" Fan, Yuke Zhu, Changliu Liu, Guanya Shi
RSS, 2025 [Paper]

[C4] Catch It! Learning to Catch Objects in Flight with Mobile Dexterous Hands.
Yuanhang Zhang*, Tianhai Liang*, Zhenyang Chen, Yanjie Ze, Huazhe Xu
ICRA, 2025 [Paper]
CoRL LFDM Workshop (Outstanding Paper Nomination), 2024

[C3] Hold My Beer: Learning Gentle Humanoid Locomotion and End-Effector Stabilization Control.
Yitang Li, Yuanhang Zhang*, Wenli Xiao, Chaoyi Pan, Haoyang Weng, Guanqi He, Tairan He, Guanya Shi
CoRL, 2025 [Paper]

[C2] Flying Hand: End-Effector-Centric Framework for Versatile Aerial Manipulation Teleoperation and Policy Learning.
Guanqi He*, Xiaofeng Guo*, Luyi Tang, Yuanhang Zhang, Mohammadreza Mousaei, Jiahe Xu, Junyi Geng, Sebastian Scherer, Guanya Shi
RSS, 2025 [Paper]

[C1] Multi-Agent Combinatorial Path Finding with Heterogeneous Task Duration.
Yuanhang Zhang, Xuemian Wu, Hesheng Wang, Zhongqiang Ren
SoCS, 2024 [Paper]

Honors & Awards (selected)

2024 **Outstanding Paper Nomination,** CoRL LFDM Workshop — *Munich, German*
2023 **Outstanding Graduate (Top 3%),** Shanghai Jiao Tong University — *Shanghai, China*
2022 **Merit Student (Top 3%),** Shanghai Jiao Tong University — *Shanghai, China*

Projects (selected)

Autonomous Humanoid Tote Logistics — *Pittsburgh, USA*
CMU MRSD Capstone Project, sponsored by Nissan and Field AI — *Sep. 2024 - Present*
- Achieved robust lower body navigation and upper body IK-based manipulation on humanoid robots.
- Leveraged Foundation Pose for tote detection and pose estimation.

Perception-constrained Visual Servoing Based NMPC for Quadrotor Flight — *Shanghai, China*
Undergraduate Thesis [Video], advised by Hesheng Wang — *Feb. 2023 - Jun. 2023*
- Incorporated quadrotor dynamics and visual feature dynamics into NMPC to enable the quadrotor to flight purely based on visual information without localization.

Competitions (selected)

International VEX Robotics Competition — *Shanghai, China*
SJTU-VEX Programming Team Leader. [Team Website] / [2021 Season Reveal] — *Mar. 2020 - Jul. 2022*
- 2021 National VEX Robotics Competition: Tournament Champions & Skills Champion (World Record).
- 2021 VEX Robotics Competition Asian Open: Tournament Champions VEXU; Excellence Award.
- 2021 VEX Robotics Competition China Final: Tournament Champions VEXU; Excellence Award.

National University IOT Design Competition — *Shanghai, China*
'HarClass': A Cloud-Based Distributed System for Smart Classrooms. [Video] — *Jun. 2022 - Sep. 2022*
- National First Prize & Harmony Innovation Award (TOP 1%)

Academic Services

Reviewer **CoRL, ICRA, IROS**, 2025 - Present

Skills

Programming Python, C/C++, MATLAB, JAVA, LaTeX
Framework Pytorch, Warp, ROS/ROS2, IsaacGym, IsaacSim/IsaacLab, Mujoco, Gazebo, Airsim
DevOps AWS, Docker, SkyPilot, Conda, Jenkins, Weights & Biases, Tensorboard
Robots Agilex Ranger Mini V2, XArm, LEAP Hand, Unitree G1, Booster T1

Press Coverage (selected)

[PC1] **Video Friday: Robot Battlefield Triage Your Weekly Selection of Awesome Robot Videos.**
FALCON, by Evan Ackerman, IEEE Spectrum, 2025 [Link]