

YUANHANG ZHANG

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EDUCATION

Carnegie Mellon University - School of Computer Science

Aug. 2024 – Present

Degree: Master, Major: Robotic Systems and Development, GPA: 4.0/4.0

Pittsburgh, the U.S.

Shanghai Jiao Tong University (SJTU)

Sep. 2019 – Jun. 2023

Degree: Bachelor, Major: Automation, Major GPA: 88.5/100

Shanghai, China

Honor: Outstanding Graduate (3%), Merit Student (3%)

SKILLS

Programming Languages: Python, C++, C, Java, HTML/CSS, Matlab

Tools/Frameworks: Pytorch, Mujoco, IsaacGym, Jax, ROS, Gazebo, Airsim, Casadi, Acados

RESEARCH EXPERIENCE

Learning to Catch Objects in Flight with Mobile Dexterous Hands

Feb. 2024 – Sep. 2024

Research Assistant, Advisor: Prof. Huazhe Xu from Tsinghua University, China

- Constructed a mobile manipulator composed of a omni-wheeled base, a 6-DoF arm, and a 12-DoF dexterous hand, to catch diverse objects randomly thrown by humans with agility, accuracy and generalization.
- Proposed two-stage Reinforcement Learning framework to efficiently train a whole-control policy for our robot.
- Bridged the sim2real gap and deployed the policy trained in Mujoco onto the real robot in a zero-shot manner.

Learning to Catch Objects in Flight with Mobile Dexterous Hands

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Multi-Agent Combinatorial Path Finding with Heterogeneous Task Duration

Aug. 2023 – Nov. 2023

Research Intern, Advisor: Prof. Richard Ren from SJTU, China

- Proposed CBSS-TPG and CBSS-D to solve an unexplored multi-agent path finding problem with task duration.
- In CBSS-TPG, designed a post-process to generate a conflict-free path execution schedule with task duration.
- In CBSS-D, refined CBSS to guarantee solution optimality through taking task duration into sequence planning and improved searching efficiency by adopting new splitting rule while resolving conflicts.

Perception-constrained Visual Servoing Based NMPC for Quadrotor Flight

Mar. 2023 – Jun. 2023

Undergraduate Thesis (A, top 3%) Advisor: Prof. Hesheng Wang from SJTU, China

- Proposed a Nonlinear Model Predictive Control (NMPC) method incorporating quadrotor and visual feature dynamics.
- Addressed perception-aware problems in Image-Based Visual Servo Control (IBVS) by adding visual feature constraints.
- Evaluated the control algorithm through traversal of multiple rings in Gazebo simulations and real drone experiments.

SELECTED PROJECTS

'HarClass': A Cloud-Based Distributed System for Smart Classrooms | Java, Python

Jun. 2022 – Sep. 2022

National First Prize & Innovation Award (Top 1%) in National University IOT Design Competition

- Designed the 'HarClass', an app for modern smart classrooms, utilizing the distributed features of the Harmony Operation System to achieve convenient and efficient interaction between teachers and students.
- Utilized distributed database to store class data and analyze class performance using the clustering algorithm.
- Developed a data visualization website using data received from the cloud server.

PUBLICATIONS

[1] T. He*, J. Gao*, W. Xiao*, **Y. Zhang***, Z. Wang, J. Wang, Z. Luo, G. He, N. Sobanbab, C. Pan, Z. Yi, G. Qu, K. Kitani, J. Hodgins, L. Fan, Y. Zhu, C. Liu, G. Shi. "ASAP: Aligning Simulation and Real-World Physics for Learning Agile Humanoid Whole-Body Skills". In submission. [\[Website\]](#)[\[arXiv\]](#)[\[Code\]](#).

[2] **Y. Zhang***, T. Liang*, Z. Chen, Y. Ze, H. Xu. "Catch It! Learning to Catch in Flight with Mobile Dexterous Hands". IEEE International Conference on Robotics and Automation (ICRA) 2025 [\[Website\]](#)[\[arXiv\]](#)[\[Code\]](#).

[3] **Y. Zhang**, X. Wu, H. Wang, Z. Ren. "Multi-Agent Combinatorial Path Finding with Heterogeneous Task Duration". International Symposium on Combinatorial Search (SoCS) 2024 [\[arXiv\]](#)[\[Code\]](#).

[4] Y. Tian, S. Cheng, T. Wei, T. Zhou, **Y. Zhang**, Z. Liu, Z. Yuan, H. Xu. "ViTaS: Visual Tactile Soft Fusion Contrastive Learning for Reinforcement Learning". arXiv 2024.