Hongyi Chen

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EDUCATION

Carnegie Mellon University, 3rd year Ph.D in Robotics; May 2028 (Expected)

Georgia Institute of Technology, M.S in Robotics; May 2023

Carnegie Mellon University, M.S in Electrical and Computer Engineering; May 2021

Peking University, B.A in Economics; June 2019

Beijing University of Chemical Technology (BUCT),B.S in Applied Mathematics; June 2018

SELECTED PUBLICATIONS

[1] **Hongyi Chen**, Tony Dong, Tiancheng Wu, Liquan Wang, Yash Jangir, Yaru Niu, Yufei Ye, Homanga Bharadhwaj, Zackory Erickson, Jeffrey Ichnowski. Dexterous Manipulation Policies from RGB Human Videos via 3D Hand-Object Trajectory Reconstruction. *arXiv*, 2026. [PDF]

[2] **Hongyi Chen**, Yunchao Yao, Yufei Ye, Zhixuan Xu, Homanga Bharadhwaj, Jiashun Wang, Shubham Tulsiani, Zackory Erickson, Jeffrey Ichnowski. Web2Grasp: Learning Functional Grasps from Web Images of Hand-Object Interactions. *arXiv*, 2025. [PDF]

[3] **Hongyi Chen**, Abulikemu Abuduweili, Aviral Agrawal, Yunhai Han, Harish Ravichandar, Changliu Liu, Jeffrey Ichnowski. KOROL: Learning Visualizable Object Feature with Koopman Operator Rollout for Manipulation. *8th Annual Conference on Robot Learning (CoRL)*, 2024. [PDF]

[4] **Hongyi Chen**, Yunchao Yao, Ruixuan Liu, Changliu Liu, Jeffrey Ichnowski. Automating Robot Failure Recovery Using Vision-Language Models With Optimized Prompts. *American Control Conference (ACC), 2025*. [PDF]

[5] **Hongyi Chen**, Yilun Du, Yiye Chen, Patricio A. Vela, Joshua B. Tenenbaum. Planning with Language Models through Iterative Energy Minimization. In: *The International Conference on Learning Representations (ICLR)*, 2023. [PDF]

ROBOT MANIPULATION RESEARCH EXPERIENCE

Samsung Research America, Mountain View, CA — Jul 2025 – Sep 2025

Advisor: *Zhe Zhang*

- Developed *VideoManip*, which reconstructs explicit 3D hand-object trajectories from human videos for dexterous robot hand manipulation policy training.
- Adopted *Web2Grasp*, which leverages reconstructed hand–object interactions from images to enable grasping with the dexterous Inspire hand on the G1 humanoid and with a parallel gripper on the robot arm.

Carnegie Mellon University, Pittsburgh, PA — Aug 2023 – present

Advisor: *Jeffrey Ichnowski* and *Zackory Erickson*, Robotics Institute

- Proposed *Web2Grasp*, that uses reconstructed hand-object interaction from web images to train a functional grasping model for multifinger robotic hands.
- Proposed *KOROL*, which learns flexible visual features for Koopman dynamics without the need to manually defined object states, and demonstrated that KOROL, using learned object features, outperforms Koopman dynamics based on ground-truth states.
- Investigated how optimizing visual and text prompts can enhance the spatial reasoning of VLMs, enabling them to function effectively as black-box controllers for both motion-level position correction and task-level recovery from unknown failures.

ROBOT PLANNING & LEARNING RESEARCH EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA — Jun 2022 – Sep 2022

Advisor: *Joshua B. Tenenbaum*, Department of Brain and Cognitive Sciences

- Proposed an iterative planning approach with masked language models through energy minimization, showcasing unique benefits like task generalization and plan composition.

Georgia Institute of Technology, Atlanta, GA — Dec 2021 – May 2023

Advisor: *Patricio A. Vela*, School of Electrical and Computer Engineering;

Advisor: *Danfei Xu*, School of Interactive Computing

- Developed a hybrid planner combining symbolic and neural methods for parsing human instructions and task planning, alongside a semantic graph neural network for guided object search in home-assistant robots. Deployed the instruction-following pipeline on AI2THOR simulator and physical Stretch robot.

Carnegie Mellon University, Pittsburgh, PA — Jan 2021 – May 2022

Advisor: *Changliu Liu*, Robotics Institute

- Applied safe control theory with reinforcement learning (RL) to navigate crowded, dynamic, and uncertain environments, ensuring theoretical safety guarantees and achieving a significantly higher probability of collision-free navigation.