

Hongyi Chen

hchen657@gatech.edu; <https://hychen-naza.github.io/>

RESEARCH INTERESTS

High-level Robot planning and reasoning: Language-Model based iterative planning through energy minimization, Language-Model based task planning, neural-symbolic planner.
Trustworthy life-long learning and control: Design reliable learning and control algorithms with formal guarantees; Bridge planning, learning and control theory in a unified and hierarchical framework which allows life-long learning.

EDUCATION

Georgia Institute of Technology, Atlanta, GA, May 2023
M.S in Robotics; GPA: 4.0 / 4.0
Carnegie Mellon University, Pittsburgh, PA, May 2021
M.S in Electrical and Computer Engineering; GPA: 3.72 / 4.0
Peking University, Beijing, China, June 2019
B.A in Economics; GPA: 3.60 / 4.0
Beijing University of Chemical Technology, Beijing, China, June 2018
B.S in Mathematics and Applied Mathematics; GPA: 3.92 / 4.0

REFEREED JOURNAL PUBLICATIONS

- [1] Ruinian Xu, **Hongyi Chen**, Yunzhi Lin and Patricio A. Vela. SGL: Symbolic Goal Learning for Human Instruction Following in Robot Manipulation. *Robotics and Automation Letters (RA-L) with the IROS option*, 7(4):10375–10382. 2022.
- [2] **Hongyi Chen**, Changliu Liu. Safe and Sample efficient Reinforcement Learning for Clustered Dynamic Uncertain Environments. *IEEE Control System Letters (L-CSS) with ACC option*, 6:1928–1933. 2021.
- [3] **Hongyi Chen**, Fan Zhang, Bo Tang, Qiang Yin and Xian Sun. Slim and Efficient Neural Network Design for Resource-Constrained SAR Target Recognition. *Remote Sensing*, 10(10):1618. 2018.

REFEREED CONFERENCE & WORKSHOP PUBLICATIONS

- [4] **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. Under Review.
- [5] **Hongyi Chen**, Letian Wang, Yuhang Yao, Ye Zhao, and Patricio A. Vela. Human Instruction Following: Graph Neural Network Guided Object Navigation. In: *CVPR workshop in Embodied AI*, 2022. Accepted.
- [6] **Hongyi Chen**, Shiyu Feng, Ye Zhao, Changliu Liu, and Patricio A. Vela. Safe Hierarchical Navigation in Cluttered Dynamic Uncertain Environments. In: *IEEE Conference on Decision and Control (CDC)*, 2022. Accepted.

RESEARCH EXPERIENCE

Georgia Institute of Technology, Atlanta, GA, Dec 2021 – present
Advised by Associate Professor Patricio A. Vela

- Presented a hierarchical solution consisting of a multi-phase planner and a low-level safe controller to jointly solve the safe navigation problem in crowded, dynamic, and uncertain environments.
- For home-assistant robots following human instructions, we proposed a hybrid planner for parsing human instruction and task planning, and a graph-based object navigation method to search unknown objects by exploiting a partially known semantic map.

Massachusetts Institute of Technology, Cambridge, MA, Jun 2022 – present
Advised by Professor Joshua B. Tenenbaum

- Proposed LEAP, an iterative planning approach with language models through energy minimization, and further demonstrate its unique benefits, involving new task generalization, test-time constraints adaptation, and the ability to compose plans together.

Carnegie Mellon University, Pittsburgh, PA, Jan 2021 – Sep 2021
Advised by Assistant Professor Changliu Liu

- Proposed approaches to address two major challenges in reinforcement learning (RL): satisfying safety constraints and efficiently learning with limited samples.