Yilun (Evelyn) Hao

yilunhao@mit.edu | (858)-257-7293 | 45 Hayward St #1129, Cambridge, MA
Homepage | Linkedin | Google Scholar

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA — Sep 2023 - Present
Ph.D. in Aeronautics and Astronautics (GPA: 5.0/5.0)
Research keywords: Foundation Models, Robotics, Task and Motion Planning, Human Robot Interaction

Stanford University, Stanford, CA — Sep 2021 - Jun 2023
Master of Science (GPA: 3.96/4.0) Major in Computer Science
Honors: Distinction in Research

University of California, San Diego, La Jolla, CA — Aug 2017 - Jun 2021
Bachelor of Science (GPA: 3.9/4.0) Major in Computer Science Minor in Mathematics
Honors: Provost Honors, Magna Cum Laude

PUBLICATIONS (* denotes equal contribution)

- **Yilun Hao**, Yang Zhang, Chuchu Fan, "Planning Anything with Rigor: General-Purpose Zero-Shot Planning with LLM-based Formalized Programming", *Under review*, 2024

- **Yilun Hao**, Yongchao Chen, Yang Zhang, Chuchu Fan, "Large Language Models Can Solve Real-World Planning Rigorously with Formal Verification Tools", *Under review*, 2024

- Ruiqi Zhang, Brandon Motes, Shaun Tan, Yongli Lu, Meng-Chen Shih, **Yilun Hao**, Karen Yang, Shreyas Srinivasan, Moungi Bawendi, Vladimir Bulovic, "Predicting Organic-Inorganic Halide Perovskite Photovoltaic Performance from Optical Properties of Constituent Films through Machine Learning", *Under review*, 2024

- Yongchao Chen, Jacob Arkin, **Yilun Hao**, Yang Zhang, Nicholas Roy, Chuchu Fan, "PRompt Optimization in Multi-Step Tasks (PROMST): Integrating Human Feedback and Preference Alignment*", Empirical Methods on Natural Language Processing (EMNLP Main, Oral, Top 3.4%), 2024*

- Li-Heng Lin, Yuchen Cui, **Yilun Hao**, Fei Xia, Dorsa Sadigh, "Gesture-Informed Robot Assistance via Foundation Model", *Proceedings of the 7th Conference on Robot Learning (CoRL), 2023*

- Ruohan Zhang, Sharon Lee, Minjune Hwang, Ayano Hiranaka, Chen Wang, Wensi Ai, Jin Jie Ryan Tan, Shreya Gupta, **Yilun Hao**, Gabrael Levine, Ruohan Gao, Anthony Norcia, Li Fei-Fei, Jiajun Wu, "NOIR: Neural Signal Operated Intelligent Robot for Everyday Activities", *Proceedings of the 7th Conference on Robot Learning (CoRL), 2023*

- **Yilun Hao***, Ruinan Wang*, Zhangjie Cao, Zihan Wang, Yuchen Cui, Dorsa Sadigh, "Masked Imitation Learning: Discovering Environment-Invariant Modalities in Multimodal Demonstrations", *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023*

- Ruohan Zhang*, Dhruva Bansal*, **Yilun Hao***, Ayano Hiranaka, Jialu Gao, Chen Wang, Roberto Martín-Martín, Li Fei-Fei, Jiajun Wu, "A Dual Representation Framework for Robot Learning with Human Guidance", *Proceedings of the 6th Conference on Robot Learning (**CoRL**), 2022*
(Also accepted with Spotlight talk at CoRL 2022 Workshop on Aligning Robot Representations with Human)

- Zihan Wang*, Zhangjie Cao*, **Yilun Hao**, Dorsa Sadigh, "Weakly Supervised Correspondence Learning", *IEEE Conference on Robotics and Automation (**ICRA**), 2022*

- Zhangjie Cao, **Yilun Hao**, Mengxi Li, Dorsa Sadigh "Learning Feasibility to Imitate Demonstrators with Different Dynamics", *Proceedings of the 5th Conference on Robot Learning (**CoRL**), 2021*

- Justin Morris, **Yilun Hao**, Saransh Gupta, Behnam Khaleghi, Baris Aksanli, Tajana Rosing "Stochastic-HD: Leveraging Stochastic Computing on the Hyper-Dimensional Computing Pipeline", *Frontiers in Neuroscience, 2022*

- **Yilun Hao**, Saransh Gupta, Justin Morris, Behnam Khaleghi, Baris Aksanli, and Tajana Rosing "Stochastic-HD: Leveraging Stochastic Computing on Hyper-Dimensional Computing", *IEEE International Conference on Computer Design (ICCD), 2021*

- Justin Morris, **Yilun Hao**, Saransh Gupta, Ranganathan Ramkumar, Jeffrey Yu, Mohsen Imani, Baris Aksanli, Tajana Rosing, "Multi-label HD Classification in 3D Flash", *IEEE/IFIP International Conference on VLSI and System-on-Chip (VLSI-SoC), 2020*. (Invited Paper)

- Justin Morris, Roshan Fernando, **Yilun Hao**, Mohsen Imani, Baris Aksanli, Tajana Rosing, "Locality-based Encoder and Model Quantization for Efficient Hyper-Dimensional Computing", *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2020*

ACADEMIC EXPERIENCE

Reliable Autonomous Systems Lab (REALM) Aug 2023 - Present
Research Assistant supervised by Prof. Chuchu Fan Massachusetts Institute of Technology

- Tackling planning with large language models under complex real-world settings

Stanford Vision and Learning Lab (SVL) Mar 2022 - Jun 2023
Research Assistant supervised by Prof. Fei-Fei Li and Prof. Jiajun Wu Stanford University

- Designed and implemented human-in-the-loop RL and IRL algorithms that incorporate scene graph with human evaluative feedbacks and preferences, which significantly improve both task performance and learning speed

Stanford Intelligent and Interactive Autonomous Systems Group (ILIAD) Apr 2021 - Jun 2023
Research Assistant supervised by Prof. Dorsa Sadigh Stanford University

- Tackled robotics problems of 1) state over-specification of learning from multi-modality data, 2) learning from suboptimal demonstrations especially infeasible dynamics, and 3) correspondence learning

System Energy Efficiency Lab (SEE Lab) Apr 2019 - Jun 2021
Research Assistant supervised by Prof. Tajana Rosing University of California, San Diego

- Designed and implemented machine learning algorithms using Hyperdimensional (HD) Computing to raise both the accuracy and efficiency of single-label & multi-label & image classification problem

TEACHING EXPERIENCE

Stanford University | Course Assistant in Computer Science Dept. Jan 2022 - Apr 2022, Jan 2023 - Apr 2023

- Worked as course assistant for 'Principles of Robot Autonomy II'

University of California, San Diego | Tutor in Computer Science Dept. Jan 2021 - Jun 2021

- Worked as tutor for 'Components and Design Techniques for Digital Systems' and 'Introduction to Machine Learning'

University of California, San Diego | Grader in Mathematics Dept. Sep 2018 - Jun 2019

- Worked as grader of "Calculus&Analytic Geometry for Sci&Engnr" and "Intro to Differential Equations"

WORKING EXPERIENCE

Golf AI | Software Engineer Jul 2020 – Sep 2020

- Designed and implemented an upgraded User Interface of the GolfAI application using SwiftUI

ACADEMIC SERVICE

Conference Paper Reviewer: Conference on Robot Learning (CoRL) 2022, 2023, 2024
Journal Paper Reviewer: IEEE Transactions on Robotics (T-RO)

SKILLS

- **Programming:** Python, PyTorch, TensorFlow, C/C++, Java, Shell, MATLAB; Swift, Firebase; LaTeX
- **Robotics:** Mujoco, Pybullet, Franka Panda, Sawyer, ROS
- **Expertise:** Foundation Models, Natural Language Processing, Robotics, Machine Learning