Ayano Hiranaka

Curriculum Vitae

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misoshiruseijin.github.io/

Research Interests

My research interest lies in developing robots that communicate and collaborate effectively with humans to increase the quality of human lives, while also evolving alongside humans. I am passionate to develop robots with human-like, generalizable understanding of the world, ability to learn through human interactions, versatile manipulation and mobility capabilities, and safe and friendly behaviors.

Education

2024–current **PhD in Computer Science**, *University of Southern California*

2021–2023 **MS in Mechanical Engineering**, *Stanford University*
GPA: 4.02/4.30

2016–2019 **BS in Mechanical Engineering**, *University of Illinois at Urbana-Champaign*
GPA: 3.98/4.00, **Graduation with Highest Honors**

Conference Publications

*: denotes equal contribution, †: denotes equal contribution, alphabetically ordered

paper **Human-Feedback Efficient Reinforcement Learning for Online Diffusion Model Finetuning**
Ayano Hiranaka*, Shang-Fu Chen*, Chieh-Hsin Lai*, Dongjun Kim, Naoki Murata, Takashi Shibuya, Wei-Hsiang Liao, Shao-Hua Sun**, Yuki Mitsufuji**
International Conference on Learning Representations (ICLR), 2025

paper **NOIR: Neural Signal Operated Intelligent Robots for Everyday Activities**
website 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
Conference on Robot Learning (CoRL), 2023

paper **Primitive Skill-based Robot Learning from Human Evaluative Feedback**
website **Ayano Hiranaka**†, Minjune Hwang†, Sharon Lee, Chen Wang, Li Fei-Fei, Jiajun Wu, Ruohan Zhang
International Conference on Intelligent Robots and Systems (IROS), 2023

paper **A Dual Representation Framework for Robot Learning with Human Guidance**
website Ruohan Zhang*, Dhruva Bansal*, Yilun Hao*, **Ayano Hiranaka**, Jialu Gao, Chen Wang, Roberto Martin-Martin, Li Fei-Fei, Jiajun Wu
Conference on Robot Learning (CoRL), 2022
Best paper award at Aligning Robot Representations with Humans workshop

Research Experiences

Dec 2023 - Nov 2024 **Sony AI Deep Generative Model Team Research Intern**
Sony AI (Tokyo, Japan)

- Investigating human-feedback-efficient RLHF algorithm for text-to-image diffusion model finetuning
- Algorithm can train a model for various tasks while simultaneously capturing human preference

Mar 2021 - Dec 2023 **Stanford Vision and Learning Lab Graduate Research Assistant**
Stanford University (Stanford CA, USA)

- Led real robot experiments in multiple human-robot collaboration projects
- Experience with a wide array of physical robots, including mobile manipulators (Sawyer, Franka, TIAGo)
- Experiences in human-in-the-loop robot learning, reinforcement learning, imitation learning, motion planning, brain-robot-interface

Sep 2019 - Dec 2019 **Machine Tool Systems Research Lab Undergraduate Researcher**
University of Illinois at Urbana-Champaign (Champaign IL, USA)

- Investigated the effect of atomization-based cutting fluid (ACF) spray angle and distance on tool life during micro-drilling operations
- Developed a program to automatically record drill measurements from images

Sep 2018 - Jun 2019 **Mehta Research Group Undergraduate Researcher**
University of Illinois at Urbana-Champaign (Champaign IL, USA)

- Developed an adaptive particle filter algorithm for real-time identification of piano note pitch (change in pitch identified within 0.25 sec)

Teaching Experiences

Winter 2022 **ENGR 110/210: Perspectives in Assistive Technology**, *Stanford University*
Graduate Teaching Assistant

Fall 2021 **ME 161: Dynamic Systems, Vibrations and Control**, *Stanford University*
Graduate Teaching Assistant

Honors and Awards

May 2020 **Bronze Tablet Recipient**, *University of Illinois at Urbana-Champaign*
Awarded to students who rank in the top three percent of their graduating class

Dec 2019 **Graduation with Highest Honors**, *University of Illinois at Urbana-Champaign*

Skills

Programming Languages: Python, C++, C#, C, Java, MATLAB, HTML/CSS

AI: Human-in-the-loop learning, HRC, shared autonomy, hierarchical learning, RL, IL, diffusion models

Hardwares: Franka, Sawyer, TIAGo

Robotics: ROS, controls, mobile manipulation, task and motion planning, camera calibration

Libraries: PyTorch, OpenCV, OMPL, NumPy

Softwares: 3D modeling (Creo, SolidWorks, Blender), Gazebo, OmniGibson, robosuite