Minjune Hwang

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EDUCATION

University of Southern California   Los Angeles, CA
*Ph.D. in Computer Science; **GPA: 4.0/4.0***   *Aug. 2024 – Present*

Stanford University   Stanford, CA
*M.S. in Computer Science; **GPA: 3.95/4.3***   *Sep. 2021 – Dec. 2023*

University of California, Berkeley   Berkeley, CA
*B.A. in Computer Science & B.A. in Statistics; **GPA: 3.90/4.0***   *Aug. 2017 – May. 2021*

RESEARCH INTEREST

My research empowers robots to learn from humans for daily tasks by: (1) finetuning robotic foundation models with diverse feedback (e.g., demonstrations, preferences, reasoning) **to align with true user intent** and (2) improving **linguistic and spatial interpretability** of policies to allow users to **intuitively understand and guide their behavior**. In doing so I use language as a medium for human-robot interaction, developing **multimodal** and **communicative** agents that can ask and answer questions while interacting in environments.

RESEARCH EXPERIENCE

Sensing, Learning & Understanding for Robotic Manipulation (SLURM) Lab   Los Angeles, CA
Ph.D. Researcher, advised by Prof. Daniel Seita   *Aug. 2024 – Present*

- Building a **multimodal, communicative Vision-Language-Action** model capable of both physical (robot action), linguistic interaction (question answering/asking), and both (active perception upon question) if needed.
- Developing a structured **data augmentation** and curation method to achieve zero-shot compositional & hierarchical generalization in end-to-end VLA policies.
- Designed an **RLHF** method that uses both preference feedback and **underlying natural language reasons** to overcome causal confusion and improve policy generalization against distribution shift, with Prof. Erdem Bıyık.

Stanford Vision & Learning (SVL) Lab   Stanford, CA
Graduate Research Assistant, advised by Prof. Fei-Fei Li & Prof. Jiajun Wu   *Mar. 2022 – Dec. 2023*

- Proposed RLHF and shared autonomy methods with **hierarchical policy learning with primitive skills** in complex manipulation tasks, first-authoring multiple papers in top conferences (CoRL, IROS).
- Designed controllers and skills for robot learning in **large-scale embodied AI simulation**, BEHAVIOR-1K.
- Researched RL algorithms with **scene graphs** for navigation & mobile manipulation with graph neural networks.

Berkeley AI Research   Berkeley, CA
Research Assistant, advised by Prof. Alexandre Bayen & Prof. Laurent El Ghaoui   *Feb. 2019 – May. 2021*

- Led the development of object detection and tracking model for a large-scale trajectory dataset for vehicle behavior learning and researched on safe motion planning with the dataset, under Prof. Alexandre Bayen.
- Researched extractive text summarization with sparse convex optimization, topic modeling, and RNNs.
- Developed a sparsity-invariant CNNs for adversarial attack detection via partial occlusion of images.

INDUSTRY EXPERIENCE

Amazon Robotics   Westborough, MA
Applied Scientist Intern   *Sep. 2022 – Dec. 2022*

- Developed ML algorithms and pipelines for object detection & tracking in warehouse human-robot collaboration.

Microsoft   Berkeley, CA
Research Intern   *Jun. 2022 – Sep. 2022*

- Designed an RL algorithm for offline sim-to-real transfer via reward augmentation and residual policy learning.

Apple, Special Project Group   Cupertino, CA
Software Engineering Intern, Motion & Trajectory Planning   *May. 2021 – Aug. 2021*

- Researched imitation learning for the warm-start of trajectory optimization of autonomous robots.
- Developed motion sampling & planning algorithms for generating safe and kinematically feasible trajectories.

Selected Publications

*: denotes equal contribution, †: equal advising

1. **Minjune Hwang**, Yigit Korkmaz, Daniel Seita†, Erdem Bıyık†. Causally Robust Reward Learning from Reason-Augmented Preference Feedback. ***ICLR 2026***. 📄 [poster].

2. Fangyu Wu, Dequan Wang, **Minjune Hwang**, Chenhui Hao, Jiawei Lu, Trevor Darrell, Alexandre Bayen. Decentralized Vehicle Coordination: The Berkeley DeepDrive Drone Dataset. ***ICRA 2025***. 📄 [pdf].

3. Ruohan Zhang*, Sharon Lee*, **Minjune Hwang***, Ayano Hiranaka*, Chen Wang, Wensi Ai, Jin Jie Ryan Tan, ..., Anthony Norcia, Li Fei-Fei, Jiajun Wu. NOIR: Neural Signal Operated Intelligent Robots for Everyday Activities. ***CoRL 2023***. 📄 [pdf] 🌐 [project page].

4. **Minjune Hwang***, Ayano Hiranaka*, Sharon Lee, Chen Wang, Li Fei-Fei, Jiajun Wu, Ruohan Zhang. Primitive Skill-Based Robot Learning from Human Evaluative Feedback. ***IROS 2023***. 📄 [pdf] 🌐 [project].

5. Michael Lingelbach, Chengshu Li, **Minjune Hwang**, Andrey Kurenkov, Alan Lou, Roberto Martín-Martín, Ruohan Zhang, Li Fei-Fei, Jiajun Wu. Task-Driven Graph Attention for Hierarchical Relational Object Navigation. ***ICRA 2023***. 📄 [pdf].

6. Chengshu Li*, ..., **Minjune Hwang**, ..., Silvio Savarese, Hyowon Gweon, Karen Liu, Jiajun Wu, Li Fei-Fei. BEHAVIOR-1K: A Benchmark for Embodied AI with 1,000 Everyday Activities and Realistic Simulation. ***CoRL 2022***. ***Best Paper Nominee*** 📄 [pdf] 🌐 [project page].

7. Michael McCoyd, Won Park, Steven Chen, Neil Shah, Ryan Roggenkemper, **Minjune Hwang**, Jason Xinyu Liu, David Wagner. Minority Reports Defense: Defending Against Adversarial Patches. *Security in Machine Learning and its Applications (SiMLA), 2020*. ***Best Paper Award*** 📄 [pdf].

Teaching Experience

CS 231N: Deep Learning for Computer Vision	Stanford, CA
Graduate Teaching Assistant	*Mar. 2023 − Jun. 2023*
EE 227BT: Convex Optimization	Berkeley, CA
Undergraduate Teaching Assistant	*Aug. 2019 − Dec. 2019*
CS 61A: Structure and Interpretation of Computer Programs	Berkeley, CA
Lab Assistant	*Jan. 2018 − May. 2018*

Honors & Fellowships

Viterbi School of Engineering Fellowship	*Aug. 2024 − Jul. 2026*
High Distinction in General Scholarship (Magna Cum Laude)	*May. 2021*
Summer Undergraduate Research Fellowship (SURF), UC Berkeley	*May. 2020*
Berkeley Undergraduate Scholarship	*Aug. 2017 − May. 2021*

Services

Serving/Served as a reviewer for CoRL, ICLR, ICRA, IROS, THRI, and workshops in RSS.

Mentoring a number of undegraduate students and summer interns at USC.

Organizing UROS, a student-run, cross-department robotics reading group and seminar series at USC.

Serving as a PhD mentor for USC CS Undergraduate Mentoring Program.

Expertises

Robotics: ROS, Optimal Control (LQR/LQG, MPC, MPPI), Motion Planning, Robots (Franka, Go2, XArm, WidowX)

Robot Policy Learning: RL (DDPG, SAC, CQL, IQL), IL (BC, ACT, Diffusion Policy), Inverse RL, PbRL, VLAs

Computer Vision: Object Segmentation & Tracking, Diffusion Models, Vision Transformer, Sensor Calibration, SLAM

Libraries: PyTorch, Tensorflow, IsaacLab, ManiSkill, Robosuite, OMPL, OpenCV, Ray, cvxopt, SageMaker, Mujoco