MINYOUNG HWANG

✉ myhwang@mit.edu   🎓 Google Scholar   ⌂ https://minyoung1005.github.io/

EDUCATION

Massachusetts Institute of Technology (MIT)   Cambridge, MA
M.S. & Ph.D. in AeroAstro & CSAIL   09/2024 - Current

Seoul National University (SNU)   Seoul, Korea
M.S. in Electrical and Computer Engineering   09/2021 - 08/2023
  • Thesis: "Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation Using Scene Object Spectrum Grounding"

B.S. in Electrical and Computer Engineering   03/2017 - 08/2021
  • Thesis: "Video Inference for Human Motion with Texture Generation"

Daejeon Science High School for the Gifted   Daejeon, Korea
Major: Mathematics   03/2014 – 02/2017

REPRESENTATIVE HONORS

Kwanjeong Education Foundation (KEF) Scholarship, KEF   2024 - 2029
Presidential Science Scholarship **(Field: Mathematics)**, Ministry of Science and ICT   2017 - 2020
NeurIPS 2023 Scholar Award   10/2023
Google Student Travel Grants (up to 3 students / year, top international conferences)   03/2023
Talent Award of Korea (Field: Mathematics), Ministry of Education   11/2015
Training Lineup for IMO (International Mathematical Olympiad), Top 18 students in Korea   05/2016

PUBLICATIONS

Masked Inverse Reinforcement Learning for Language Conditioned Reward Learning
Minyoung Hwang, Alex Forsey-Smerek, Andreea Bobu
In Submission, 2025

Sample-Efficient Robot Preference Learning with Confidence-Guided Exploration
Chan Woo Kim, Hyeonseong Kim, Minyoung Hwang, Sungjoon Choi, Kyungjae Lee
In Submission, 2025

MotIF: Motion Instruction Fine-tuning
Minyoung Hwang, Joey Hejna, Dorsa Sadigh, Yonatan Bisk
*IEEE Robotics and Automation Letters (**RA-L**), 2025*

Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences
Minyoung Hwang, Luca Weihs, Chanwoo Park, Kimin Lee, Ani Kembhavi, Kiana Ehsani
*The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), June 2024*

Sequential Preference Ranking for Efficient Reinforcement Learning from Human Feedback
Minyoung Hwang, Gunmin Lee, Hogun Kee, Chan Woo Kim, Kyungjae Lee, Songhwai Oh
*Neural Information Processing Systems (**NeurIPS**), Dec. 2023*

**Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation
Using Scene Object Spectrum Grounding**
Minyoung Hwang, Jaeyeon Jeong, Minsoo Kim, Yoonseon Oh, Songhwai Oh
*The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), June 2023*

Improving Image-Goal Navigation with Visual Language Grounding via Image Captioning
Minyoung Hwang, Songhwai Oh
*Conference on Information and Control Systems (**CICS**), Oct. 2022*

Geometric Understanding of Reward Function in Multi-Agent Visual Exploration
Minyoung Hwang, Obin Kwon, Songhwai Oh
*International Conference on Control, Automation and Systems (**ICCAS**), Oct. 2021*

AI Insiders
Gun Ahn, <u>Minyoung Hwang</u>, et al.
Smart Books, 2025

Wanna be Engineer
34 members of STEM (Including Hwang, M.)
MegaStudy Books, 2021

WORK EXPERIENCE

Carnegie Mellon University (CMU)   Pittsburgh, PA
Research Intern   01/2024 – 06/2024
- Connecting Language to Actions & the World (CLAW) Lab (Prof. Yonatan Bisk)
- How human preferences are communicated in natural language to a robotic agent

Allen Institute for Artificial Intelligence (AI2)   Seattle, WA
Research Intern   07/2023 – 12/2023
- Perceptual Reasoning and Interaction Research (PRIOR)
- Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences, sub. to CVPR 2024

SNU Robot Learning Laboratory   Seoul, Korea
Robotics Researcher (M.S. Student)   09/2021 – 06/2023
- SeqRank for Feedback-efficient RLHF, *accepted to NeurIPS 2023* (01/2023 - 05/2023)
- Meta-Explore for Vision-and-Language Navigation, *accepted to CVPR 2023* (08/2021 - 11/2022)
- Graph Merge for Robust Path Following (08/2021 - 02/2022)

Robotics Research Intern   02/2020 – 08/2021
- Geometric Understanding of Reward Function in Multi-Agent Visual Exploration, *accepted to ICCAS 2021* (02/2021 - 10/2021)
- Video Inference for Human Motion with Texture Generation, Bachelor Thesis (08/2020 - 12/2020)
- Visual Navigation in Gibson Env2 Environment (02/2020 - 07/2020)

San Jose State University (SJSU) Silicon Valley Innovation   San Jose, CA
Startup Team CEO, Startup Training Program   01/2020
- Led startup team UP-CARE (Use your Phone Camera for Health and Environment).
- Developed fall detection and alert for elderly users.

STEM, SNU Engineering College   Seoul, Korea
Robotics Engineer   03/2019 – 11/2019
- Robot Dynamics and Control, Motion Planning, Computer Vision
- Developed both software and hardware of robot cleaner using 3D printers, Arduino, and computer vision open source (Google Mediapipe); led the development of control algorithm considering robot dynamics.

PROJECTS AND RESEARCH

* RL: Reinforcement Learning / CV: Computer Vision / HRI: Human-Robot-Interaction

Promptable Behaviors for Efficient Personalization of Robots |*RL, HRI, CV*   05/2023 – 12/2023
Learning reward weights for multi-objective rewards from human preference.   AI2

SeqRank for Feedback-efficient RLHF |*RL, HRI, Graph Theory*   01/2023 – 05/2023
RLHF framework that uses sequential preference ranking to enhance the feedback efficiency.   RLLAB, SNU

Meta-Explore for Vision-and-Language Navigation |*Multimodal, Graph Theory*   07/2022 – 11/2022
Hierarchical decision-making process by recognizing semantically meaningful clues.   RLLAB, SNU

Text-VLAD | *CV, Visual Localization*   09/2021 – 12/2021
Visual localization using text and visual features   RLLAB, SNU

Influence based Reward for Communicative Multi-Agent Reinforcement Learning   03/2021 – 07/2021
Giving rewards based on credit assignment among multi agents   RLLAB, SNU

Video Inference for Human Motion with Texture Generation | *CV, Motion Estimation* 08/2020 – 12/2020
Reconstruction of 3D multi-view video from 2D human motion video RLLAB, SNU

Visual Navigation in Gibson Env2 Environment | *RL, Visual Navigation* 02/2020 – 07/2020
Implementing robust path following of robots in Gibson simulator RLLAB, SNU

UP-CARE (Use your Phone Camera for Health and Environment) | *HRI, CV* 01/2020 – 01/2020
Fall detection for elderly using phone camera based on human pose estimation San Jose Univ., CA, US

Scrupulous Robot Cleaner with Mecanum Wheels and Pointed-shaped Inlet | *HRI* 03/2019 – 11/2019
Omnidirectional robot cleaner with autonomous & hand-motion controlled modes STEM, SNU

TEACHING EXPERIENCE

Teaching Assistant, **Introduction to Intelligent Systems (English Lecture)** 09/2021 – 06/2022
Head TA for 2022 Spring Lecture. SNU, Korea
Managed RC car racing projects and taught students how to use ROS and Gazebo

Major Tutor, **Signals and Systems** 03/2021 – 08/2021
Tutoring for Seoul National University ECE major subject SNU, Korea

Undergraduate Teaching Assistant, **Introduction to Circuit Theory and Laboratory** 03/2019 – 06/2019
Supported and guided students to conduct electric circuit experiments SNU, Korea

Tutor, **Basic Calculus** 03/2018 – 12/2020
Taught Basic Calculus 1, 2, and Basic Calculus for Biological Science. SNU, Korea

AWARDS

Lecture·Research Support Scholarship, Full tuition for 2022 Spring, SNU 03/2022
Grand Prize, Silicon Valley Innovation and Startup Program, San Jose State University 01/2020
1st Prize, International Capstone Design Fair, Korea University Innovation Hub Center 11/2019
2nd Prize, SNU College of Engineering Creative Design Fair, SNU College of Engineering 09/2019
Gold Medal, University Students Contest of Mathematics, Korean Mathematical Society 11/2018

HONORS AFFILIATION AND TRAINING

MIT xPRO Robotics Essentials, Massachusetts Institute of Technology 05/2022 - 07/2022

SNU Tomorrow's Edge Membership (STEM), SNU College of Engineering Honor Society 04/2019 – Present
Selects 30 outstanding students from Seoul National University's Engineering College annually since 2010.
- 10th President (07/2019 - 06/2020)

Machine Learning Theory Korea 03/2022 – Present

TODAM BOSTON, Global networking club with international graduate students 09/2020 – 12/2021

NorthEast Asia SRT (Student Round Table), International communication partnership 08/2019

INVITED TALK

UW Computer Science Department 12/2023
Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences

CMU Language Technologies Institute 08/2023
Leveraging Human Knowledge to Robots through Interaction: from Vision to Language and Beyond

COMMUNITY INVOLVEMENT

SNU Vision Mentoring 07/2019 – 02/2022
Mentoring high school and undergraduate students interested in engineering and science SNU, Korea

Blended Science Festival: Motion controlled Robot Cleaner Experience 10/2019
Provided hands-on experience for students to interact with a robot cleaner. Seoul Science Park, Korea

PURME Foundation NEXON Children's Rehabilitation Hospital 03/2017 – 10/2017
Assisted disabled children with rehabilitation. Seoul, Korea

EXTRACURRICULAR ACTIVITIES

Orchestra Club Activities | *Violin* 2014 - 2020
Seoul National University Philharmonic Orchestra | Violin
Music Fountain : Orchestra club in Daejeon Science High School for the Gifted | *Concertmaster, 1st Violin*

SKILLS

Programming: Python, C/C++, MATLAB, Arduino, OpenGL
Patent: Envelope with built-in sieve (**KR20140003720U**, 06/2014)
Languages: Korean (native fluency), English (full-professional proficiency)