

MINYOUNG HWANG

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EDUCATION

Massachusetts Institute of Technology (MIT) M.S. & Ph.D. in AeroAstro & CSAIL	Cambridge, MA 09/2024 - Current
Seoul National University (SNU) M.S. in Electrical and Computer Engineering • Thesis: "Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation Using Scene Object Spectrum Grounding"	Seoul, Korea 09/2021 - 08/2023
B.S. in Electrical and Computer Engineering • Thesis: "Video Inference for Human Motion with Texture Generation"	03/2017 - 08/2021
Daejeon Science High School for the Gifted Major: Mathematics	Daejeon, Korea 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

MotIF: Motion Instruction Fine-tuning <i>In Submission, 2024</i>	Hwang <i>et al.</i>
Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences <i>The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), June 2024</i>	Hwang <i>et al.</i>
Sequential Preference Ranking for Efficient Reinforcement Learning from Human Feedback <i>Neural Information Processing Systems (NeurIPS), Dec. 2023</i>	Hwang <i>et al.</i>
Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation Using Scene Object Spectrum Grounding <i>The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), June 2023</i>	Hwang <i>et al.</i>
Improving Image-Goal Navigation with Visual Language Grounding via Image Captioning <i>Conference on Information and Control Systems (CICS), Oct. 2022</i>	Hwang <i>et al.</i>
Geometric Understanding of Reward Function in Multi-Agent Visual Exploration <i>International Conference on Control, Automation and Systems (ICCAS), Oct. 2021</i>	Hwang <i>et al.</i>
Wanna be Engineer <i>MegaStudy Books, 2021</i>	34 members of STEM (Including Hwang, M.)

WORK EXPERIENCE

Carnegie Mellon University (CMU) <i>Research Intern</i> • Connecting Language to Actions & the World (CLAW) Lab (Prof. Yonatan Bisk) • How human preferences are communicated in natural language to a robotic agent	Pittsburgh, PA 01/2024 - 06/2024
Allen Institute for Artificial Intelligence (AI2) <i>Research Intern</i> • Perceptual Reasoning and Interaction Research (PRIOR) • Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences, sub. to CVPR 2024	Seattle, WA 07/2023 - 12/2023

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 <i>Selects 30 outstanding students from Seoul National University's Engineering College annually since 2010.</i> <ul style="list-style-type: none">• 10th President (07/2019 - 06/2020)	04/2019 – Present
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 <i>Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences</i>	12/2023
CMU Language Technologies Institute <i>Leveraging Human Knowledge to Robots through Interaction: from Vision to Language and Beyond</i>	08/2023

COMMUNITY INVOLVEMENT

SNU Vision Mentoring <i>Mentoring high school and undergraduate students interested in engineering and science</i>	07/2019 – 02/2022 SNU, Korea
Blended Science Festival: Motion controlled Robot Cleaner Experience <i>Provided hands-on experience for students to interact with a robot cleaner.</i>	10/2019 Seoul Science Park, Korea
PURME Foundation NEXON Children's Rehabilitation Hospital <i>Assisted disabled children with rehabilitation.</i>	03/2017 – 10/2017 Seoul, Korea

EXTRACURRICULAR ACTIVITIES

Orchestra Club Activities Violin <i>Seoul National University Philharmonic Orchestra Violin</i> <i>Music Fountain : Orchestra club in Daejeon Science High School for the Gifted Concertmaster, 1st Violin</i>	2014 - 2020
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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)