MINYOUNG HWANG

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EDUCATION

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

Korean Government Scholarship (**Ph.D. scholarship,** $80,000**)**, Ministry of Education	2024 - 2026
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

Promptable Behaviors: Personalizing Multi-Objective Rewards from Human Preferences   Hwang *et al.*
In Submission

Sequential Preference Ranking for Efficient Reinforcement Learning from Human Feedback Hwang *et al.*
Neural Information Processing Systems (NeurIPS), Dec. 2023

Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation   Hwang *et al.*
Using Scene Object Spectrum Grounding
The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), June 2023

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

Geometric Understanding of Reward Function in Multi-Agent Visual Exploration   Hwang *et al.*
International Conference on Control, Automation and Systems (ICCAS), Oct. 2021

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 – 05/2024
- 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

Sequor Robotics   Seoul, Korea
Research Manager; Head of R & D   05/2022 – 12/2022
- Developed a control algorithm for a human-following, socially-aware robot.

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

Multi-Objective Preference-based Reinforcement Learning | *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 helped students do 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 assistance for various youth science education programs   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)