

# MINYOUNG HWANG

✉ minyoung1005@snu.ac.kr    🏠 <https://minyoung1005.github.io/>

## EDUCATION

<b>Seoul National University (SNU)</b> <i>M.S. in Electrical and Computer Engineering</i> • Master's Thesis: "Meta-Explore: Exploratory Hierarchical Vision-and-Language Navigation Using Scene Object Spectrum Grounding"	<b>Seoul, Korea</b> 09/2021 - 08/2023
<i>B.S. in Electrical and Computer Engineering</i> • Bachelor's Thesis: "Video Inference for Human Motion with Texture Generation"	03/2017 - 08/2021
<b>Daejeon Science High School for the Gifted</b> <i>Major: Mathematics</i>	<b>Daejeon, Korea</b> 03/2014 - 02/2016

## HONORS AND AWARDS

<b>The Presidential Science Scholarship (Field: Mathematics)</b> , Ministry of Science and ICT	2017 - 2020
<b>Google Student Travel Grants</b> (up to 3 students per year, top international conferences)	03/2023
<b>Lecture-Research Support Scholarship</b> , Full tuition for 2022 Spring, SNU	03/2022
<b>Grand Prize, Silicon Valley Innovation and Startup Program</b> , San Jose State University	01/2020
<b>1st Prize, International Capstone Design Fair</b> , Korea University Innovation Hub Center	11/2019
<b>2nd Prize, SNU College of Engineering Creative Design Fair</b> , SNU College of Engineering	09/2019
<b>Gold Medal, University Students Contest of Mathematics</b> , Korean Mathematical Society	11/2018
<b>Talent Award of Korea (Field: Mathematics)</b> , Ministry of Education	11/2015

## HONORS AFFILIATION AND TRAINING

<b>MIT xPRO Robotics Essentials</b> , Massachusetts Institute of Technology	05/2022 - 07/2022
<b>SNU Tomorrow's Edge Membership (STEM)</b> , SNU College of Engineering Honor Society Selects 30 outstanding students from Seoul National University's Engineering College annually since 2010. • 10 <sup>th</sup> President (07/2019 - 06/2020)	04/2019 - Present
<b>Training Lineup for IMO (International Mathematical Olympiad)</b> , Korean Mathematical Society	05/2016
<b>KMO (Korean Math Olympiad) Winter School</b> , Korean Mathematical Society	Winter 2014, Winter 2015
<b>Machine Learning Theory Korea</b>	03/2022 - Present
<b>TODAM BOSTON</b> , Global networking club with international graduate students	09/2020 - 12/2021
<b>NorthEast Asia SRT (Student Round Table)</b> , International communication partnership	08/2019

## PUBLICATIONS

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

## WORK EXPERIENCE

### Allen Institute for Artificial Intelligence (AI2)

Research Intern

Seattle, WA

07/2023 – Present

- Perceptual Reasoning and Interaction Research (PRIOR)

### Sequor Robotics

Research Manager; Head of R & D

Seoul, Korea

05/2022 – 12/2022

- Developed a control algorithm for a human-following, socially-aware robot.

### SNU Robot Learning Laboratory

Robotics Researcher (Ph.D. Student)

Seoul, Korea

09/2021 – 06/2023

- SeqRank for Feedback-efficient RLHF, *In Submission* (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 Researcher (Internship)

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

Startup Team CEO, Startup Training Program

San Jose, CA

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

Robotics Engineer

Seoul, Korea

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

### SeqRank for Feedback-efficient RLHF | *RL, HRI, Graph Theory*

RLHF framework that uses sequential preference ranking to enhance the feedback efficiency.

01/2023 – 05/2023

RLLAB, SNU

### Meta-Explore for Vision-and-Language Navigation | *Multimodal, Graph Theory*

Hierarchical decision-making process by recognizing semantically meaningful clues.

07/2022 – 11/2022

RLLAB, SNU

### Text-VLAD | *CV, Visual Localization*

Visual localization using text and visual features

09/2021 – 12/2021

RLLAB, SNU

### Influence based Reward for Communicative Multi-Agent Reinforcement Learning

Giving rewards based on credit assignment among multi agents

03/2021 – 07/2021

RLLAB, SNU

### Video Inference for Human Motion with Texture Generation | *CV, Motion Estimation*

Reconstruction of 3D multi-view video from 2D human motion video

08/2020 – 12/2020

RLLAB, SNU

### Visual Navigation in Gibson Env2 Environment | *RL, Visual Navigation*

Implementing robust path following of robots in Gibson simulator

02/2020 – 07/2020

RLLAB, SNU

### UP-CARE (Use your Phone Camera for Health and Environment) | *HRI, CV*

Fall detection for elderly using phone camera based on human pose estimation

01/2020 – 01/2020

San Jose Univ., CA, US

### Scrupulous Robot Cleaner with Mecanum Wheels and pointed-shaped inlet: | *HRI*

Omnidirectional robot cleaner with autonomous & hand-motion controlled modes

03/2019 – 11/2019

STEM, SNU

## TEACHING EXPERIENCE

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<b>Introduction to Intelligent Systems, TA (English Lecture)</b> Managed RC car racing project and teach students how to use ROS and Gazebo. Head TA for 2022 Spring Lecture.	09/2021 – 06/2022  SNU, Korea
<b>Signals and Systems, Major Tutor</b> Tutoring for Seoul National University ECE major subject	03/2021 – 08/2021 SNU, Korea
<b>Introduction to Circuit Theory and Laboratory, Undergraduate TA</b> Supported and helped students do electric circuit experiments	03/2019 – 06/2019 SNU, Korea
<b>Basic Calculus Tutor</b> Taught Basic Calculus 1, 2 and Basic Calculus for Biological Science.	03/2018 – 12/2020 SNU, Korea

## COMMUNITY INVOLVEMENT

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<b>SNU Vision Mentoring</b> Mentoring high school and undergraduate students interested in engineering and science	07/2019 – 02/2022 SNU, Korea
<b>Blended Science Festival: Motion controlled Robot Cleaner Experience</b> Provided assistance for various youth science education programs	10/2019 Seoul Science Park, Korea
<b>PURME Foundation NEXON Children's Rehabilitation Hospital</b> Assisted disabled children with rehabilitation.	03/2017 – 10/2017 Seoul, Korea

## EXTRACURRICULAR ACTIVITIES

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<b>Orchestra Club Activities   Violin</b> Seoul National University Philharmonic Orchestra   <i>Violin</i> Music Fountain : Orchestra club in Daejeon Science High School for the Gifted   <i>Concertmaster, 1<sup>st</sup> Violin</i> Jamsil Middle School Orchestra   <i>Concertmaster, 1<sup>st</sup> Violin</i> Jamdong Elementary School Orchestra   <i>Concertmaster, 1<sup>st</sup> Violin</i>	2006 - 2020
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## SKILLS

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