

# MINYOUNG HWANG

+82 10-2574-5217

[minyoung.hwang@rllab.snu.ac.kr](mailto:minyoung.hwang@rllab.snu.ac.kr)

[linkedin.com/in/minyoung-hwang-81480819b/](https://linkedin.com/in/minyoung-hwang-81480819b/)

[github.com/Minyoung1005](https://github.com/Minyoung1005)

## EDUCATION AND TRAINING

<b>Ph.D Student</b>   <i>Electrical and Computer Engineering</i> Robot Learning Laboratory, Seoul National University	09/2021 – Current Seoul, Korea
<b>B.S. with highest honors</b>   <i>Electrical and Computer Engineering</i> Seoul National University	03/2017 – 07/2021 Seoul, Korea
<b>Science High School</b>   <i>Major: Mathematics</i> Daejeon Science High School for the Gifted	03/2014 – 01/2016 Daejeon, Korea
<b>- SNU Tomorrow's Edge Membership (STEM)</b>   <i>10<sup>th</sup> President</i> Honor Society in Engineering College, Seoul National University	03/2016 – Current Seoul, Korea
<b>- Training Lineup for IMO (International Mathematical Olympiad)</b> Korean Mathematical Society	05/2016 – 05/2016 Seoul, Korea
<b>- Silicon Valley Innovation - Startup Training Program</b> San Jose State University	01/2020 – 01/2020 California, United States

## WORK EXPERIENCE

<b>Research Intern</b> NeuroSky <ul style="list-style-type: none"><li>Applying human sensibility models to human-robot interaction.</li></ul>	06/2022 – Current Remote
<b>Research Manager</b> Sequor Robotics <ul style="list-style-type: none"><li>Head of Research &amp; Development for Socially-Aware Robot Control.</li><li>Developed Human-Following Robot Control Algorithm.</li></ul>	05/2022 – 12/2022 Seoul, Korea
<b>Robotics Research Engineer (Ph.D Student)</b> Robot Learning Laboratory, Seoul National University <ul style="list-style-type: none"><li>visual navigation researches; text-image fused visual graph memory and graph merge algorithm for graph-based visual navigation. Mainly deals with deep reinforcement learning, computer vision, and natural language processes.</li><li>( 08/2021 - 11/2022 ) Meta-Explore for Vision-and-Language Navigation</li><li>( 08/2021 - 02/2022 ) Graph Merge for Robust Path Following</li></ul>	09/2021 – Current Seoul, Korea
<b>Robotics Research Engineer (Internship)</b> Robot Learning Laboratory, Seoul National University <ul style="list-style-type: none"><li>( 02/2021 - 10/2021 ) Geometric Understanding of Reward Function in Multi-Agent Visual Exploration (accepted by ICCAS 2021)</li><li>( 08/2020 - 12/2020 ) Video Inference for Human Motion with Texture Generation (Bachelor Thesis)</li><li>( 02/2020 - 07/2020 ) Visual Navigation in Gibson Env2 Environment (Internship)</li></ul>	02/2020 – 08/2021 Seoul, Korea
<b>Startup Team CEO</b> San Jose State University's Silicon Valley Innovation - Startup Training Program <ul style="list-style-type: none"><li>Led startup team UP-CARE (Use your Phone Camera for Health and Environment)</li></ul>	01/2020 – 01/2020 San Jose , United States
<b>Robotics Engineer</b> STEM, Engineering College, Seoul National University <ul style="list-style-type: none"><li>Robot Dynamics and Control, Motion Planning, Computer Vision</li><li><b>Developed both software and hardware</b> of robot cleaner using 3D printer, Arduino, computer vision opensource (Google Mediapipe). Led development of control algorithm considering robot dynamics.</li><li><b>International Capstone Design Fair, 1st Prize</b></li><li><b>SNU College of Engineering Creative Design Fair, 2nd Prize</b></li></ul>	03/2019 – 11/2019 Seoul, Korea

## PROJECTS AND RESEARCH

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

<b>Meta-Explore for Vision-and-Language Navigation</b>   <i>Multimodal, Graph Theory</i>	07/2022 – 11/2022
Hierarchical decision-making process by recognizing semantically meaningful clues.	RLLAB, SNU
<b>Text-VLAD</b>   <i>CV, Visual Localization</i>	09/2021 – 12/2021
Visual localization using text and visual features	RLLAB, SNU
<b>Influence based Reward for Communicative Multi-Agent Reinforcement Learning</b>	03/2021 – 07/2021
Giving rewards based on credit assignment among multi agents	RLLAB, SNU
<b>Video Inference for Human Motion with Texture Generation</b>   <i>CV, Motion Estimation</i>	08/2020 – 12/2020
Reconstruction of 3D multi-view video from 2D human motion video	RLLAB, SNU
<b>Visual Navigation in Gibson Env2 Environment</b>   <i>RL, Visual Navigation</i>	02/2020 – 07/2020
Implementing robust path following of robots in Gibson simulator	RLLAB, SNU
<b>UP-CARE (Use your Phone Camera for Health and Environment)</b>   <i>HRI, CV</i>	01/2020 – 01/2020
Fall detection for elderly using phone camera based on human pose estimation	San Jose Univ., CA, US
<b>Scrupulous Robot Cleaner with Mecanum Wheels and pointed-shaped inlet:</b>   <i>HRI</i>	03/2019 – 11/2019
Omnidirectional robot cleaner with autonomous & hand-motion controlled modes	STEM, SNU

## PRESENTATIONS

<b>Text-Recognizing Localization in Indoor Visual Navigation</b>	12/2021
Seoul National University - SKT AI Curriculum	

## PUBLICATIONS

<b>Improving Image-Goal Navigation with Visual Language Grounding via Image Captioning</b>	10/2022
Conference on Information and Control Systems (CICS)	
<b>Geometric Understanding of Reward Function in Multi-Agent Visual Exploration</b>	10/2021
International Conference on Control, Automation and Systems (ICCAS)	
<b>Wanna be Engineer</b>	2021
MegaStudy Books, written by members of STEM	

## HONORS AND AWARDS

<b>Lecture-Research Support Scholarship</b>	01/03/2022
Full tuition for 2022 Spring	SNU
<b>The Presidential Science Scholarship(Field: Mathematics)</b>	2017-2020
100 students with academic excellence and potential in the areas of STEM yearly	Ministry of Science and ICT
<b>Silicon Valley Innovation and Startup Program, Grand Prize (1st Prize)</b>	01/2020
Developed fall detection and alert for elderly users.	San Jose University
<b>University Students Contest of Mathematics</b>	17/11/2018
Gold Medal	Korean Mathematical Society
<b>Talent Award of Korea (Field: Mathematics)</b>	27/11/2015
Korea's future leaders with exemplary talents	Minister of Education of Korea
<b>Training Lineup for IMO (International Mathematical Olympiad)</b>	Spring 2016
Intensive course for IMO for 4 weeks	Korean Mathematical Society
<b>KMO (Korean Math Olympiad) Winter School</b>	Winter 2014, Winter 2015
Korean Mathematical Society	Seoul, Korea
<b>KPhO (Korean Physics Olympiad) Summer School</b>	Summer 2016
Highest level of achievement within KPhO	Korean Physical Society
<b>10<sup>th</sup> Student Invention Scholarship</b>	2012
Invention Camp with creative students	Korea Invention Promotion Association (KIPA)

## TEACHING EXPERIENCE

---

<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

---

<b>Vision Mentoring</b> Mentoring high school students interested in engineering and science	07/2019 – Current 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> Helping disabled children with rehabilitation	03/2017 – 10/2017 Seoul, Korea

## NETWORKS AND MEMBERSHIPS

---

<b>ML Theory Korea</b> Seminar about various machine learning theories, including DL, RL, and optimization	03/2022 – Current Remote, Zoom
<b>SNU Tomorrow's Edge Membership</b> Korea's first Engineering College Honor Society	04/2019 – Current SNU, Korea
<b>TODAM BOSTON</b> Global networking club with international graduate students	09/2020 – 12/2021 Remote, Zoom
<b>NorthEast Asia SRT (Student Round Table)</b> International communication partnership among university students in North East Asia	08/2019 SNU, Korea

## SKILLS

---

**Languages:** Korean (Native), English (Fluent, IBT TOEFL 108)  
**Programming:** Python, C/C++, MATLAB, Arduino, OpenGL  
**Patent:** Envelope with built-in sieve (**KR20140003720U**, granted on June 16th, 2014)

## EXTRACURRICULAR ACTIVITIES

---

<b>Haegeum Player</b> Korean Traditional String Instrument	2021 - Current
<b>SNUPO   Violin</b> Seoul National University Philharmonic Orchestra	2017 – 2020
<b>Orchestra Club Activities   Violin</b> 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 - 2016