

Hwiyeon Yoo

CONTACT INFORMATION	Ph.D. <i>Mobile:</i> (+82)-10-9311-4553 <i>E-mail:</i> hwiyeon.yoo@gmail.com <i>Homepage:</i> https://hwiyeon.github.io
RESEARCH INTERESTS	Robot Navigation, World Model, Semantic Planning, Vision-Language-Action (VLA), Reinforcement Learning
EXPERIENCE	Research Engineer, NAVER LABS Dec. 2025 - Present <ul style="list-style-type: none">Developing end-to-end outdoor mobile robot navigation on sidewalk Machine Learning Researcher, Boeing AI Mar. 2024 - Nov. 2025 <ul style="list-style-type: none">Developing OCR-based key information extraction and document understanding solution for aircraft manufacturing automationDeveloping vision-based inspection solutions for aircraft manufacturing
EDUCATION	Ph.D. in Electrical and Computer Engineering Mar. 2017 - Feb. 2024 <ul style="list-style-type: none">Robot Learning Laboratory, Seoul National University, Seoul, Korea<ul style="list-style-type: none">Advisor: Prof. Songhwai OhThesis: Efficient and Effective Visual Context-Based Topological Representations for Embodied Agent Navigation B.S. in Electrical and Computer Engineering Mar. 2012 - Feb. 2017 <ul style="list-style-type: none">Seoul National University, Seoul, Korea
INTERNATIONAL JOURNAL	Hwiyeon Yoo , Yunho Choi, Jeongho Park, and Songhwai Oh, “Commonsense-Aware Object Value Graph for Object Goal Navigation,” <i>IEEE Robotics and Automation Letters (RA-L)</i> , 2024. Wooseok Oh , Hwiyeon Yoo , Timothy Ha, and Songhwai Oh, “Local Selective Vision Transformer for Depth Estimation Using a Compound Eye Camera,” <i>Pattern Recognition Letters</i> , 2023. Hwiyeon Yoo , Geonho Cha, and Songhwai Oh, “Deep Ego-Motion Classifiers for Compound Eye Cameras,” <i>Sensors</i> , vol. 19, no. 23, Dec. 2019.
INTERNATIONAL CONFERENCE	Hwiyeon Yoo , Yunho Choi, Jeongho Park, and Songhwai Oh, “Commonsense-Aware Object Value Graph for Object Goal Navigation,” <i>40th Anniversary of the IEEE Conference on Robotics and Automation (ICRA@40)</i> , Sep. 2024. Nuri Kim, Obin Kwon, Hwiyeon Yoo , Yunho Choi, Jeongho Park, and Songhwai Oh, “Topological Semantic Graph Memory for Image-Goal Navigation,” in <i>Proc of the Conference on Robot Learning (CoRL)</i> , Dec. 2022. (Oral Presentation, Acceptance Rate: 6.5%) Obin Kwon, Nuri Kim, Yunho Choi, Hwiyeon Yoo , Jeongho Park, and Songhwai Oh, “Visual Graph Memory with Unsupervised Representation for Visual Navigation,” in <i>Proc. of the International Conference on Computer Vision (ICCV)</i> , Oct. 2021. Hwiyeon Yoo , Jungho Yi, Jong Mo Seo, and Songhwai Oh, “Actualization of Deep Ego-motion Classification on Miniaturized Octagonal Compound Eye Camera,” in

Proc. of the International Conference on Control, Automation and Systems (ICCAS), Oct. 2021. (Best Poster Paper Award Winner)

Hwiyeon Yoo and Songhwai Oh, “Localizability-based Topological Local Object Occupancy Map for Homing Navigation,” in *Proc. of the International Conference on Ubiquitous Robots*, Jul. 2021.

Hwiyeon Yoo, Nuri Kim, Jeongho Park, and Songhwai Oh, “Path-Following Navigation Network Using Sparse Visual Memory,” in *Proc. of the International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2020.

Hyemin Ahn, Timothy Ha*, Yunho Choi*, **Hwiyeon Yoo***, and Songhwai Oh, “Text2Action: Generative Adversarial Synthesis from Language to Action”, in *Proc. of the IEEE International Conference on Robotics and Automation (ICRA)*, May 2018. (* equally contributed)

See full list at <https://hwiyeon.github.io>

HONORS

Awards and Scholarships

- Best Poster Paper Award Winner, International Conference on Control, Automation and Systems (ICCAS) 2021
- Brain Korea 21 Plus Scholarship, Seoul National University 2020 - 2021

RESEARCH EXPERIENCE

Development of End-to-End Mobile Robot Navigation Algorithms for Sidewalks at NAVER LABS

- Development of world model for mobile robot navigation.
- Development of semantic planning for mobile robot navigation.

Dec. 2025 -

Development of AI/ML-Based Solutions for Aircraft Manufacturing Automation and Inspection at Boeing

- Development of visual key information extraction models and document understanding solutions based on OCR and VLM.
- Development of anomaly detection algorithms for visual inspection.

Mar. 2024 - Nov. 2025

General-Purpose Deep Reinforcement Learning Using Metaverse for Real World Applications - Ministry of Science and ICT (MSIT)

- Implementation of a vision-based object goal navigation algorithm for embodied agents in real robot navigation.

2023 - Feb. 2024

AI Technology for Guidance of a Mobile Robot to its Goal with Uncertain Maps in Indoor/Outdoor Environments - Ministry of Science and ICT (MSIT)

- Development of a vision-based path following and homing navigation algorithm for embodied mobile robots with building semantic map.
- Development of a vision-based image goal and object goal navigation algorithm for unknown environments for embodied mobile robots using semantic graph memory.
- Deployment of the navigation algorithms on a real mobile robot - Clearpath Jackal.

2019 - 2023

SKILLS

Computer Skills

- Python, Pytorch, C++/C, ROS

Language Skills

- Korean, English