

# Curriculum Vitae

## PROFILES

Name	Se-Wook Yoo, Ph.D.		
Position	Senior Software Engineer		
Organization	Whereable.ai Inc, Incheon, Republic of Korea		
E-Mail	✉ sewookyoo@gmail.com		
Link	 LinkedIn	www.linkedin.com/in/usaywook	
	 GitHub	github.com/Usaywook	
	 Google Scholar	https://scholar.google.co.kr/citations?user=sewookyoo	
	 Blog	swooky.site/blog/about/2	

## RESEARCH INTERESTS

Reinforcement Learning, Imitation Learning, Inverse Reinforcement Learning, Robotics, Robot Safety, Decision Making, Path Planning, Control, Hierarchical Learning, Multi-Task Learning, Meta Learning, Transfer Learning, Representation Learning, Large-Scale Language Model, Reinforcement Learning with Human Feedback, ...

## EDUCATION

<b>Seoul National University</b> , Seoul, Republic of Korea	September 2018 - February 2025
Doctor of Philosophy in Electrical and Computer Engineering	Cumulative GPA: 3.71/4.30
Dissertation Title: Efficient Restoration of Reward Signals for Safe Robot Learning	
<b>Hongik University</b> , Seoul, Republic of Korea	March 2012 - August 2018
Bachelor of Science: Electronic and Electrical Engineering	Cumulative GPA: 4.12/4.50 (Major: 4.31/4.50)

## ACADEMIC ACTIVITIES

<b>Undergraduate Research Assistant</b>	
of Vehicle Intelligence Laboratory, Seoul National University, Seoul, Republic of Korea	September 2018 - February 2025
<ul style="list-style-type: none"><li>Student Representative of Laboratory</li><li>Teaching Assistant of Artificial Intelligence System Design for Engineers</li><li>Teaching Assistant of Topics in Communications</li></ul>	<div>2023</div> <div>Fall 2020, Fall 2021</div> <div>Spring 2019</div>
<b>Conference Reviewer</b>	
<ul style="list-style-type: none"><li>International Conference on Machine Learning (ICML)</li><li>International Conference on Neural Information Processing Systems (NeurIPS)</li><li>IEEE International Conference on Robotics and Automation (ICRA)</li><li>IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)</li></ul>	<div>2024</div> <div>2022, 2024</div> <div>2022, 2023</div> <div>2022, 2023, 2024, 2025</div>
<b>Journal Reviewer</b>	
<ul style="list-style-type: none"><li>IEEE Transactions on Intelligent Vehicles (T-IV)</li><li>IEEE Transactions on Neural Networks and Learning Systems (TNNLS)</li><li>IEEE Robotics and Automation Letters (RA-L)</li></ul>	<div>2024</div> <div>2023</div> <div>2023</div>

## PROJECTS

<b>Autonomous Mobility for Large Indoor Space</b>	Incheon International Airport
<i>Planning and Control Team Leader</i>	January 2025 - Present
Quadie addresses the challenge of navigating large indoor spaces, such as airports, exhibition halls, resorts, shopping malls, and museums, where users often encounter long distances and difficulty finding their destinations.	
<ul style="list-style-type: none"><li>Decision-maker for handling yield and deadlock situations</li><li>Path planner modules for handling narrow corridors</li><li>Velocity planner for four wheels swerve robot</li><li>Controller for four wheels swerve robot</li></ul>	<div>January 2025 - Present</div> <div>January 2025 - Present</div> <div>January 2025 - Present</div> <div>January 2025 - Present</div>
<b>Future Challenge Defense Technology R&amp;D Project</b>	Agency for Defense Development (ADD)
<i>Planning and Control Team Leader</i>	January 2022 - February 2025
Developing autonomous intelligence technology for performing rough terrain missions	

- Recovering cost function for safe exploration [R1] January 2024 - December 2024
- Traversability estimation for unstructured environment [J2] January 2023 - December 2023
- Traversability-aware navigation for uneven terrain [J1] January 2023 - December 2023
- Path planning for large-scale unknown environments [J1, J2] July 2022 - July 2023
- Path tracking for off-road driving [J1, J2] January 2022 - December 2023
- Off-road simulator based on actual terrain [J1] July 2022 - December 2023

#### Private Support Project

*Planning and Control Team Member* September 2018 - December 2022 | Developing and testing autonomous driving systems in urban environments Thordrive Inc

- Improving hybrid agent for handling decision dilemma [C5, J3] January 2021 - December 2022
- Path tracking for urban driving [J3] January 2020 - December 2020
- Test operator logging system August 2019 - October 2019
- Scenario runner for urban driving [J3] September 2018 - December 2019

#### Engineering Field Basic Research Project

*Planning and Control Team Member* Ministry of Science and ICT  
September 2018 - November 2022

| A study on human-level driving intelligence for autonomous vehicles

- Interaction-aware decision-making across surrounding vehicles [J3] January 2022 - November 2022
- Multi-task intent estimation for fast adaption [C1] January 2021.01 - November 2021
- Task decomposition based on hierarchical structure [C2, C3, C4] September 2018 - December 2019

## PUBLICATIONS

#### International Conference Proceedings

- [C1] **Se-Wook Yoo** and Seung-Woo Seo. “Learning Multi-Task Transferable Rewards via Variational Inverse Reinforcement Learning”. In: *International Conference on Robotics and Automation (ICRA)*. IEEE. 2022, pp. 434–440. DOI: 10.1109/ICRA46639.2022.9811697.
- [C2] **Se-Wook Yoo** and Seung-Woo Seo. “Graph-based Subtask Representation Learning via Imitation Learning”. In: *International Conference on Electronics, Information, and Communication (ICEIC)*. IEEE. 2022, pp. 1–4. DOI: 10.1109/ICEIC54506.2022.9748273.

#### Domestic Conference Proceedings

- [C3] **Se-Wook Yoo**. “Graph-Based Representation Learning for Subtask Execution Through Imitation Learning.” *Journal of the Korean Institute of Electrical Engineers*, 49(5), 2022, pp. 20–27. URL: <https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE11100736>.
- [C4] **Se-Wook Yoo**, and Seung-Woo Seo. “Transformer-based Subtask Decomposition via Multitask Imitation Learning for Autonomous Driving.” *Proceedings of the Korean Institute of Electrical Engineers Conference*, 2022, pp. 1291–1294. URL: <https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE11132622>.
- [C5] **Se-Wook Yoo**, and Seung-Woo Seo. “Improvement of Lane Change Maneuver using Deep Neural Network based Path Generation.” *Proceedings of the Korean Institute of Electrical Engineers Conference*, 2019, pp. 632–633. URL: <https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE09282347>.

#### International Journal Articles

- [J1] **Se-Wook Yoo\***, E-In Son\*, and Seung-Woo Seo. Traversability-aware Adaptive Optimization for Path Planning and Control in Mountainous Terrain. *IEEE Robotics and Automation Letters*, 9(1):1–8, 2024. DOI: 10.1109/LRA.2024.3387642.
- [J2] Hyung-Suk Yoon, Ji-Hoon Hwang, Chan Kim, E In Son, **Se-Wook Yoo**, and Seung-Woo Seo. Adaptive Robot Traversability Estimation Based on Self-Supervised Online Continual Learning in Unstructured Environments. *IEEE Robotics and Automation Letters*, 9(1):1–8, 2024. DOI: 10.1109/LRA.2024.3386451.
- [J3] **Se-Wook Yoo**, Chan Kim, JinWoo Choi, Seong-Woo Kim, and Seung-Woo Seo. GIN: Graph-Based Interaction-Aware Constraint Policy Optimization for Autonomous Driving. *IEEE Robotics and Automation Letters*, 8(2):464–471, 2022. DOI: 10.1109/LRA.2022.3227862.

#### Under Review

- [R1] **Se-Wook Yoo** and Seung-Woo Seo. “DIAL: Distribution-Informed Adaptive Learning of Multi-Task Constraints for Safety-Critical Systems”. *IEEE Transactions on Robotics (T-RO)*, 2025. DOI: [arxiv.org/abs/2501.18086](https://arxiv.org/abs/2501.18086)

## AWARDS

#### Earth Rover Challenge Award

First place winner

International Conference on Intelligent Robots and Systems (IROS)

2024

<b>Best Paper Award</b> bronze prize	International Conference on Electronics, Information, and Communication (ICEIC) 2022
<b>Academic Award</b> Dean's list	College of Engineering, Hongik University 2015
<b>Intelligent Vehicle Contest Award</b> Bronze prize	Hanyang University 2012

## OTHER EXPERIENCES

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<b>Whereable.ai Inc.</b> , Seoul, Republic of Korea <i>Senior Software Engineer</i>	January 2025 - Present
<ul style="list-style-type: none"> <li>• Development of decision-making modules for handling yield and deadlock situations</li> <li>• Development of path planner modules for handling narrow corridors</li> <li>• Development of velocity planner for four wheels swerve robot</li> <li>• Development of controller for four wheels swerve robot</li> </ul>	
<b>Thordrive Inc.</b> , Seoul, Republic of Korea <i>Intern as SW Developer</i>	August 2019 - October 2019
<ul style="list-style-type: none"> <li>• Development of test operator logging system for autonomous driving</li> <li>• Development of decision-making modules based on maneuver changes</li> </ul>	
<b>Military Service</b> , UNCSB-JSA, Republic of Korea <i>Discharge as Korea Army</i>	January 2013 - October 2014

## SKILLS

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<ul style="list-style-type: none"> <li>• <b>Languages</b></li> <li>• <b>Programming</b></li> <li>• <b>Softwares</b></li> <li>• <b>Frameworks</b></li> <li>• <b>Libraries</b></li> </ul>	<p><b>Native:</b> Korean   <b>Fluent:</b> English (TOEFL iBT : 89)</p> <p><b>Familiar:</b> C ,C++, Python   <b>Experienced:</b> Javascript, Matlab, R, Julia</p> <p>ROS, Git, GitLab, Docker, DevOps</p> <p>PyTorch, Tensorflow</p> <p>Numpy, Matplotlib, Scikit-learn, Pandas, Gym, Jupyter, Wandb</p>
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