

Curriculum Vitae

PROFILES

Name	Se-Wook Yoo		
Position	Ph.D. Student in Engineering (Expected Graduation: February 2025)		
Organization	Vehicle Intelligent Lab, Seoul National University, Republic of Korea		
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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

Seoul National University , 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	
Hongik University , 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

Undergraduate Research Assistant	
of Vehicle Intelligence Laboratory, Seoul National University, Seoul, Republic of Korea	September 2018 - Present
- Student Representative of Laboratory - Teaching Assistant of Artificial Intelligence System Design for Engineers - Teaching Assistant of Topics in Communications	2023 Fall 2020, Fall 2021 Spring 2019
Conference Reviewer	
- International Conference on Machine Learning (ICML) - International Conference on Neural Information Processing Systems (NeurIPS) - IEEE International Conference on Robotics and Automation (ICRA) - IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	2024 2022, 2024 2022, 2023 2022, 2023, 2024
Journal Reviewer	
- IEEE Transactions on Intelligent Vehicles (T-IV) - IEEE Transactions on Neural Networks and Learning Systems (TNNLS) - IEEE Robotics and Automation Letters (RA-L)	2024 2023 2023

PROJECTS

Future Challenge Defense Technology R&D Project	Agency for Defense Development (ADD)
<i>Planning and Control Team Leader</i>	January 2022 - Present
Developing autonomous intelligence technology for performing rough terrain missions	
- Recovering cost function for safe exploration [R1] - Traversability estimation for unstructured environment [J2] - Traversability-aware navigation for uneven terrain [J1] - Path planning for large-scale unknown environments[J1, J2] - Path tracking for off-road driving [J1, J2] - Off-road simulator based on actual terrain [J1]	January 2024 - December 2024 January 2023 - December 2023 January 2023 - December 2023 July 2022 - July 2023 January 2022 - December 2023 July 2022 - December 2023
Private Support Project	Thordrive Inc
<i>Planning and Control Team Member</i>	September 2018 - December 2022 Developing and testing autonomous driving systems in urban environments

- 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

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

Ministry of Science and ICT
September 2018 - November 2022

- 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. “Distribution-Informed Adaptive Learning of Multi-Task Constraints for Safety-Critical Systems”. *IEEE Transactions on Robotics (T-RO)*, 2024.

AWARDS

Earth Rover Challenge Award

First place winner

International Conference on Intelligent Robots and Systems (IROS)
2024

Best Paper Award

bronze prize

International Conference on Electronics, Information, and Communication (ICEIC)
2022

Academic Award

Dean’s list

College of Engineering, Hongik University
2015

Intelligent Vehicle Contest Award

Bronze prize

Hanyang University
2012

OTHER EXPERIENCES

Thordrive Inc, Seoul, Republic of Korea

Intern as SW developer

August 2019 - October 2019

- Development of test operator logging system for autonomous driving
- Development of decision-making modules based on maneuver changes

Military Service, UNCSB-JSA, Republic of Korea

Discharge as Korea Army

January 2013 - October 2014

SKILLS

- **Languages**
- **Programming**
- **Softwares**
- **Frameworks**
- **Libraries**

Native: Korean | ***Fluent:*** English (TOEFL iBT : 89)
Familiar: C ,C++, Python | ***Experienced:*** Javascript, Matlab, R, Julia
ROS, Git, GitLab, Docker, DevOps
PyTorch, Tensorflow
Numpy, Matplotlib, Scikit-learn, Pandas, Gym, Jupyter, Wandb