

Jinwoo Choi

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EDUCATION

Seoul National University

Ph.D. student in Department of Electrical and Computer Engineering
Advisor: Prof. Seung-Woo Seo

Mar 2018 – Present
Seoul, South Korea

Hanyang University

B.S. in Department of Electronic Engineering
Leave of Absence for Mandatory Military Service: Feb 2013 – Feb 2015

Mar 2012 – Feb 2018
Seoul, South Korea

RESEARCH INTERESTS

My main research areas are reinforcement learning, autonomous driving, and robotics. I am interested in developing reliable agents that learn from offline data and perform long-horizon decision-making in complex real-world environments.

PUBLICATIONS

- FPAS: Frontier-Based Path Planning with Adaptive Sampling for Large-Scale Unknown Environments**
Jinwoo Choi, Yeonkyu Lee, Jung-Taak Kim, Jisung Bae, Seung-Woo Seo
International Conference on Intelligent Robots and Systems (IROS), 2026
- Chain-of-Goals Hierarchical Policy for Long-Horizon Offline Goal-Conditioned RL**
Jinwoo Choi, Sang-Hyun Lee, Seung-Woo Seo
International Conference on Machine Learning (ICML), 2026
- ESP-SLAM: Efficient Submap Partitioning for Large-Scale 3D Gaussian Splatting-Based SLAM**
Jisung Bae, Hwchang Kim, **Jinwoo Choi**, Ji-Hoon Hwang, Dong-Wook Kim, Kun Park, Seung-Woo Seo
IEEE Robotics and Automation Letters (RA-L), 2026
- Dynamic Contrastive Skill Learning with State-Transition Based Skill Clustering and Dynamic Length Adjustment**
Jinwoo Choi, Seung-Woo Seo
International Conference on Learning Representations (ICLR), 2025
- GIN: Graph-based interaction-aware constraint policy optimization for autonomous driving**
Se-Wook Yoo, Chan Kim, **Jinwoo Choi**, Seong-Woo Kim, Seung-Woo Seo
IEEE Robotics and Automation Letters (RA-L), 2022
- Ego-lane index-aware vehicular localisation using the DeepRoad Network for urban environments**
Soomok Lee, **Jinwoo Choi**, Seung-Woo Seo
IET Intelligent Transport Systems, 2021

EXPERIENCE

Vehicle Intelligence Laboratory, Seoul National University

Ph.D. Student (Advisor: Seung-Woo Seo)

Mar 2018 – Present
Seoul, South Korea

- **Challengeable Future Defense Technology Research and Development Program**

Role: Project Manager, global path planning (Jan 2022 – Jun 2023)

Conducted research on mobile robot-based autonomous exploration in unknown, unstructured, and hazardous environments, funded by the Agency for Defense Development (ADD), with a focus on global path planning for goal-reaching in unexplored areas.

- **SNUVI: Autonomous Vehicle System for Urban Driving at K-City (a national autonomous driving testbed)**

Role: Team Leader, local path planning (Jul 2020 – Feb 2021)

Developed an autonomous vehicle system for urban driving, integrating perception, localization, and decision-making modules to handle pedestrians, traffic, and road rules.

ThorDrive

Aug 2021 – Oct 2021

Research Intern

Seoul, South Korea

- Developed an RL-based high-level decision-making module in CARLA for real-world autonomous vehicle deployment, enabling candidate path selection for lane changes and detours around illegally parked vehicles.

AWARDS

- **Excellence Award**, 2017 Capstone Design Fair

Awarded by Hanyang University

Project: Traffic Accident Reduction System Using Eye-Tracking Technology

SKILLS

Programming Languages

- Python, C++, C

Machine Learning Frameworks

- PyTorch, JAX, TensorFlow

Research Areas

- Reinforcement Learning, Autonomous Driving, Path Planning, Robot Exploration, Computer Vision, SLAM

Robotics Tools

- ROS, CARLA

Languages

- Korean (native), English (proficient)

SERVICES

Teaching

- TA, Interdisciplinary Innovative Capstone Design, Seoul National University (Spring 2019)
- TA, SNU in Silicon Valley program, Seoul National University (hosted in joint with Stanford University) (Summer 2019)

Reviews

- **Journals:** RA-L (2022)
- **Conferences:** ICML (2026), NeurIPS (2025), ICLR (2025, 2026), ICRA (2025), IROS (2023, 2026)