Yunwoo Lee

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RESEARCH AREA

Autonomous Robots, Multi-Robot System, Target Tracking, Motion Planning and Control, UAV/UGV

EMPLOYMENT

Assistant Professor, DGIST, EECS, Daegu Metropolitan City, South Korea

Sep. 2026 – Current

- Lead **Open Autonomy Lab**

Postdoctoral Fellow & Visiting Scholar, Carnegie Mellon University, Robotics Institute, Pittsburgh PA, United States

Mar. 2025 – Jul. 2026

- Principal investigator: Prof. Sebastian Scherer (Research Group: AirLab)
- Lead a research project funded by Defence Science and Technology Agency (DSTA)
- Lead a research project funded by Home Team Science & Technology Agency (HTX)

Researcher, AI Institute of Seoul National University, Seoul, South Korea

Mar. 2025 – Sep. 2025

- Developed a fully automated assistant robot

EDUCATION

Ph.D in Mechanical and Aerospace Engineering, Seoul National University, Seoul, South Korea

Sep. 2019 – Feb. 2025

- Supervisor: Hyoun Jin Kim (Research Group: LARR)
- Cumulative GPA: 4.14 / 4.3 (Major GPA: 4.14 / 4.3)

B.S in Electrical and Computer Engineering, Seoul National University Seoul, South Korea,

Mar. 2012 – Feb. 2019

- Cumulative GPA: 3.96 / 4.3 (Major GPA: 4.12 / 4.3), *Summa Cum Laude*
- Supervisor: Sul, Seung Ki (Research Group: EEPEL)

PUBLICATIONS

Journal

- **[J8]** **Lee, Y.**, Park, J., Jung, S., Jeon, B., Oh, D., & Kim, H. J. (2025). Qp chaser: Polynomial trajectory generation for autonomous aerial tracking. IEEE Transactions on Automation Science and Engineering **(2025 T-ASE Best New Application Paper Award at ICRA 2026)**
- **[J7]** **Lee, Y.**, Park, J., & Kim, H. J. (2025). DMVC-Tracker: Distributed Multi-Agent Trajectory Planning for Target Tracking Using Dynamic Buffered Voronoi and Inter-Visibility Cells. IEEE Robotics and Automation Letters.
- **[J6]** Park, J., **Lee, Y.**, Jang, I., & Kim, H. J. (2025). Decentralized trajectory planning for quadrotor swarm in cluttered environments with goal convergence guarantee. The International Journal of Robotics Research
- **[J5]** **Lee, Y.**, Park, J., Jeon, B., Jung, S., & Kim, H. J. (2024). BPMP-Tracker: A versatile aerial target tracker using Bernstein polynomial motion primitives. IEEE Robotics and Automation Letters
- **[J4]** Yoo, S., Jung, S., **Lee, Y.**, Shim, D., & Kim, H. J. (2024). Mono-camera-only target chasing for a drone in a dense environment by cross-modal learning. IEEE Robotics and Automation Letters
- **[J3]** Park, J., **Lee, Y.**, Jang, I., & Kim, H. J. (2023). Dlsc: Distributed multi-agent trajectory planning in maze-like dynamic environments using linear safe corridor. IEEE Transactions on Robotics
- [**J2**] Jeon, B. F., **Lee, Y.**, Choi, J., Park, J., & Kim, H. J. (2021). Autonomous aerial dual-target following among obstacles. IEEE Access
- [**J1**] Jang, Y., Oh, C., **Lee, Y.**, & Kim, H. J. (2021). Multirobot collaborative monocular SLAM utilizing rendezvous. IEEE Transactions on Robotics

Conference

- **[C3]** **Lee, Y.**, Park, J., Jeon, B., & Kim, H. J. (2021, September). Target-visible polynomial trajectory generation within an mav team. In 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems
- **[C2]** Jang, Y., **Lee, Y.***, & Kim, H. J. (2020, October). Navigation-assistant path planning within a mav team. In 2020

IEEE/RSJ International Conference on Intelligent Robots and Systems (1st Co-author)
- **[C1]** Jeon, B., **Lee, Y.**, & Kim, H. J. (2020, May). Integrated motion planner for real-time aerial videography with a drone in a dense environment. In 2020 IEEE International Conference on Robotics and Automation

Under Review

- **[U4]** SCOPE: Field-of-View-Aware Path Planning in Unknown 3D Environments via Safety-Volume Certification.
- **[U3]** Multi-robot Learning-based Informative Path Planning Using Spatio-Temporal Gaussian Process Kalman Filter.
- **[U2]** MC-Swarm: Minimal-Communication Multi-Agent Trajectory Planning and Deadlock Resolution for Quadrotor Swarm **(1st Author)**
- **[U1]** GAR-Tracker: Target-Visible Trajectory Planning for Ground Assistant Robots **(Corresponding Author)**

PROJECTS

Robotic Swarm AI, Home Team Science & Technology Agency, Singapore — Feb. 2026 - Jul. 2026

Adversarial-AI Project, Defence of Science and Technology Agency, Singapore — Jul. 2025 - Jul. 2026

Vision-Based Detection and Avoidance, Ministry of Science and Technology of Korea — Mar. 2022 - Feb. 2025

Drone Swarm, Korean Aerospace Industries (KAI), South Korea — Mar. 2022 - Jan. 2023

Self-Driving in Atypical Environments, Ministry of Science and Technology of Korea — Sep. 2019 - Dec. 2021

TEACHING EXPERIENCE

Miniature Drone Theory and Practice, Seoul National University, Siheung, South Korea — Mar. 2024 - Aug. 2024

- Arranged hands-on course about PID control for micro quadrotors (for 30 students, with 10 teaching assistants)

INVITED TALKS

DGIST EECS, South Korea — Dec. 2025

- Title: Active Target Tracking: From a Drone-Based Motion Planning Perspective

SEOULTECH MSD, South Korea — Mar. 2026

- Title: Robust Aerial Tracking from a Motion Planning Perspective

SOGANG AI Robotics Lab, South Korea — Mar. 2026

- Title: Robust Aerial Tracking from a Motion Planning Perspective

POSTECH ME, South Korea — Mar. 2026

- Title: Robust Aerial Tracking from a Motion Planning Perspective

INTERNSHIP

Infineon Technology Korea, Seoul, South Korea — Jan. 2018 - Aug. 2018

- Designed a 3-phase inverter using a 32-bit MCU
- Implemented a sensorless motor control algorithm for BLDC motors

Electrical Engineering & Power Electronics Lab, Seoul National University, Seoul, South Korea
· Supervisor: Sul, Seung Ki — Nov. 2016 - Sep. 2017

- Designed an experimental setup for Si-C MOSFET testing in an elevator motor drive system
- Constructed an M-G set for implementing an IPMSM motor control algorithm

GRANT & AWARDS

IEEE 2025 T-ASE Best New Application Paper Award (Awarded at ICRA 2026) — Jun. 2026

- [J8] QP Chaser: Polynomial Trajectory Generation for Autonomous Aerial Tracking

Human Resource Development Program for Industrial Innovation (Global) — Mar. 2025 - Sep. 2025

- Dispatch program, supported by Korea Institute for Advancement of Technology (KIAT)

Samsung Humantech Paper Award, 27th — Feb. 2021

- Silver prize (Title: Multirobot Collaborative Monocular SLAM Utilizing Rendezvous, co-author)

National Scholarship for Science and Engineering, Korea Student Aid Foundation — 2012-2013 & 2016-2017

- Full tuition scholarship based on merit, 2016, 2017

- Partial tuition scholarship based on merit, 2012, 2013

REFERENCES

Prof. H. Jin Kim, Seoul National University, South Korea

- e-mail: hjinkim@snu.ac.kr
- LabPage: https://larr.snu.ac.kr

Prof. Sebastian Scherer, Carnegie Mellon University, United States

- e-mail: basti@andrew.cmu.edu
- LabPage: https://theairlab.org

Prof. Jungwon Park, Seoul National University of Science and Technology, South Korea

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- LabPage: https://lars.seoultech.ac.kr