Jungeun Lee

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Education

- **Ulsan National Institute of Science and Technology (UNIST)** *Aug. 2020 -*
  Combined Master's-Doctoral Program in Electrical Engineering Ulsan, Republic of Korea
  - Focus: Multi-Agent Coordination, Reinforcement Learning, Optimization, Safe Control
  - GPA: 4.16/4.30
  - Advisor: Prof. Jeong hwan Jeon

- **Ulsan National Institute of Science and Technology (UNIST)** *Mar. 2016 - Aug. 2020*
  B.S. in Electrical Engineering, Materials Science and Engineering Ulsan, Republic of Korea
  - Honors: *Magna Cum Laude*
  - GPA: 3.71/4.30 (Major GPA: 3.82/4.30)

Experience

- **CJ Corporation** *Aug. 2025 - Jan. 2026*
  Research Intern Seoul, Republic of Korea
  - Automated and optimized the logistics packing system using reinforcement learning.
  - Implemented a Gymnasium-based simulation reflecting real-world packing processes.
  - Reduced the total packing makespan compared to the conventional packing process through reinforcement learning and Gurobi-based mathematical optimization.

Publications

[C6] **First author.** Manuscript under double-blind review at *The International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2026.

[C5] **Jungeun Lee***, Seongjae Lee*, Jeong hwan Jeon. "Safe Trajectory Planning with Bernstein Polynomials Under Control Barrier Function Constraints." Submitted to *American Control Conference (ACC)*, 2026.

[C4] **Co-author.** Manuscript under double-blind review at *IEEE International Conference on Robotics and Automation (ICRA)*, 2026.

[C3] Thi Thuy Ngan Duong, **Jungeun Lee**, Jeong hwan Jeon. "Cooperative Mission Planning for Heterogeneous Robots and Energy Constraints." *International Conference on Robot Intelligence Technology and Applications*, 2024.

[J1] Cong Phat Vo, **Jungeun Lee**, Jeong hwan Jeon. "Robust Adaptive Path Tracking Control Scheme for Safe Autonomous Driving via Predicted Interval Algorithm." *IEEE Access*, 2022.

[C2] **Jungeun Lee**, Hyeonho Noh, Hyun Jong Yang. "Performance Analysis of Beamforming for Radar and Communications Coexisting Systems."*IEEE International Conference on Information and Communication Technology Convergence (ICTC)*, 2018.

[C1] Hyeonho Noh, **Jungeun Lee**, Hyun Jong Yang. "Beam Synthesis Under Feasible Scenarios for Radar and Communications Combined Systems."*IEEE International Conference on Information and Communication Technology Convergence (ICTC)*, 2018.

* Contributed equally

Patents and Software Certifications

[S1] "Deep Reinforcement Learning and Demand Prediction Model for Mobility-on-Demand Systems." Tested and certified in accordance with *KS X ISO/IEC 25023:2016* by *TPR Co., Ltd. (KOLAS Accredited Testing Laboratory)*. Certification No. *TPR-SWT-2025-017*; issued on July 10, 2025.

[P1] Hyun Jong Yang, Jonggyu Jang, Harim Lee, Yeongjun Kim, Hyeonho Noh, **Jungeun Lee**, and Hyeonsu Lyu. "Simulator for a Radar-based Active Target Detection Drone Communication Base Station." *Korean Registered Patent No. C-2018-037076*.

Projects (Selected)

- **Real-time dynamic routing technology based on prediction and simultaneous optimization of carbon emission and transport demand** *Apr. 2022 - Jun. 2025 (39 months)*
  Agency: Ministry of SMEs and Startups, Republic of Korea [📹, ⚙]
  - Developed a routing algorithm to solve traffic congestion and the resulting environmental pollution in metropolitan areas.
  - Designed a carbon emission model by capturing real-time vehicle sensor data on altitude, speed, and acceleration.
  - Pioneered a deep reinforcement learning-based Autonomous Mobility-on-Demand (AMoD) system to reduce carbon emissions, moving beyond the limitations of classic optimization methods.
- **AI-based applications for multi-agent mobility operations** *May. 2024 - Nov. 2024 (7 months)*
  Agency: Electronics and Telecommunications Research Institute (ETRI)
  - Developed and modularized C++ based algorithms for task assignment optimization and optimal routing in multi-agent mobility systems.
  - Built a GUI-based simulation tool to validate algorithm performance under diverse environmental conditions and constraints.
  - Designed the system with a ROS-compatible modular architecture to enhance scalability.
- **Development of AI technology for intelligent mobility-on-demand operations** *Apr. 2021 - Dec. 2022 (21 months)*
  Agency: Ministry of Science and ICT (MSIT), Republic of Korea [⚙]
  - Developed an optimal routing algorithm for demand-responsive mobility systems.
  - Designed the system to adjust vehicle routes in real-time, reflecting new traffic demands from nearby locations.
  - Formulated an optimization problem to minimize passenger travel delays and waiting times.
  - An average travel delay of 2.52 minutes and an average wait time of 4 minutes for ride-sharing passengers.
  - A service rate of 89.57% of the total demand.
- **AI Novatus Academia**
  Agency: Gyeongsangnam-do Provincial Government, Republic of Korea [🌐]
  - Assisted in the reinforcement learning program.
  - Provided theoretical lectures on reinforcement learning for employees of small and medium-sized enterprises (SMEs) in the Gyeongsangnam-do region.
  - Conducted hands-on programming sessions to help participants apply reinforcement learning techniques to real-world applications.

Skills

- **Programming Languages:** Python, C++, Java, MATLAB
- **Machine Learning Frameworks:** PyTorch, TensorFlow
- **Optimization Solvers:** Gurobi, OR-Tools, IPOPT, CVX

Honors and Awards

- **KIIE & LG CNS Optimization Grand Challenge 2025** *Sep. 2025*
  Excellence Award (6th out of 343 Teams) [⚙]
  - Served as **team leader**.
  - Awarded $2,200 and employment benefits.
  - Participants included researchers from leading universities (Imperial College London, Eindhoven University of Technology, SNU, KAIST, POSTECH) and major corporations (LG Display, Samsung Electronics, Hyundai Motor, KT).
- **Hyundai Motor Group Autonomous Driving Challenge** *Mar. 2025*
  3rd Place out of 16 Qualifiers [⚙]
  - Served as **team leader**.
  - Awarded $3,600.
  - Recognized as Korea's first end-to-end autonomous driving challenge.

◦ Teams from leading universities such as KAIST, UNIST, GIST, Hanyang University, Korea University, Sungkyunkwan University.

- **Ulsan Public Data Utilization Startup Competition** *Aug. 2023*
  3rd Place
- **National Science & Technology Scholarship** *Feb. 2016 - Aug. 2020*
- **Government-funded Scholarship (fully funded)** *Feb. 2016 -*