Seokju Lee

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Education

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, South Korea
Ph.D. Candidate - Mechanical Engineering; Advisor: Prof. Kyung-Soo Kim — *Mar 2025 – Present*
Mechatronics, Systems and Control (MSC) Lab

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, South Korea
M.S. - Mechanical Engineering; Advisor: Prof. Kyung-Soo Kim — *Mar 2023 – Feb 2025*
Mechatronics, Systems and Control (MSC) Lab
M.S. Thesis: *Slip-Compensated Legged Robot State Estimation Using Latent Space Attention Mechanisms*

Ulsan National Institute of Science and Technology (UNIST) — Ulsan, South Korea
B.S. - Electrical Engineering; GPA: 4.07/4.3; Major GPA: 4.13/4.3 — *Mar 2020 – Feb 2023*
Summa Cum Laude, Three-Year Early Graduation, Graduate Representative

Publications

Journal Articles

[1] **Seokju Lee** and Kyung-Soo Kim. Attention-Based Neural-Augmented Kalman Filter for Legged Robot State Estimation. *IEEE Robotics and Automation Letters (RA-L)*. (Under Review)

[2] Yunji Jung, **Seokju Lee**, Tair Djanibekov, Jong Chul Ye, and Hyunjung Shim. Text Optimization with Latent Inversion for Non-Rigid Editing. *Pattern Recognition Letters*, 2025. Paper: click

[3] Hyun-Bin Kim, **Seokju Lee**, Byeong-Il Ham, Keun Ha Choi, and Kyung-Soo Kim. Temperature Compensation Method of Six-Axis Force/Torque Sensor Using Gated Recurrent Unit. *IEEE Sensors Journal*, 2025. Paper: click

Conference Papers

[1] **Seokju Lee**, Hyun-Bin Kim, and Kyung-Soo Kim. Legged Robot State Estimation Using Invariant Neural-Augmented Kalman Filter with a Neural Compensator. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025. (Accepted) Page: click

[2] **Seokju Lee**, Seunghun Jeon, and Jemin Hwangbo. Learning Legged Mobile Manipulation Using Reinforcement Learning. In *International Conference on Robot Intelligence Technology and Applications.* pages 310-317. Cham: Springer International Publishing, 2022. Paper: click

Honors and Awards

- First Place (Winner), Wheeled-Legged Robot Competition, IROS 2025 Workshop
- UNIST Best Students Awards (Minister of Science and ICT Award)
- Presidental Science Scholarship
- Social Venture Contest LG Sponsorship Award
- Daejeon Design Thinking Hackathon 1st Award (Minister of Environment Award)

Experience

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon, South Korea
Robotics and Artificial Intelligence Lab, Visiting Researcher — *Jun 2022 – Aug 2022*
- Learning legged mobile manipulation using reinforcement learning (Advisor: Prof. Jemin Hwangbo)

Teaching Assistant — *Mar 2025 – Dec 2025*
- Linear System Control, Multidisciplinary Capstone Design, Mechanism Design

Aalto University — Espoo, Finland
Exchange Student — *Jan 2022 – Feb 2022*
- Studying big data and machine learning

Ulsan National Institute of Science and Technology (UNIST) — Ulsan, South Korea
Robotics and Mobility Lab, Visiting Researcher — *Dec 2021 – Nov 2022*
- Develop the Autonomous Platform to deliver service using sensor fusing (Advisor: Prof. Jeong hwan Jeon)

AI Graduate School Creative Self-Challenge Contest — *May 2021 – Feb 2022*
- Team Leader; Lead 3D modeling and control research for quadrotor

Teaching Assistant — *Sep 2021 – Nov 2022*
- Calculus I, Calculus II

Projects

Humanoid Locomotion: (Work with Korea Institute of Machinery & Materials (KIMM)) Research on strategies for stable locomotion of humanoid robotic platforms in complex terrain using reinforcement learning (Jul 2025 – Sep 2025)

Aerial Robot: (Work with Agency for Defense Development (ADD)) Ultra-high Efficiency Surveillance Reconnaissance Autonomous Flying Robot based on Structural Battery (June 2023 – Nov 2025)

Exoskeleton: (Work with Korea Institute of Robotics and Technology Convergence (KIRO)) Mutually linked modular waist, shoulder, and knee muscle assist Exosuit technology (Jan 2024 – Dec 2024)

Skills Summary

Languages: Python, C, C++, MATLAB, ROS

Simulators: Isaac Gym, Isaac Sim, Raisim, Gazebo

Professional Services

Reviewer: ICRA (2024, 2025), IROS (2025), Artificial Intelligence Review