

DAEHO LEE

Researcher, Agency for Defense Development (ADD) | Daejeon, South Korea

✉ dhlee07042@gmail.com | 🌐 daeholee.me | 🎓 [Google Scholar](#)

RESEARCH INTERESTS *Wearable and legged robots*

Physical human–robot interaction — coupled dynamics, compliance, and physical interfaces

Perception-guided assistive control — intent inference amid reactive responses, and pre-contact sensing

Biomechanical evaluation — interaction loads, locomotor performance, and human adaptation

EDUCATION

KAIST, Daejeon, South Korea

Mar. 2020 – Aug. 2022

M.S. in Mechanical Engineering | GPA 4.02/4.3 | Advisor: Prof. Kyoungchul Kong

Thesis: *Terminal Decision Maker Against Upcoming Surface for the Safe Locomotion of Wearable Robots*

KAIST, Daejeon, South Korea

Mar. 2013 – Feb. 2020

B.S. in Mechanical Engineering, *magna cum laude* | Minor: Business and Technology Management | GPA 3.85/4.3

Includes military service (KATUSA), 2016 - 2018

SELECTED HONORS

Certificate of Commendation, Chief of Staff, *Republic of Korea Army*

2024

Global Leadership Award in “Challenge” Division, *KAIST*

2021

Gold & Bronze Medals (as team member), *CYBATHLON 2020 Powered Exoskeleton Race*

2020

RESEARCH EXPERIENCE

Exo Lab, Dept. of Mechanical Engineering, KAIST

Mar. 2020 – Mar. 2023

Graduate Research Assistant; Researcher from Sep. 2022 | Advisor: Prof. Kyoungchul Kong

- **Pre-contact sensing for initial-contact load modulation.** Developed a Time-of-Flight (ToF) foot–ground distance module and a distance-based swing control layer for the Angel Legs M20 exoskeleton; a single-participant treadmill pilot showed 24.7%–28.9% lower 0–100 ms anterior-plate vertical impulse than with the layer off M.S. thesis · [M1]
- **Gait-phase detection with non-contact ranging.** Built a dual-ToF overshoe module and a lightweight, threshold-based classifier segmenting six gait phases across stance and swing JKSPE 2026 [J5] · ISPS 2021 [T1]
- **Ground-impact evaluation.** Developed crutch-force [J1] and pneumatic plantar-pressure modules and evaluated a shank shock-absorption mechanism and aligned gait pattern: 23% lower mean peak heel GRF than without the absorber (one participant) ICRA 2021 [C1] · IJCAS 2023 [J4]
- Assembled and debugged the CYBATHLON 2020 WalkON Suit IV systems IEEE IEM 2022 [J3]
- **Adaptive exoskeleton sizing.** Formed and led a student team, secured the grant, and built the force-sensing data-acquisition system for a collaborating ML group KAIST Venture Program, KRW 20M (≈US\$17,000)
- Built OpenSim human–robot models and MATLAB analysis pipelines for motion, force, and sEMG

PROFESSIONAL EXPERIENCE

Agency for Defense Development (ADD) | Researcher, 2nd R&D Institute

Apr. 2023 – Present

- Co-led integrated product support (IPS) and defense standardization across multiple Republic of Korea Army R&D and production programs (details restricted)
- Managed development of an XR procedural-training system and a technical-data verification system upgrade
- Developed a CATIA automation tool for secure CAD data transfer across air-gapped networks

PEER-REVIEWED CONFERENCE PROCEEDINGS

- [C1] J. Park, **D. Lee**, K. Park, and K. Kong, "Reduction of Ground Impact of a Powered Exoskeleton by Shock Absorption Mechanism on the Shank," *Proc. IEEE Int. Conf. Robotics and Automation (ICRA)*, 2085–2090, 2021.

JOURNAL PUBLICATIONS

- [J5] **D. Lee**, "Real-time Gait Phase Detection System Using Non-contact Distance Sensors," *J. Korean Soc. Precis. Eng.*, 43(7), 701–708, 2026 (in Korean).
- [J4] J. Park, **D. Lee**, and K. Kong, "Shank Shock Absorption Mechanism and Associated Gait Pattern Design for Reduction of Ground Impact of a Powered Exoskeleton," *Int. J. Control Autom. Syst.*, 21(6), 1959–1969, 2023.
- [J3] J. Choi, K. Park, J. Park, **D. Lee**, *et al.*, "The History and Future of the WalkON Suit: A Powered Exoskeleton for People With Disabilities," *IEEE Ind. Electron. Mag.*, 16(4), 16–28, 2022.
- [J2] E. Song, **D. Lee**, and K. Kong, "Design of Shoes Utilizing Torsion Spring for Increasing Gait Efficiency and Application in Wearable Robot," *J. Inst. Control Robot. Syst.*, 27(3), 262–270, 2021 (in Korean).
- [J1] K. Park, **D. Lee**, and K. Kong, "Development of FSR-Crutch Module for Real-Time Evaluation of Walking Performance in the Rehabilitative Applications," *J. Inst. Control Robot. Syst.*, 26(10), 856–862, 2020 (in Korean).

CONFERENCE PRESENTATIONS

- [T1] **D. Lee**, K. Kong, and H. Choi, "Detection of Full Phases in a Gait Using Multi-Modal Sensor-Integrated Shoes," *ASME Conf. on Information Storage and Processing Systems (ISPS 2021)*, online, Jun. 2021.

MANUSCRIPTS IN PREPARATION

- [M1] **D. Lee**, J. Park, H. Choi, and K. Kong, "FDL: Foot–Ground Distance Layer for Initial-Contact Load Modulation in a Lower-Limb Exoskeleton," manuscript in preparation.

SCHOLARSHIPS

KAIST Scholarship (full tuition), *KAIST*; two awards 2020 – 21, 2013 – 14

National Excellence Scholarship for Science and Engineering (full tuition), *Ministry of Education* 2015 – 2019

TECHNICAL SKILLS

Programming: Python, MATLAB, C/C++, LabVIEW

Embedded systems: STM32, sbRIO/FPGA, myRIO, Arduino; circuit design and PCB assembly; SPI, I²C, UART

Experimental: VICON, AMTI instrumented treadmill, Delsys EMG, Xsens, OpenSim

Mechanical design: SOLIDWORKS, AutoCAD, CATIA

Languages: Korean (native), English (fluent)

ADDITIONAL EXPERIENCE

Samsung Electro-Mechanics | Engineering Intern, Suwon Jul. – Aug. 2019
Co-proposed a diagonal horizontally mounted capacitor (D-HMC) configuration to reduce MLCC acoustic noise

AFN Korea | KATUSA (mandatory military service), Pyeongtaek Aug. 2016 – Apr. 2018
Broadcaster and video editor for AFN Korea feature stories and clips; discharged as a sergeant

Cairen (now WooriWel) | Undergraduate Intern, Daejeon Dec. 2015 – Jan. 2016
Redesigned and modeled oxygen-respirator components (CUop Program); continued this work in the capstone project "Oxygen Respirator for Elevator"