

Dongjae Lee

1, Gwanak-ro, Gwanak-gu, Seoul 08826, Republic of Korea

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Education

Seoul National University

Ph.D. in Aerospace Engineering

- Advisor: Prof. H. Jin Kim
- Dissertation: Nonprehensile Aerial Manipulation with Robust Stability Guarantee
- Cumulative GPA: 4.05/4.30

Seoul, South Korea

Sep 2020 – Feb 2025

Seoul National University

M.S. in Mechanical and Aerospace Engineering

- Advisor: Prof. H. Jin Kim
- Thesis: opening a hinged door with an aerial manipulator using model predictive control
- Cumulative GPA: 4.19/4.30

Seoul, South Korea

Sep 2018 – Aug 2020

Seoul National University

B.S. in Mechanical and Aerospace Engineering

- Cumulative GPA: 3.82/4.30

Seoul, South Korea

Mar 2014 – Feb 2018

Experiences

Visiting PhD student

KTH Royal Institute of Technology

- Advisor: Prof. Dimos V. Dimarogonas
- Research focus: nonprehensile manipulation, switching control

Stockholm, Sweden

Apr 2024 – Oct 2024

Online Education Mentor

Engineering Mathematics

HOLIX (former: Educast)

Seoul, South Korea

Dec 2017 – Jun 2018

Projects

Tiltrotor design and collaborative transportation

Ministry of Education (MoE)

- platform design, control & experiments, **led the team of graduate students**

South Korea

Jun 2022 – May 2023

Landscape inspection and motion planning for automating industrial excavator

Hyundai Construction Equipment (HCE)

- optimization-based motion planning & outdoor experiment

South Korea

Feb 2020 – Dec 2022

Precise aerial manipulation with autonomous drones

Ministry of Trade, Industry and Energy (MoTIE)

- outdoor experiment of cooperative aerial transportation

South Korea

Feb 2020 – May 2020

Development of specialized multirotor for transportation

Ministry of Trade, Industry and Energy (MoTIE)

- pick-and-place mechanism design & outdoor experiment

South Korea

Jan 2019 – Dec 2019

Honors

AWARDS

2025	Outstanding Doctoral Dissertation Award	Seoul National University, South Korea
2024	BK Future Innovation Talent Award (Silver Prize)	Seoul National University, South Korea
2022	BK Aerospace Excellence Research Award	Seoul National University, South Korea
2021	2021 ICRA Best Paper Award on Unmanned Aerial Vehicles	IEEE
2020	2020 ICCAS Outstanding Paper Award	ICROS, South Korea

FELLOWSHIP

2024	BK Fellowship for Outstanding Graduate Student Overseas Training	National Research Foundation(NRF), South Korea
2022–2023	Ph.D. Research Fellowship	National Research Foundation(NRF), South Korea
2021–2022	BK Research Fellowship	Seoul National University, South Korea
2016	National Scholarship	Korea Student Aid Foundation, South Korea

JOURNAL ARTICLES

- [J1] Autonomous Heavy Object Pushing Using a Coaxial Tiltrotor
S. Hwang*, **D. Lee***, C. Kim, H. J. Kim
IEEE Transactions on Automation Science and Engineering (T-ASE) accepted.
- [J2] Autonomous Excavator for Precise Earthcutting and Onboard Landscape Inspection
I. Jang*, J. Kim*, **D. Lee***, C. Kim*, C. Oh, Y. Kim, S. Woo, H. Sung, H. J. Kim
IEEE Robotics & Automation Magazine (RAM) accepted.
- [J3] The Pallettrone Cart: Human-Robot Interaction-Based Aerial Cargo Transportation
G. Park, H. Park, W. Park, **D. Lee**, M. Kim, S. J. Lee
IEEE Robotics and Automation Letters (RA-L), 2024.
- [J4] Image-Based Time-Varying Contact Force Control of Aerial Manipulator using Robust Impedance Filter
J. Byun, J. Kim, D. Eom, **D. Lee**, C. Kim, H. J. Kim
IEEE Robotics and Automation Letters (RA-L), 2024.
- [J5] Design, Modeling and Control of a Top-loading Fully-Actuated Cargo Transportation Multirotor
W. Park, X. Wu, **D. Lee**, S. J. Lee
IEEE Robotics and Automation Letters (RA-L), 2023.
- [J6] A Hybrid Controller Enhancing Transient Performance for an Aerial Manipulator Extracting a Wedged Object
J. Byun, I. Jang, **D. Lee**, H. J. Kim
IEEE Transactions on Automation Science and Engineering (T-ASE), 2023.
- [J7] RISE-based trajectory tracking control of an aerial manipulator under uncertainty
D. Lee, J. Byun, H. J. Kim
IEEE Control Systems Letters (LCSS), 2022.
- [J8] Aerial manipulator pushing a movable structure using a DOB-based robust controller
[2021 ICRA Best Paper Award on Unmanned Aerial Vehicles]
D. Lee, H. Seo, I. Jang, S. J. Lee, H. J. Kim
IEEE Robotics and Automation Letters (RA-L), 2021.
- [J9] Fully actuated autonomous flight of thruster-tilting multirotor
S. J. Lee, **D. Lee**, J. Kim, D. Kim, I. Jang, H. J. Kim
IEEE/ASME Transactions on Mechatronics (T-MECH), 2021.

CONFERENCE PROCEEDINGS

- [C1] Safety-Critical Control for Aerial Physical Interaction in Uncertain Environment
J. Byun, Y. Kim, **D. Lee**, H. J. Kim
2025 IEEE International Conference on Robotics and Automation (ICRA), 2025.
- [C2] Saturated RISE control for considering rotor thrust saturation of fully actuated multirotor
D. Lee, H. J. Kim
2024 International Conference on Unmanned Aircraft Systems (ICUAS), 2024.
- [C3] Autonomous aerial perching and unperching using omnidirectional tiltrotor and switching controller
D. Lee, S. Hwang, J. Byun, S. J. Lee, H. J. Kim
2024 IEEE International Conference on Robotics and Automation (ICRA), 2024.
- [C4] Safety-Critical Control under Multiple State and Input Constraints and Application to Fixed-Wing UAV
D. D. Oh*, **D. Lee***, H. J. Kim
2023 IEEE Conference on Decision and Control (CDC), 2023.
- [C5] Minimally actuated tiltrotor for perching and normal force exertion
D. Lee, S. Hwang, C. Kim, S. J. Lee, H. J. Kim
2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023.
- [C6] Globally Defined Dynamic Modelling and Geometric Tracking Controller Design for Aerial Manipulator
B. Kim, **D. Lee**, J. Byun, H. J. Kim
2023 IEEE International Conference on Robotics and Automation (ICRA), 2023.
- [C7] Stability and robustness analysis of plug-pulling using an aerial manipulator
J. Byun, **D. Lee**, H. Seo, I. Jang, J. Choi, H. J. Kim
2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.
- [C8] Real-time motion planning of a hydraulic excavator using trajectory optimization and model predictive control
D. Lee*, I. Jang*, J. Byun, H. Seo, H. J. Kim
2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.
- [C9] Robust and Recursively Feasible Real-Time Trajectory Planning in Unknown Environments
I. Jang, **D. Lee**, S. Lee, H. J. Kim
2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.
- [C10] Aerial manipulation using model predictive control for opening a hinged door
D. Lee, H. Seo, D. Kim, H. J. Kim
2020 IEEE International Conference on Robotics and Automation (ICRA), 2020.

- [C11] Trajectory planning with safety guaranty for a multirotor based on the forward and backward reachability analysis
H. Seo, C. Y. Son, **D. Lee**, H. J. Kim
2020 IEEE International Conference on Robotics and Automation (ICRA), 2020.
- [C12] Cargo transportation strategy using T 3-Multirotor UAV
S. J. Lee, **D. Lee**, H. J. Kim
2019 IEEE International Conference on Robotics and Automation (ICRA), 2019.

MANUSCRIPTS UNDER REVIEW / IN PREPARATION

- [M1] Aerial physical interaction with robust stability guarantee against sudden collision and contact-loss
D. Lee, J. Byun, H. J. Kim
under review (journal submission).
- [M2] Autonomous Aerial Manipulation at Arbitrary Pose in SE(3) with Robust Control and Whole-body Planning
D. Lee^{*}, B. Kim^{*}, H. J. Kim
under review (journal submission).
- [M3] Switching control of underactuated multi-channel systems with input constraints for cooperative manipulation
D. Lee, D. V. Dimarogonas, H. J. Kim
under review (journal submission).

Invited Presentations

- **Robust Nonprehensile Aerial Manipulation** *Korea Institute for Advanced Study (KIAS), South Korea*
Feb 2025
2025 KIAS mini workshop on AI and Robotics
- **Nonprehensile pushing manipulation from pusher and object perspectives** *SeoulTech, South Korea*
Nov 2024
Robotics group in Dept. of mechanical system design engineering
- **Aerial physical interaction with a movable object** *German Aerospace Center (DLR), Germany*
Jul 2024
Flying robots group, institute of robotics and mechatronics
- **Aerial physical interaction with a possibly movable object** *KTH Royal Institute of Technology, Sweden*
Dec 2023
Distributed hybrid systems group (Online)

Skills

Programming C/C++, Matlab, Simulink, ROS, Python
Language Korean (native), English (proficient)
Tools Git, CAD(Solidworks, Onshape), Optimization Toolbox/Solver(Acados, CasADi, CPLEX)

Reference

- Prof. H. Jin Kim, Seoul National University, hjinkim@snu.ac.kr
- Prof. Dimos V. Dimarogonas, KTH Royal Institute of Technology, dimos@kth.se
- Prof. Seung Jae Lee, Seoul National University of Science and Technology, seungjae_lee@seoultech.ac.kr