

Dongjae Lee

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Education

Seoul National University

Ph.D. candidate in Aerospace Engineering

Seoul, South Korea

Sep 2020 – Feb 2025 (expected)

- Advisor: Prof. H. Jin Kim
- Research focus: aerial manipulation, robust/adaptive control, new platform design
- Cumulative GPA: 4.05/4.30

Seoul National University

M.S. in Mechanical and Aerospace Engineering

Seoul, South Korea

Sep 2018 – Aug 2020

- 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 National University

B.S. in Mechanical and Aerospace Engineering

Seoul, South Korea

Mar 2014 – Feb 2018

- Cumulative GPA: 3.82/4.30

Experiences

Visiting PhD student

KTH Royal Institute of Technology

Stockholm, Sweden

Apr 2024 – present

- Advisor: Prof. Dimos Dimarogonas
- Research focus: collaborative manipulation, event-triggered control

Online Education Mentor

Engineering Mathematics

Seoul, South Korea

HOLIX (former: Educast)

Dec 2017 – Jun 2018

Projects

Tiltrotor design and collaborative transportation

Ministry of Education (MoE)

South Korea

Jun 2022 – May 2023

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

Landscape inspection and motion planning for automating industrial excavator

Hyundai Construction Equipment (HCE)

South Korea

Feb 2020 – Dec 2022

- optimization-based motion planning & outdoor experiment

Precise aerial manipulation with autonomous drones

Ministry of Trade, Industry and Energy (MoTIE)

South Korea

Feb 2020 – May 2020

- outdoor experiment of cooperative aerial transportation

Development of specialized multirotor for transportation

Ministry of Trade, Industry and Energy (MoTIE)

South Korea

Jan 2019 – Dec 2019

- pick-and-place mechanism design & outdoor experiment

Honors

AWARDS

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] 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) 9.8 (2024) pp. 6999–7006. 2024.
- [J2] 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.
- [J3] 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.
- [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) 9.5 (2024) pp. 4854–4861. IEEE, 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) 8.9 (2023) pp. 5807–5814. IEEE, 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). IEEE, 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) 6 (2022) pp. 3379–3384. IEEE, 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) 6.2 (2021) pp. 723–730. IEEE, 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) 26.2 (2021) pp. 765–776. IEEE, 2021.

CONFERENCE PROCEEDINGS

- [C1] 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.
- [C2] 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.
- [C3] 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.
- [C4] 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.
- [C5] 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.
- [C6] 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.
- [C7] 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.
- [C8] 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.
- [C9] 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.
- [C10] 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.

- [C11] 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] Robust Omnidirectional Aerial Manipulation with Enlarged Workspace
D. Lee^{*}, B. Kim^{*}, H. J. Kim
under review (journal submission).
- [M3] Switching Law and Control for a class of Nonlinear Input-Affine Multi-Channel Systems with Partial Controllability
D. Lee, D. V. Dimarogonas, H. J. Kim
in preparation.
- [M4] Safety-Critical Control for Aerial Physical Interaction in Uncertain Environment
J. Byun, Y. Kim, **D. Lee**, H. J. Kim
under review (conference submission).

Invited Presentations

- **Aerial physical interaction with a movable object**
Flying Robots group, Institute of Robotics and Mechatronics
German Aerospace Center (DLR), Germany
Jul 2024
- **Aerial physical interaction with a possibly movable object**
Distributed Hybrid Systems Group (Online)
KTH Royal Institute of Technology, Sweden
Dec 2023

Academic Services

- Journal reviewer for IEEE RAL
2021–2024
- Journal reviewer for IEEE/ASME TMECH
2021, 2023
- Journal reviewer for IEEE TASE
2021, 2023–2024
- Journal reviewer for IEEE TAC
2024
- Journal reviewer for IEEE LCSS
2022
- Journal reviewer for IEEE ACCESS
2020
- Journal reviewer for Springer IJCAS
2019, 2021–2024
- Conference reviewer for IEEE ICRA
2020–2023
- Conference reviewer for IEEE IROS
2023

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