Dongjae Lee

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Research Interests: Robotics, Aerial Manipulation, Motion Planning, Robust Control, Optimal Control

Education

Seoul National University, Republic of Korea — Sep. 2020 – present
Ph.D. Student in Aerospace Engineering
· Advisor: Prof. H. Jin Kim
· Research Focus: aerial manipulation for a robot-enviroment interaction

Seoul National University, Republic of Korea — Sep. 2018 – Aug. 2020
M.S. in Mechanical and Aerospace Engineering
· Thesis: Opening a Hinged Door with an Aerial Manipulator using Model Predictive Control
· Advisor: Prof. H. Jin Kim

Seoul National University, Republic of Korea — Mar. 2014 – Feb. 2018
B.S. in Mechanical and Aerospace Engineering
· Cum Laude

Projects

Tiltrotor design and collaborative transportation, platform design & control — Jun. 2022 – present
Ministry of Education (MoE) Project, Role: PI

Excavator automation, optimization-based motion planning — Feb. 2020 – present
LARR-Hyundai Construction Equipment (HCE) Project, Role: Student researcher

Cooperative aerial transportation, outdoor experiment — Feb. 2020 – May. 2020
LARR-Ministry of Trade, Industry and Energy (MoTIE) Project, Role: Student researcher

Aerial transportation, platform design & outdoor experiment — Jan. 2019 – Dec. 2019
LARR-Ministry of Trade, Industry and Energy (MoTIE) Project, Role: Student researcher

Publications

T-Mech	IEEE/ASME Transactions on Mechatronics
RA-L	IEEE Robotics and Automation Letters
L-CSS	IEEE Control Systems Letters
ICRA	IEEE International Conference on Robotics and Automation
IROS	IEEE/RSJ International Conference on Intelligent Robots and Systems
ICCAS	International Conference on Control, Automation and Systems

INTERNATIONAL JOURNALS

Dongjae Lee, Jeonghyun Byun, and H. Jin Kim, "RISE-based trajectory tracking control of an aerial manipulator under uncertainty," L-CSS with CDC option, 2022.

Dongjae Lee, Hoseong Seo, Inkyu Jang, Seung Jae Lee, and H. Jin Kim, "Aerial Manipulator Pushing a Movable Structure using a DOB-based Robust Controller," RA-L with ICRA option, 2021. **IEEE ICRA 2021 Best Paper Award on Unmanned Aerial Vehicles - Winner**

Seung Jae Lee, **Dongjae Lee**, Junha Kim, Dabin Kim, Inkyu Jang, and H. Jin Kim, "Fully-Actuated Autonomous Flight of Thruster-Tilting Multirotor," T-Mech, 2021.

INTERNATIONAL CONFERENCES

Jeonghyun Byun, **Dongjae Lee**, Hoseong Seo, Inkyu Jang, Jeongjun Choi, and H. Jin Kim, "Stability and Robustness Analysis of Plug-Pulling using an Aerial Manipulator," IROS, 2021.

Dongjae Lee, Inkyu Jang, Jeonghyun Byun, Hoseong Seo, and H. Jin Kim, "Real-Time Motion Planning of a Hydraulic Excavator using Trajectory Optimization and Model Predictive Control," IROS, 2021.

Inkyu Jang, **Dongjae Lee**, Seungjae Lee, and H. Jin Kim, "Robust and Recursively Feasible Real-Time Trajectory Planning in Unknown Environments," IROS, 2021.

Inkyu Jang, **Dongjae Lee**, and H. Jin Kim, "Provably Safe Real-Time Receding Horizon Trajectory Planning for Linear Time-Invariant Systems," ICCAS, 2020. **Outstanding Paper Award - Winner**

Jeonghyun Byun, **Dongjae Lee**, H. Jin Kim, and Hyeonbeom Lee, "On-line Parameter Estimation of a Hexacopter Equipped with 2-DOF Robotic Arm against Disturbance," ICCAS, 2020.

Dongjae Lee, Hoseong Seo, Dabin Kim, and H. Jin Kim, "Aerial manipulation using Model Predictive Control for Opening a Hinged Door," ICRA, 2020.

Hoseong Seo, Clark Youngdong Son, **Dongjae Lee**, and H. Jin Kim, "Trajectory Planning with Safety Guaranty for a Multirotor based on the Forward and Backward Reachability Analysis," ICRA, 2020.

Dongjae Lee, Dohyun Jang, Hoseong Seo, and H. Jin Kim, "Model predictive control for an aerial manipulator opening a hinged door," ICCAS, 2019.

Seung Jae Lee, **Dongjae Lee**, and H. Jin Kim, "Cargo Transportation Strategy using T3-Multirotor UAV," ICRA, 2019.

Honors, awards, scholarships

- BK Enhancing Diversity in Graduate Education Fellowship — Nov. 2021 – May 2022
- IEEE ICRA Best Paper Award on Unmanned Aerial Vehicles — Jun. 2021
- ICCAS Outstanding Paper Award — Oct. 2020
- Brain Korea 21 (BK21) Scholarship — Sep. 2018 – present
- Lecture & Research Scholarship — Sep. 2020 – Dec. 2020
- National Scholarship for Science and Engineering — Feb. 2016

Experiences

Teaching Assistant, Seoul National University — Sep. 2018 – Dec. 2018
Introductory Engineering Probability

Research Internship, Seoul National University — Apr. 2018 – Aug. 2018
Laboratory for Autonomous Robotics Research (LARR)

Skills

Programming	C/C++, Matlab, Simulink, ROS
Languages	Korean (native), English (proficient)
Tools	Vim, Git, Solidworks, Onshape

Last update: September 8, 2022