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

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

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

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

Publications

T-Mech	IEEE/ASME Transactions on Mechatronics
RA-L	IEEE Robotics and Automation 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, 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. (accepted)

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. (accepted)

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

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

- 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: July 2, 2021