# Jeonghyun Byun

PHD STUDENT

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## Education

**Seoul National University**                                                    *Seoul, Republic of Korea*

PHD AEROSPACE ENGINEERING                                                              *2020.03.02 -*

- GPA: 3.98 / 4.3
- Advisor: H. Jin Kim

**Seoul National University**                                                    *Seoul, Republic of Korea*

BS AEROSPACE ENGINEERING                                                      *2016.03.02 - 2020.02.26*

- GPA: 4.05 / 4.3
- Dissertation: Simulation of the object grabbing using a hexacopter with a 2-DOF robotic arm
- Advisor: H. Jin Kim

## Publications

### INTERNATIONAL JOURNALS

**Jeonghyun Byun**[1], Junha Kim, Dohyun Eom, Dongjae Lee, Changhyeon Kim, H. Jin Kim. Imaged-Based Time-Varying Contact Force Control of Aerial Manipulator using Robust Impedance Filter. IEEE Robotics and Automation Letters (RA-L), 2024.

**Jeonghyun Byun**[1], Inkyu Jang, Dongjae Lee, H. Jin Kim. A Hybrid Controller Enhancing Transient Performance for an Aerial Manipulator Extracting a Wedged Object. IEEE Transactions on Automation Science and Engineering (T-ASE), 2023.

Dongjae Lee[1] **Jeonghyun Byun**, H. Jin Kim. RISE-based trajectory tracking control of an aerial manipulator under uncertainty. IEEE Control Systems Letters (L-CSS), 2022.

### INTERNATIONAL CONFERENCES

**Jeonghyun Byun**[1], Dohyun Eom, H. Jin Kim. Haptic-Based Bilateral Teleoperation of Aerial Manipulator for Extracting Wedged Object with Compensation of Human Reaction Time. 2024 International Conference on Unmanned Aircraft Systems (ICUAS).

Dongjae Lee[1], Sunwoo Hwang, **Jeonghyun Byun**, H. Jin Kim. Autonomous Aerial Perching and Unperching Using Omnidirectional Tiltrotor and Switching Controller. 2024 International Conference on Robotics and Automation (ICRA).

Inkyu Jang[1], Sunwoo Hwang, **Jeonghyun Byun**, H. Jin Kim. Safe Receding Horizon Motion Planning with Infinitesimal Update Interval. 2024 International Conference on Robotics and Automation (ICRA).

**Jeonghyun Byun**[1], H. Jin Kim. Force-Tracking Performance Enhancing Hybrid Motion/Force Controller for Multirotor-Based Aerial Manipulator. 2023 23rd International Conference on Control, Automation and Systems (ICCAS).

Dohyun Eom[1], **Jeonghyun Byun**, H. Jin Kim. Robust Attitude Stabilization of Quadrotor via Adaptive Control based on Quaternion. 2023 23rd International Conference on Control, Automation and Systems (ICCAS).

**Jeonghyun Byun**[1], Byeongjun Kim, Changhyeon Kim, Donggeon David Oh, H. Jin Kim. Stable Contact Guaranteeing Motion/Force Control for an Aerial Manipulator on an Arbitrarily Tilted Surface. 2023 International Conference on Robotics and Automation (ICRA).

Byeongjun Kim[1], Dongjae Lee, **Jeonghyun Byun**, H. Jin Kim. Globally Defined Dynamic Modelling and Geometric Tracking Controller Design for Aerial Manipulator. 2023 International Conference on Robotics and Automation (ICRA).

Donggeon David Oh[1], **Jeonghyun Byun**, Dongjae Lee. Real-Time Trajectory Generation of a Quadrotor UAV with Load Suspended from a Pulley. 2022 21th International Conference on Control, Automation and Systems (ICCAS).

**Jeonghyun Byun**[1], H. Jin Kim, Miso Kwon. Hybrid motion/force control of the aerial manipulator without information on the added equipment. 2022 13$^{\text{rd}}$ Asian Control Conference (ASCC 2022).

**Jeonghyun Byun**[1], H. Jin Kim. Robust Control of the Aerial Manipulator with a Fixed End-effector Position. 2021 20th International Conference on Control, Automation and Systems (ICCAS). **Presented in Award Session**

Dongjae Lee[1], Inkyu Jang[1], **Jeonghyun Byun**, Hoseong Seo, H. Jin Kim. Real-Time Motion Planning of a Hydraulic Excavator using Trajectory Optimization and Model Predictive Control. 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

**Jeonghyun Byun**[1], Dongjae Lee, Hoseong Seo, Inkyu Jang, Jeongjun Choi, H. Jin Kim. Stability and Robustness Analysis of Plug-Pulling using an Aerial Manipulator. 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

**Jeonghyun Byun**[1], Dongjae Lee, H. Jin Kim, Hyeonbeom Lee. On-line Parameter Estimation of a Hexacopter Equipped with 2-DOF Robotic Arm against Disturbance. 2020 20th International Conference on Control, Automation and Systems (ICCAS).

### Domestic Conferences

**변정현**, 김현진, "무인비행체를 통한 물리적 상호작용 과정에서의 천이 및 정상 상태 성능을 높이는 1차원 모션/힘 제어기", 한국항공우주학회 2023춘계학술대회, April 19-21, 2023.

# Honors

### Awards

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|---|---|
| 2022.11 | **Incentive Award, Aerospace Paper Award**, Korea Aerospace Industries, LTD. |
| 2020.02 | **Award Certificate**, Department of Aerospace Engineering, Seoul National University |
| 2020.02 | **Summa Cum Laude**, Seoul National University |
| 2018.09 | **Honorable Mention, 7th SNU Creative Design Fair**, College of Engineering, Seoul National University |
| 2017.09 | **Honorable Mention, 6th SNU Creative Design Fair**, College of Engineering, Seoul National University |

### Fellowships

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| 2021.11 – 2022.02 | **BK21 Excellent Research Talent Fellowship**, BrainKorea21PLUS |
| 2020.03 – 2020.08 | **BK21 PLUS Doctoral Fellowship**, BrainKorea21PLUS |
| 2019.03 – 2020.02 | **Eminence scholarship**, Seoul National University |
| 2018.11 | **KAI-KSAS Scholarship**, Korean Aerospace Industry & Korean Society for Aeronautical and Space Sciences |
| 2018.03 – 2019.02 | **Sinyang Cultural Foundation Scholarship**, Sinyang Cultural Foundation |
| 2017.03 – 2018.02 | **Eminence scholarship**, Seoul National University |
| 2016.09 – 2017.02 | **Merit Based scholarship**, Seoul National University |

# Teaching Experience

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|---|---|
| 2021.03 - 2021.06 | **Tutor, Engineering Maths 1, Seoul National University**, Solved some difficult problem sets |
| 2020.09 - 2020.12 | **Teaching Assistant, Introductory Engineering Probability, Seoul National University**, Developed scoring criteria for the exams |
| 2020.09 - 2020.12 | **Tutor, Physics 2, Seoul National University**, Solved some difficult problem sets |
| 2020.03 - 2020.06 | **Teaching Assistant, Engineering Maths 1, Seoul National University**, Developed scoring criteria for the exams |
| 2017.03 - 2018.06 | **Tutor, Physics, Seoul National University**, Solved some difficult problem sets |

# Outreach & Professional Development

## SERVICE AND OUTREACH

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| 2023 | **Laboratory for Autonomous Robotics Research (LARR)**, Laboratory Leader |

# Skills

**Programming:** C/C++, MATLAB

**Language:** Korean (native), English (proficient), French (elementary)

**Tools:** Git, ROS, Arduino, Fusion360, Onshape