

Juyeop Han

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Research Interest

- **Guaranteeing safety and verification** in fields of robotics and machine learning
- **Integrating theoretical and practical approaches** for real-world application in robotics
- General and fundamental **research applicable to various fields** such as robotics, control theory, machine learning, and optimization

Education

Korea Advanced Institute of Science and Technology (KAIST)

MASTER'S STUDENT IN AEROSPACE ENGINEERING

- GPA: 3.92/4.0

Daejeon, S.Korea

Mar. 2021 - Present

Seoul National University (SNU)

B.S. IN MECHANICAL ENGINEERING

- GPA: 3.83/4.0, **Summa Cum Laude**
- Leave of Absence for Mandatory Military Service (2017 - 2019)

Seoul, S.Korea

Mar. 2015 - Feb. 2021

Publications

- [C3] **J. Han***, Y.Min*, B.Jeong, H.Chae and H.Choi. "DS-K3DOM: 3-D Dynamic Occupancy Grid Mapping with Kernel Inference and Dempster-Shafer Evidential Theory" (*equal contribution) *International Conference on Robotics and Automation (ICRA), 2023 (Accepted)*. [[preprint](#)] [[code](#)]
- [C2] **J. Han**, and H.Choi. "Computation of Tight Forward Reachable Set for a Multirotor based on the Nonlinear Adaptive Controller" *American Control Conference (ACC), 2023 (Accepted)*. [[preprint](#)]
- [C1] **J. Han**, M. Tahk, and H. Choi, "Pseudospectral method-based safe motion planning for quadrotors in a cluttered environment" *AIAA Science and Technology Forum (Scitech), 2022*. [[paper](#)]

Research Experience

Autonomous Decision and Control Lab, CU Boulder

VISITING SCHOLAR | ADVISOR: PROF. ZACHARY SUNBERG

- developing decision making algorithm of control system with temporal logic and reachability

Boulder, CO

OCT. 2022 - Present

Lab for information and Control Systems, KAIST

RESEARCH ASSISTANT | ADVISOR: PROF. HAN-LIM CHOI

- Proposed algorithm for kernel-based 3-dimensional dynamic occupancy grid map (DS-K3DOM) [C3]
- Proposed method for real-time computation of tighter forward reachable set (FRS) of multirotor [C2]
- Planned optimal trajectory in cluttered environment for quadrotors [C1]
- installed sensors to hardware equipment for research projects funded by [KI-Robotics](#) and [ADD](#)
- maintained motion capture system in [KARPE](#)

Daejeon, S.Korea

Jan. 2021 - Present

Innovative Design and Integrated Manufacturing Lab, SNU

RESEARCH INTERN | ADVISOR: PROF. SUNG-HOON AHN

- Conducted thesis research on planning path and object recognition of 6 DOF robot actuator for surface cleaning

Seoul, S.Korea

Jun. 2020 - Aug. 2020

Review Activities

- IEEE Control System Letters (L-CSS), 2022

Skills

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| Programming | C/C++, Python, MATLAB |
| Libraries & Tools | ROS, CUDA, Pytorch, LaTeX, SolidWorks |
| Languages | Korean (Native), English (Fluent, 2 years in U.S. military, GRE 157/168/3.5, TOEFL MyBest 100) |

Honors & Awards

SCHOLARSHIPS

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| 2023 - 2025 Korean Government Scholarship for Ph.D Program , USD 40,000 per year, Government of S. Korea | <i>the U.S.</i> |
| 2021 - 2023 Government-Funded Scholarship , 90% Tuition, KAIST | <i>Daejeon, S.Korea</i> |
| Sp. 2020 SNU Alumni-Funded Scholarship , Full Tuition, SNU Alumni Foundation | <i>Seoul, S.Korea</i> |
| 2015 - 2017 Merit-Based Scholarship , {50%, Full × 2, 33%} Tuition, SNU and SNU Foundation | <i>Seoul, S.Korea</i> |

AWARDS

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| Dec. 2019 Outstanding Award , SNU ME Materials and Manufacturing Process Course | <i>Seoul, S.Korea</i> |
| Jun. 2016 Participation Award , Seoul Hackathon, Administration of Seoul | <i>Seoul, S.Korea</i> |
| Dec. 2015 Creative Award , SNU ME Creative Engineering Design Course | <i>Seoul, S.Korea</i> |

Extracurricular Activity

2nd Infantry Divison, US Army

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| UNIT SUPPLY SPECIALIST, SERGEANT | <i>Pyeongtaek, S.Korea</i> |
| <ul style="list-style-type: none">Served in military as Korean augmentation to the United States army(KATUSA) agent.Managed unit supply in air ambulance company.Partly was in charge of COC (Change of Command) inspection and ARMS inspection | <i>Nov. 2017 – Aug. 2019</i> |

DALISHA (SNU Running Crew)

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| LEADERSHIP MEMBER | <i>Seoul, S.Korea</i> |
| <ul style="list-style-type: none">Led running during COVID-19.Managed accounting in the crew. | <i>Sep. 2018 - Feb. 2021</i> |