

# Juyeop Han

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## Research Interest

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- **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

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### 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

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- [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 (Submitted)*. [[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

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### 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

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

## Skills

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

## Honors & Awards

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### SCHOLARSHIPS

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

### AWARDS

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

## Extracurricular Activity

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### 2nd Infantry Divison, US Army

UNIT SUPPLY SPECIALIST, SERGEANT

- 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

### DALISHA (SNU Running Crew)

LEADERSHIP MEMBER

- Led running during COVID-19.
- Managed accounting in the crew.

*Pyeongtaek, S.Korea*

*Nov. 2017 – Aug. 2019*

*Seoul, S.Korea*

*Sep. 2018 - Feb. 2021*