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) — *Daejeon, S.Korea*

Master's Student in Aerospace Engineering — *Mar. 2021 - Present*

- GPA: 3.92/4.0

Seoul National University (SNU) — *Seoul, S.Korea*

B.S. in Mechanical Engineering — *Mar. 2015 - Feb. 2021*

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

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* **(Submitted)**. [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

Autonomous Decision and Control Lab, CU Boulder — *Boulder, CO*

Visiting Scholar | Advisor: Prof. Zachary Sunberg — *OCT. 2022 – Present*

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

Lab for information and Control Systems, KAIST — *Daejeon, S.Korea*

Research Assistant | Advisor: Prof. Han-Lim Choi — *Jan. 2021 – Present*

- 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

Innovative Design and Integrated Manufacturing Lab, SNU — *Seoul, S.Korea*

Research Intern | Advisor: Prof. Sung-Hoon Ahn — *Jun. 2020 – Aug. 2020*

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

Review Activities

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

Skills

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

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

Awards

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

Extracurricular Activity

2nd Infantry Divison, US Army *Pyeongtaek, S.Korea*
Unit Supply Specialist, Sergeant *Nov. 2017 – Aug. 2019*

- 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) *Seoul, S.Korea*
Leadership member *Sep. 2018 - Feb. 2021*

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