

Jeeho Ahn

Applying for **Ph.D. in Robotics**
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EDUCATION

- Korea University** Mar 2016 – Aug 2018
M.S. in Electrical and Computer Engineering Seoul, Korea
- Thesis: Guidance Points Generation for Autonomous Mobile Robot Navigation for RGB-D Mapping using CNN-based Machine Learning
 - Advisor: Prof. A
 - Focus: Mobile Robot Navigation, SLAM
- Korea University** Mar 2011 – Dec 2015
B.S. in Electrical Engineering Seoul, Korea
- Cumulative GPA: 0.00 / 0.00 (GPA is optional. Only put this if confident)

PUBLICATIONS

UNDER PREPARATION

- J. Ahn, S. Lee, and C. Nam “Ordered sorting of cluttered objects using multiple mobile manipulators,” in *IEEE International Conference on Robotics and Automation (ICRA)*, under review [arXiv]
- S.H Cheong, J. Ahn, C. Kim, and C. Nam “Object rearrangement inside cluttered and confined spaces for robotic manipulation,” in *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, under revision

PUBLISHED

- J. Ahn, C. Kim, and C. Nam “Coordination of two robotic manipulators for object retrieval in clutter,” in *IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, USA, 2022 [xPlore]
- J. Ahn, J. Lee, S.H. Cheong, C. Kim, and C. Nam “An integrated approach for determining objects to be relocated and their goal positions inside clutter for object retrieval,” in *IEEE International Conference on Robotics and Automation (ICRA)*, Xi’an, China, 2021 [xPlore]
- U. Rakhman, J. Ahn, and C. Nam “Fully automatic data collection for neuro-symbolic task planning for mobile robot navigation,” in *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Melbourne, Australia, 2021 [xPlore]

HONORS & AWARDS

- DARPA Robotics Challenge Finals 12th Place, DARPA 2015
Team SNU has achieved 12th place out of 24 participating groups
- Best UCC Award, Software Friendship, Samsung Electronics 2015
For presenting the best video on engineering activities [YouTube]
- Gold Prize, International Capstone Design Fair 2014, Korea University 2014
For presenting a motion-capturing “goal-keeper” robot
- Accepted, Software Friendship, Samsung Electronics 2014
\$7,500+ Financial Support for engineering activities. Only 25 groups were selected nationally based on proposals

RESEARCH EXPERIENCE

- Research Staff**, Sogang University May 2022 – Present
AI Robotics Lab. Seoul, Korea
- Focus: Multi-Robot Systems, Mobile Manipulators, RL-based Manipulation.
 - Submitted a conference paper on collaboration of multiple mobile manipulators
 - Participating in a RL-based manipulation project
 - Advisor: Prof. B
- Researcher**, Korea Institute of Science and Technology Sep 2020 – Nov 2021
Interactive Task and Motion Planning Lab. Seoul, Korea
- Focus: Task and Motion Planning, Manipulation
 - Published three conference papers on task and motion planning and coordination of multiple manipulators
 - Developed multi-agent path planner and task-allocator for multi-robot warehouse project
 - Designed and implemented a new hand-eye calibration model for a depth camera, which showed higher accuracy compared to a conventional RGB camera method
 - Supervisors: Dr. C and Dr. D

WORK EXPERIENCE	Research Engineer , CMES Inc. Sep 2018 – Sep 2020 Startup company specialized in Factory Automation using 3D Vision
	<ul style="list-style-type: none"> ▪ Designed and developed manufacturing automation solutions using 3D scans tailored to each manufacturing process, delivered them to LG Electronics and Hyundai Motor Company ▪ Developed and delivered a fully automated precise assembly system for large-sized curved display components for vehicles with errors less than 0.1 mm, which was known to be the first in the industry ▪ Designed a simulation software for sealant dispensing in automobile manufacturing, which sought to improve the process efficiency significantly
	Research Engineer , TEELABS Mar 2018 – Jul 2018 Startup company specialized in 3D SLAM
	<ul style="list-style-type: none"> ▪ Developed an autonomous navigation software of a mobile robot for indoor scanning purposes ▪ Designed the hardware attachments for a mobile robot that rigidly hold necessary sensors for autonomous navigation
INTERNSHIPS	Korea Institute of Science and Technology Apr 2016 – Oct 2017 Center for Robotics Seoul, Korea
	<ul style="list-style-type: none"> ▪ Participated in a project of building an autonomous service robot as a graduate student intern ▪ Developed an autonomous indoor navigation system
	Seoul National University Jan 2015 – Feb 2015 Dynamic Robotic Systems Lab. Suwon, Korea
	<ul style="list-style-type: none"> ▪ Participated in DARPA Robotics Challenge as a team member of Team SNU <ul style="list-style-type: none"> • Advisor: Prof. Jaeheung Park
	Korea University Mar 2015 – Feb 2016 Perceptual Robotics Lab. Seoul, Korea
	<ul style="list-style-type: none"> ▪ Developed a continuously spinning 2D LiDAR hardware for acquiring dense 3D point clouds for 3D SLAM, demonstrated at IROS 2015 ▪ Developed the hardware for a RGB-D system with a 2D LiDAR and a RGB camera that are to be calibrated ▪ Exhibited an autonomous mobile robot at CES 2018 in Las Vegas, USA as a part of the technology transfer to TEELABS <ul style="list-style-type: none"> • Advisor: Prof. Nakju Doh
	ROBOTIS Jul 2014 – Aug 2014 Robotic actuator and robot platform company Seoul, Korea
	<ul style="list-style-type: none"> ▪ Assisted a team in inspecting control performances of its commercialized actuators
LEADERSHIP	DRIMLInER Project , DRIM Feb 2014 – Nov 2016 Co-Founder, Developer, and Project Organizer [YouTube]
	<ul style="list-style-type: none"> ▪ Organized the whole project from technical development to hosting a contest of creative ideas ▪ Demonstrated an effective way to resolve the "study-first-think-later" problem in the public education in Korea ▪ Developed a robotics kit from PCB level that is mass-production ready which cost \$20 per student ▪ The students found it far more assistive than what the public education system offers ▪ Over the three years of the project, we were able to accept 200+ participants out of 500+ applicants ▪ Raised fund from multiple organizations so we can offer it for free of charge ▪ Introduced on local media, including a monthly robotics magazine, school newspapers, [Magazine] and others [KU News]
	KAsimov , Korea University Mar 2011 – Dec 2015 President 2014 Board Member 2013 - 2015
	<ul style="list-style-type: none"> ▪ A robotics club at Korea University where students from various majors actively collaborate ▪ Raised \$10,000+ fund as the president from multiple organizations with the prosperous future plans, including DRIMLInER Project ▪ Accepted to be one of 25 Samsung Software Friendship member as a student club with most successful history of achievements and promising visions in Korea ▪ Developed a portable cooling container for an eye-drop specifically made from blood serum of a student suffering from a rare ophthalmic disease to free him from refrigerators

- Interviewed about 3D printings on The Granite Tower, KU's magazine written in English [GT]

OTHER WORK EXPERIENCE

- **Calibration Method for Multiple Depth Cameras from 3D Point Clouds** Dec 2021 – Mar 2022
Freelance Engineer
Delivered to a research group at Inha University
 - Outsourced project of designing a multi-scanner system with precise extrinsic calibrations

SKILLS

- Languages: C/C++, Python, C#, JavaScript, JAVA, MATLAB
- OS: Linux, Windows
- Frameworks: ROS, Unity, Qt, TensorFlow, PyTorch
- Libraries: Point Cloud Library(PCL), OpenCV, Ceres, Eigen, NumPy
- Design Tools: SolidWorks, FreeCAD, Ultiboard(PCB), MeshLab
- Robots: UR / ABB / KUKA / KAWASAKI / FRANKA manipulators, Clearpath Husky, Pioneer 3-DX
- Electrical Skills: Soldering, Circuit Design
- Other: L^AT_EX, Arduino, Raspberry Pi, DYNAMIXEL

PATENTS

- Method, System, and Program for Optimizing 3D Scanner Transformations from 3D Scan Data
Korean Patent 10-2022-0128592 · Filed on Oct 7, 2022
- Task and Motion Planning Method, System and Program for Rearranging Objects using Multiple Manipulators
Korean Patent 10-2022-0081612 · Filed on Jul 4, 2022

SERVICES

- Military Service at ROK Army Oct 2018 – Nov 2021
Fulfilled the mandatory military service in ROK Army as a researcher
Currently in military reserve status
- Voluntary Interpreter Aug 2015
Participated in WorldSkills 2015, a world championship of vocational skills, as a voluntary Korean-English interpreter
- Voluntary English Tutor Apr 2015
Volunteered for an English tutor for students of low-income families in Seoul

LANGUAGES

- **Korean:** Native language
- **English:** Professional Proficiency
- **Vietnamese:** Elementary Proficiency

REFERENCES

- **Professor A**
Professor, Institute of Convergence Science
Korea University
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mailto:recommender1@email.com
- **Professor B**
Assistant Professor, Electronic Engineering
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- **Dr. C**
Principal Researcher, AI Robotics Institute
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[CV compiled on 2023-11-13]