

# Byoungkwon Yoon

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**Research Interests:** Field Mobile Robot, Robot Perception, Mobile Robot Navigation, Multi-Robot System

## EDUCATION

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**Seoul National University**, Seoul, South Korea  
Master's Degree in Mechanical Engineering  
Concentrated on: Mobile robot, Perception, State estimation

2023.03 ~ 2025.02  
Cumulative GPA: 3.94/4.3

**Korea National University**, Seoul, South Korea  
Bachelor's Degree in Mechanical Engineering

2017.03 ~ 2023.02 (including military service)  
Cumulative GPA: 4.03/4.5

## PUBLICATIONS

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### Journal paper

- **B. Yoon**, S. Hong, D. Lee. Directional Correspondence Based Cross-Source Point Cloud Registration for USV-UAV Cooperation in Wild Outdoor. *IEEE Robotics and Automation Letters*, Under review.
- W. Lee, **B. Yoon (Co-first)** et al. Machine Learning-Aided Three-Dimensional Morphological Quantification of Angiogenic Vasculature in the Multiculture Microfluidic Platform. *BioChip J.* 17, 357–368 (2023). Published

### Conference

- T. Kim, **B. Yoon**, D. Lee. UWB-Based Localization System Considering Antenna Anisotropy and NLOS/Multipath Conditions. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2024*. Published
- T. Kim, **B. Yoon**, D. Lee. UWB-Based Localization System Considering Antenna Anisotropy and NLOS Conditions. *Institute of Control, Robotics and Systems (ICROS) 2024*. Published

## RESEARCH EXPERIENCE

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### Cross-Source Point Cloud Registration for USV-UAV Cooperation in Wild Outdoor

Research Project, Under Review

2023 ~ 2024

- Addressed challenges occurring when matching pointclouds collected from heterogeneous multi-robots, especially in unstructured wild environments.

### Control and Planning of USV in inland water environment

Government-Funded Project

2023 ~ 2025

- Build path planning and control system of USV to clean green algae in inland water environments.
- Develop visual data process pipeline and software.

### RGB-D based object detection and spray coat path generation

Industry-Funded Project

2024 ~ ongoing

- Introduce RGB-D and object model based classification and pose estimation pipeline of real-world objects.
- Develop optimal path planning algorithm for spray coat.

### Robust Control and Planning of USV

Government-Funded Project

2024

- Built robust control of USV under actuator failure.

### Indoor Localization of UAV using UWB

Research Project, Published

2022 ~ 2023

- Designed and tested indoor localization system of micro-sized UAV using ultra-wide band (UWB).
- Developed UWB distancing model, UWB software and hardware for testing.

## Machine Learning based Pointcloud Segmentation of Vascular Image

*Undergraduate Project, Published*

2020 ~ 2022

- Developed 3D analysis method of vascular image to identify cancer based on pointcloud.
- Built PointNet based segmentation pipeline with supervised learning.

## HONORS AND AWARDS

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### Scholarship

- Undergraduate Scholarship, Songam Foundation

2017 ~ 2022

### Awards

- Best student award
- Best student award

2022

2021

## PROFESSIONAL EXPERIENCES

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### Anteron (Startup Company)

*Hardware Engineer*

Seoul, South Korea

2023 ~ 2024.01

- Device design
- Control theory of device
- Embedded software development

## OTHER EXPERIENCES

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### Student exchange program at University of Wisconsin-Madison

*Mechanical Engineering Department*

Wisconsin, USA

Spring 2022

### Republic of Korea Air Force

*Sergeant, honorable discharge*

Gyeonggi-do, South Korea

2018 ~ 2020

## SKILLS

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- **Programming:** C/C++; MATLAB; Python
- **Software:** ROS
- Dynamics; Control Theory; Navigation; Computer Vision
- Language: TOEFL iBT - Total 104

## REFERENCES

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### Professor Dongjun Lee (Current Advisor)

*Professor, Department of Mechanical Engineering, Seoul National University, Seoul, Republic of Korea*

E-mail: djlee@snu.ac.kr

### Professor Noo Li Jeon (Undergraduate research Advisor)

*Professor, Department of Mechanical Engineering, Seoul National University, Seoul, Republic of Korea*

E-mail: njeon@snu.ac.kr

### Dr. Hai-Nguyen Nguyen (Previous lab Co-researcher)

*Lecturer, Department of Robotics and Mechatronics Engineering, Royal Melbourne Institute of Technology Vietnam, Ho Chi Minh, Vietnam*

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