

Haebeom Jung

MS/PHD INTEGRATED STUDENT

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Research Interests

Sensor Calibration, Novel View Synthesis, 3D reconstruction

Education

Seoul National University

PH.D. STUDENT IN ARTIFICIAL INTELLIGENCE

- **Current GPA:** 4.02/4.30
- A member of the SNU VGI Lab (Advisor: Prof. Jaesik Park)
- Got a full scholarship for 4 semesters.

Seoul, S.Korea

Sep. 2023 - Current

KwangWoon University

B.S. IN DIVISION OF ROBOTICS

- **GPA:** 3.81/4.50, **Major GPA:** 3.93/4.50
- Got a full scholarship for 6 semesters.

Seoul, S.Korea

Mar. 2016 - Feb. 2023

Working Experience

POSTECH

RESEARCH INTERN

- Participate in "Development of high-performance matching techniques for non-equal pointcloud" an industry-academic task. (Advisor: Prof. Jaesik Park)

Seoul, S.Korea

Sep. 2022 - Jun. 2023

Kakao Mobility

SOFTWARE · ROBOTICS ENGINEER (FULL-TIME)

- Developed self-driving car data collection program.
- Research on Visual SLAM & Localization.

Pangyo, S.Korea

Dec. 2021 - Apr. 2022

Stryx

SOFTWARE · ROBOTICS ENGINEER (COMPULSORY MILITARY SERVICE)

- Lead engineer on hardware business headquarters software team.
- Developed sensor data collection program for MMS(mobile mapping system).
- Research and development unmanned ground vehicle autonomous driving system.(SLAM, Localization, Sensor Fusion, Path Planning)

Seoul, S.Korea

Dec. 2019 - Dec. 2021

ROBOTIS

ROBOTICS ENGINEER (INTERN)

- Verified 'ROBOTIS Open Manipulator' before it was released as an open source.
- Made example of 'ROBOTIS Open Manipulator SARA' and uploaded on youtube.

Seoul, S.Korea

Jan. 2019 - Feb. 2019

Publications

Metropolis-Hastings Sampling for 3D Gaussian Reconstruction

HYUNJIN KIM, **HAEBEOM JUNG**, AND JAESIK PARK

NeurIPS 2025, San Diego

Dec. 2025

Targetless LiDAR-Camera Calibration with Neural Gaussian Splatting

HAEBEOM JUNG, NAMTAE KIM, JUNGWOO KIM, AND JAESIK PARK

arXiv:2504.04597 (Under Review)

Apr. 2025

Patents

Device and Method for Targetless LiDAR-Camera Calibration

HAEBEOM JUNG, NAMTAE KIM, AND JAESIK PARK

Application No. 10-2025-0067792

Seoul National Univ., S.Korea

May. 2025

Method of estimating the location of a moving object using vector map

YESUNG HWANG, **HAEBEOM JUNG**, JEONGMIN KANG, ILSUK PARK, SEUNGKWAN SONG, AND SEUNGHWAN HONG

Registration No. 10-2624-6440000

Kakao Mobility, S.Korea

Jan. 2024

Awards

AWARDS

INTERNATIONAL

- | | | |
|------|--|------------------|
| 2018 | 3rd Place , ROBOCUP CANADA, KidSize Humanoid Technical Challenge [Video] | Montreal, Canada |
| 2017 | 4th Place , ROBOCUP IRAN, KidSize Humanoid Soccer [Video] | Tehran, Iran |

DOMESTIC

- | | | |
|------|--|-----------------|
| 2018 | 3rd Place , R-BIZ Challenge, Turtlebot3 Autorace (\$300) [Video] | Ilsan, S.Korea |
| 2018 | 2nd Place , IRC, Intelligence Humanoid Robot Sports (\$1,000) | Ilsan, S.Korea |
| 2017 | Winner , IRC, Intelligence Humanoid Robot Sports (\$2,000) [Video] | Ilsan, S.Korea |
| 2017 | Winner , ROBOCUP KOREA, Intelligence Humanoid Soccer | Dae-gu, S.Korea |
| 2016 | 3rd Award , KIRO, Future-Robot Idea presentation (\$1,000) | Pohang, S.Korea |

HONORS

- | | | |
|------|--|---------------------|
| 2019 | Outstanding Mentor , 2019 Samsung Electronics Junior Software Creation Contest | Samsung Electronics |
| 2017 | Achievement Award , Spread the name of KwangWoon University throughout the year | KwangWoon Univ. |

SCHOLARSHIPS

- | | | |
|-----------|---|----------------------|
| 2023-2025 | Full scholarship , AI Fellowship | Seoul National Univ. |
| 2017-2019 | Full scholarship , Robotics Competition Team | KwangWoon Univ. |

Fundings

Photo-Realistic Rendering for Surrounding Dynamic Mobile Scenes

MASTER'S RESEARCH FELLOWSHIP PROGRAM

Ministry of Education, S.Korea.

Jul. 2024 - Jun. 2025

Artificial Intelligence Graduate School Program

SEOUL NATIONAL UNIVERSITY, IPAI

Ministry of Science and ICT, S.Korea.

Sep. 2023 - Jul. 2025

Skills

- | | |
|--------------------|-----------------------|
| Programming | Python, C/C++, JAVA |
| Framework | Pytorch, ROS/ROS2, Qt |
| Languages | Korean, English |

Projects

Centimeter-Accurate Spatial Reconstruction Using Unstructured Imagery.

SEOUL NATIONAL UNIV. - GRADUATE STUDENT

Participation rate - 100%

Sep. 2023 - Current

- Project of Ministry of Science and ICT · IITP
- Reconstructed textured 3D meshes from ground-aerial image pairs with less than 50% overlap, utilizing novel view synthesis (NVS) for 3D reconstruction followed by mesh generation.

Photo-Realistic Rendering for Surrounding Dynamic Mobile Scenes.

SEOUL NATIONAL UNIV. - GRADUATE STUDENT

Participation rate - 100%

Jul. 2024 - Jun. 2025

- Project of Ministry of Education
- Rendered high-quality 3D scenes from omnidirectional camera data containing dynamic objects, leveraging accurate poses estimated via LiDAR-camera calibration.

Development of Driving Environment Data Transformation and Data Verification Technology for the Mutual Utilization of Self-driving Learning Data for Different Vehicles.

KAKAO MOBILITY - ROBOTICS ENGINEER

Participation rate - 80%

Jun. 2021 - Dec. 2021

- Project of Ministry of Science and ICT
- Developed the sensor geometry visualization 3D tool using ROS Rviz & QT. Position and orientation for each sensor were displayed on UI, and FOV was visualized on 3d world.

Development of AI Service Integrated Framework for Autonomous Driving.

Participation rate - 60%

KAKAO MOBILITY - ROBOTICS ENGINEER

Jun. 2021 - Dec. 2021

- Project of Ministry of Science and ICT
- Developed a multi-sensor convergence data collection system.

Mobile Robot Autonomous Driving System

Participation rate - 70%

STRYX - SENIOR RESEARCHER

Oct. 2020 - Dec. 2021

- Customizing open source slam package and implemented on our system with sensor calibration such as IMU, LiDAR and camera.
- Implemented real-time 3d localization algorithms using 3d LiDAR. It first estimates the sensor pose from IMU data implemented on the LiDAR, and then performs multi-threaded NDT scan matching between a global map pointcloud and input pointclouds to correct the estimated pose.
- Implemented an autonomous driving system that provides a local path including collision avoidance, and the global path determines by user path selection. I also developed LiDAR segmentation algorithms for object detection.
- Developed mobile robot motor control firmware and android app for mobile robot control.
- **[Demo Video]**

MMS data collection program

Participation rate - 60%

STRYX - JUNIOR RESEARCHER

Feb. 2021 - Dec. 2021

- Serviced the web-based MMS data collection program. Data can be acquired in real-time and transmitted to the server.
- Created the data storage software was using each sensor's SDK. Driver linked to firmware was implemented to allow users to control hardware through web UI.

KT forklift 3D SLAM

Participation rate - 30%

STRYX - JUNIOR RESEARCHER

Jul. 2020 - Oct. 2020

- Verified the existing 3d LiDAR slam open source algorithm for forklift environment.
- Conducted accuracy test of positioning solutions using Google cartographer.

KT Vison GPS

Participation rate - 40%

STRYX - JUNIOR RESEARCHER

Feb. 2020 - Apr. 2020

- Developed a lane recognition algorithm using LiDAR intensity.
- Built sensor communication software architecture using ROS.
- Designed and developed a linux UI program.

Open Manipulator SARA

Participation rate - 100%

ROBOTIS - INTERN

Jan. 2019 - Feb. 2019

- Developed a 6-axis manipulator(Open Manipulator SARA) by analyzing hardware design and kinematics.
- Developed a controller, GUI, and Gazebo simulation program designed for 'Open Manipulator SARA'.
- A demo video of stacking Jenga using 'Open Manipulator SARA' was released as an open source. **[Github] [Video]**

Extracurricular Activity

Kakao Mobility Tech Conference NEMO 2022

Coex, Seoul

AUTONOMOUS DRIVING ROBOT DOCENT

Feb. 2022

- Explained and operated an autonomous robot that travels inside the conference hall. **[Video]**

Open Source Contribution

MAINTAINER & CONTRIBUTOR

- Maintainer: ROS2 wrapping package for ORB-SLAM3 library, **ORB-SLAM3-ROS2**. **[Github]**
- Contributor: Fixed error when using velodyne lidar, **FAST-LIO**: A Fast, Robust LiDAR-inertial Odometry Package by Tightly-Coupled Iterated Kalman Filter. **[Github]**
- Contributor: Added map saving rosservice with map generating function, **LIO-SAM**: Tightly-coupled Lidar Inertial Odometry via Smoothing and Mapping. **[Github]**

2019 Samsung Electronics Junior Software Creation Contest

Suwon, S.Korea

MENTOR

Jul. 2019 - Sep. 2019

- Serviced the app, which provided a system for managing kindergarten students going to and from school and attendance using beacons.
- The high school team I coached won the grand prize among 10,000 teams.

2019 Spring Capstone Design

Seoul, S.Korea

MEMBER

Mar. 2019 - Jun. 2019

- Our team made a 6-DOF multi-joint manipulator that helps dentists.
- I developed a program to register and manage a patient's face using a deep learning model.

RO:BIT (Robot Game Sports Team in KwangWoon Univ.)

Seoul, S.Korea

MEMBER & TEAM LEADER AT 2018

July. 2016 - Dec. 2018

- As a member of the humanoid team for 3 years, I participated in many external activities and competitions related to robots.
- I mainly researched and developed a robot algorithm called humanoid intelligence in games such as soccer, basketball and athletics, etc.
- In 2018, I led the team as the leader of the humanoid team and won awards in international competitions.