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# Sangwoo Jung

## EDUCATION

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**Seoul National University (SNU)**

*Sep. 2023 - Now*

Ph.D. Candidate in Mechanical Engineering (ME)

Advised by Dr. Ayoung Kim

**Seoul National University (SNU)**

*Aug. 2023*

M.S. in Mechanical Engineering (ME)

Dissertation: "Radar Odometry for Quadrupedal Robot using Gravity"

Advised by Dr. Ayoung Kim

**Korea Advanced Institute of Science Technology (KAIST)**

*Feb. 2021*

B.S. in Mechanical Engineering (ME) and Computer Science (CS)

Advised by Dr. Seong Su Kim

## EXPERIENCE

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**Undergraduate Researcher**

*Jul. 2020 - Aug. 2021*

Intelligent Robotic Autonomy and Perception (IRAP) Lab

Dept. of Civil and Environmental Engineering (CEE)

Korea Advanced Institute of Science Technology (KAIST)

**Exchange Student**

*Aug. 2019 - Jan. 2020*

KTH Royal Institute of Technology

**Undergraduate Researcher**

*Jun. 2018 - Aug. 2018*

Mobile Robotics & Intelligence Laboratory (MORIN) Lab

Dept. of Mechanical Engineering (ME)

Korea Advanced Institute of Science Technology (KAIST)

## FIELD OF INTEREST

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Radar, LiDAR simultaneous localization and mapping (SLAM),

Legged Robot, Sensor Fusion, Deep Learning

## PUBLICATIONS

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**International Journal**

- Hyesu Jang, Wooseong Yang, Hanguen Kim, Dongje Lee, Yongjin Kim, Jinbum Park, Minsoo Jeon, Jaeseong Koh, Yejin Kang, Minwoo Jung, **Sangwoo Jung**, Chng Zhen Hao, Wong Yu Hin, Chew Yihang, and Ayoung Kim, "MOANA: Multi-Radar Dataset for Maritime Odometry and Autonomous Navigation Application", in International Journal of Robotics Research (IJRR), 2024.

- **Sangwoo Jung**, Hyesu Jang, Minwoo Jung, Ayoung Kim, and Myung-Hwan Jeon, “Imaging radar and LiDAR Image Translation for 3-DOF Extrinsic Calibration”, in Intelligent Service Robotics (ISR), 2024.
- Minwoo Jung, **Sangwoo Jung** and Ayoung Kim, ”Asynchronous multiple lidar-inertial odometry using point-wise inter-lidar uncertainty propagation”, in IEEE Robotics and Automation Letters (RA-L), 2023.
- Myung-Hwan Jeon, Jeongyun Kim, **Sangwoo Jung**, Wooseong Yang, Minwoo Jung, Jaeho Shin, and Ayoung Kim, “TRansPose: Large-Scale Multispectral Dataset for Transparent Object”, in International Journal of Robotics Research (IJRR), 2023.

### International Conference

- Minwoo Jung, **Sangwoo Jung**, Hyeonjae Gil, and Ayoung Kim, ”HeLiOS: Heterogeneous LiDAR Place Recognition via Overlap-based Learning and Local Spherical Transformer”, in IEEE International Conference on Robotics and Automation (ICRA), 2025
- Hanjun Kim, Minwoo Jung, Chiyun Noh, **Sangwoo Jung**, Hyunho Song, Wooseong Yang, Hyesu Jang, and Ayoung Kim, ”HeRCULES: Heterogeneous Radar Dataset in Complex Urban Environment for Multi-session Radar SLAM”, in IEEE International Conference on Robotics and Automation (ICRA), 2025
- Chiyun Noh, Wooseong Yang, Minwoo Jung, **Sangwoo Jung**, and Ayoung Kim, ”GaRLIO: Gravity enhanced Radar-LiDAR-Inertial Odometry”, in IEEE International Conference on Robotics and Automation (ICRA), 2025
- Sanghyun Hahn, Seunghun Oh, Minwoo Jung, Ayoung Kim, and **Sangwoo Jung**, “Quantitative 3D Map Accuracy Evaluation Hardware and Algorithm for LiDAR(-Inertial) SLAM”, in International Conference on Control, Automation, and Systems (ICCAS), 2024
- **Sangwoo Jung**, Wooseong Yang, and Ayoung Kim, ”Co-RaL: Complementary Radar-Leg Odometry with 4-DoF Optimization and Rolling Contact”, in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024
- Seungsang Yun, Minwoo Jung, Jeongyun Kim, **Sangwoo Jung**, Younghun Cho, Myung-Hwan Jeon, Giseop Kim, and Ayoung Kim, “STheReO: Stereo Thermal Dataset for Research in Odometry and Mapping”, in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022

### Domestic Journal

- Chiyun Noh, **Sangwoo Jung**, Yujin Kim, Kyongsu Yi and Ayoung Kim, ”Moving Object Segmentation-based Approach for Improving Car Heading Angle Estimation”, in Journal of Korea Robotics Society (KROS), 2024
- Minwoo Jung, **Sangwoo Jung** and Ayoung Kim, “Intensity and ambient enhanced lidar-inertial slam for unstructured construction environment”, in Journal of Korea Robotics Society (KROS), 2020.
- **Sangwoo Jung**, Minwoo Jung and Ayoung Kim, “Map Error Measuring Mechanism Design and Algorithm Robust to LiDAR Sparsity”, in Journal of Korea Robotics Society (KROS), 2020.

### Dissertations

- **Sangwoo Jung**, “Radar Odometry for Quadrupedal Robot using Gravity”, Master’s thesis, Seoul National University (SNU), 2023.

### Other Publications

- **Sangwoo Jung** and Ayoung Kim, “Toward 6D Velocity Estimation for Legged Robot using Rolling Motion”, in Work-in-Progres paper on IEEE International Conference on Ubiquitous Robots (UR), 2024.
- **Sangwoo Jung**, Hyesu Jang, Myung-Hwan Jeon and Ayoung Kim, “CycleGAN-based Imaging Radar to LiDAR Image-Translation for 2D Extrinsic Calibration”, in workshop on IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023.
- **Sangwoo Jung** and Ayoung Kim, “6D Instantaneous Velocity for Legged Robot using Rolling Motion”, in Late-Breaking Results Poster on IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022.

## PRESENTATIONS

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- ISR Journal Session Invited Oral Presentation, UR 2025, Jul. 2025
- Oral Presentation, IROS 2024, Oct. 2024
- Work-in-Progress Paper Poster Presentation, UR 2024, Jul. 2024
- Workshop Poster Presentation, IROS 2023, Oct. 2023
- Poster Presentation, IROS 2022, Oct. 2022.

## SERVICES

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### Reviewer

- IEEE Robotics and Automation Letters (RA-L)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Ubiquitous Robots (UR)
- IEEE Sensors Journal
- Intelligent Service Robotics (ISR)
- Signal, Image and Video Processing

## LANGUAGES & SKILLS

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- Korean, English
- Advanced: C/C++, Python, MATLAB, ROS, PyTorch, Microsoft Office, Ubuntu, Windows, L<sup>A</sup>T<sub>E</sub>X
- Novice: Solidworks, Java, Scala, Rust, Assembly

Revised June 13, 2025