

Minji Kim M.S

I am a Master's student at the Machine Perception and Intelligence Lab (MPIL) under the supervision of Prof. Pyojin Kim.

My research focuses on 3D computer vision and robotics. Currently, I am working on indoor localization in extreme environments using limited sensors, and I am also interested in sensor calibration and multi-modal data fusion.



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📁 Portfolio (Korean)

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🌐 Personal Page

🌐 LinkedIn

Education

- 2024.02 – Present **M.S., Mechanical and Robotics Engineering**
Gwangju Institute of Science and Technology.
- 2018.02 – 2024.02 **B.S., Mechanical Engineering**
Sookmyung Women's University.

Employment History

- 2025.03 – 2025.06 **NUS Temasek Laboratories**, National University of Singapore.
- 2022.10 – 2024.02 **Machine Perception and Intelligence Lab**, Sookmyung Women's University.

Research Publications

- 1 **Kim, Minji**, J. Han, J. Ham, and P. Kim, "SPLiCE: Single-point LiDAR and camera calibration & estimation leveraging Manhattan World," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025.
- 2 J. Han, Z. Hu, S. Yang, **Kim, Minji**, and P. Kim, "SoMaSLAM: 2d graph SLAM for sparse range sensing with soft Manhattan World constraints," *IEEE Robotics and Automation Letters (RA-L)*, 2025.
- 3 J. Ham, **Kim, Minji**, S. Kang, K. Joo, H. Li, and P. Kim, "San francisco world: Leveraging structural regularities of slope for 3-DoF visual compass," *IEEE Robotics and Automation Letters (RA-L)*, 2024.

Ongoing Projects

- 🔧 **Digital Twin Matching and Multi-Mapping with Sparse Range Sensing for Micro-Drones**
Developing a system that fuses sparse ToF-based local maps from multiple UAVs into a global map by aligning them with a digital twin floor plan, using structure-based features, semantic segmentation, and graph attention-based matching.
- 🔧 **Circle-Based Localization in the Gravity-Free Environment of the International Space Station (ISS)**
Designing a lightweight localization system for Astrobee by leveraging fixed circular structures as visual markers, enabling drift correction, loop closing, and robust pose estimation without depth sensing through ellipse-based 3D geometry optimization.

Awards & Grants

2024.10	International Research Fellowship Scholarship, Gwangju Institute of Science and Technology.
2023.12	Capstone Design Grand Prize (1st Place), Sookmyung Women's University.
2023.06/12	Academic Self-Directed Career Design Award (3rd Place), Sookmyung Women's University.
2022-2023	Academic Excellence Scholarship, Sookmyung Women's University.

Skills

Languages	English (fluent), Korean (native)
Programming Languages	Python, C++, MATLAB
Frameworks & Tools	ROS2, Docker, VS Code, L ^A T _E X