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) 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, LaTeX