

# JUNWOON LEE

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## RESEARCH INTEREST

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SLAM, Mapping, Computer vision, Sensor fusion, Path planning

## EDUCATION

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### University of Tokyo

*April, 2023 - March, 2025 (expected)*

M.S. Student in Human & Engineered Environmental Studies

Advisor: Prof. Atsushi Yamashita and Assistant Prof. Ren Komatsu

### Osaka University

*April, 2017 - March, 2023*

B.E. in Mechanical Engineering

Thesis: LiDAR-visual SLAM (Simultaneous Localization And Mapping) for Online Mapping of Unpaved Road Surface

Advisor: Prof. Masamitsu Kurisu

## RESEARCH EXPERIENCE

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### Research Assistant, University of Tokyo

*April, 2023 - March, 2025 (expected)*

Real World Robot Informatics Lab.

In developing a novel LiDAR visual inertial SLAM system.

### Research Assistant, Osaka University

*April, 2022 - March, 2023*

Komatsu MIRAI Construction Equipment Cooperative Research Center

Developed a unpaved road surface mapping system using a novel LiDAR-visual SLAM.

Resulted in an thesis, a publication in JFR (under review) and a patent in Japan (Pending).

## PUBLICATIONS & WORKING PAPERS

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### Publications

- [1] **J.Lee**, R.Komatsu, M.Shinozaki, T.Kitajima, H.Asama, Q.An, A.Yamashita. "Switch-SLAM: Switching-based LiDAR-Inertial-Visual SLAM for Degenerate Environments," *2024 IEEE International Conference on Robotics and Automation*. (under review)
- [2] **J.Lee**, M.Kurisu, K.Kuriyama. "Three-dimensionalized feature based LiDAR-visual SLAM for on-line mapping of unpaved road surface," *Journal of Field Robotics*. (under review)

### Patents

- [1] K. Adachi, M.Kurisu, **J.Lee**. Terrain detection system and method, JP Patent 2023-105215 (Pending).

## SKILLS

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### Research Skills

Program Languages : C++, C, Python, MATLAB

Libraries : GTSAM, Ceres Solver, OpenCV, PyTorch, Keras, Open3D, PCL

Frameworks : ROS, Github, L<sup>A</sup>T<sub>E</sub>X

Sensors : LiDAR, Camera, Thermal Camera, IMU, RTK-GNSS

### Languages

Korean(native), Japanese(near-native), English(proficient)

## HONORS AND AWARDS

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**Rotary Yoneyama Memorial Foundation Scholarship***April, 2023 - March, 2025*

A stipend of JPY 140,000(about USD 1,200) per month.

**Korea-Japan Joint Government Scholarship Program***April, 2017 - March, 2023*

A stipend of JPY 120,000(about USD 1,000) per month and tuition waiver for 4 years.

**WORKING EXPERIENCE**

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**The 23rd Security Brigade, Republic of Korea Army***April, 2020 - October, 2021*

Sergeant, Coastal frontline guard (Military duty)

**REFERENCES**

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