



Taeyoung Kim

ROBOTICS · SLAM ENGINEER

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“Nothing ventured, nothing gained.”

Summary

This is Taeyoung Kim, who wants to become robotics SLAM / Navigation engineer. My research interests are Sensor fusion and SLAM. I like to take on challenging tasks and I like to grow up with my colleagues around me. That's why I record and share what I did on my Github or Technical Blog. I'm also interested in contributing open-source projects.

Research Interests

- SLAM / Spatial AI** Focusing on LiDAR(-inertial) SLAM, Robust Localization, Neural representation
Sensor fusion Spatial-temporal calibration for LiDAR, IMU, and Camera etc.

Education

Yonsei University @CILAB

Seoul, S.Korea

M.S. IN VEHICLE CONVERGENCE ENGINEERING (ADVISOR: PROF. EUNTAI KIM)

Mar. 2022 - Feb. 2024

- **Total GPA** : 4.05 / 4.3
- **Teaching Assistant** : 2023-1 Research Experience for Undergraduate (REU)
- Focusing on LiDAR (-inertial) SLAM
- Research on LiDAR-IMU extrinsic calibration method

Kwang Woon University

Seoul, S.Korea

B.S. IN SCHOOL OF ROBOTICS

Mar. 2016 - Feb. 2022

- **Total GPA** : 4.10 / 4.50, **Major GPA** : 4.41 / 4.50
- **Club**: BARAM (Robotics Academic Group) - [2020 Staff] , DAISY (English Conversation Club) - [2019 Spring President]

Work Experience

Hyundai Motor Group @Robotics Lab

Uiwang-si, Gyeonggi-do, S.Korea

RESEARCH ENGINEER

Feb. 2024 - Current

- Research on mobile robot navigation system

KIST(Korea Institute of Science and Technology) @Robot Vision Lab

Seoul, S.Korea

STUDENT INTERN (ADVISOR : DR. KANGGEON KIM)

Sep. 2020 - Feb. 2021

- Research on Monocular Depth Estimation
- Participated in KIST disinfect robot (AI Disinfection Robot) project - [Video]

Projects

Cooperative mapping, environment recognition, and autonomous driving technology for multiple mobile robots operating in large indoor workspaces

KEIT

PARTICIPANT

Apr. 2023 - Dec. 2023

- Development multi robot navigation systems - [Certification]

Development of Core Technology for Mobile Manipulator for 5G Edge-based Transportation and Manipulation

Ministry of Science and ICT

PARTICIPANT

May. 2022 - Dec. 2022

- Development LiDAR-inertial visual SLAM algorithm for mobile manipulator - [Certification]

Developing LiDAR-IMU calibration methods for mobile robots

Hyundai NGV

PARTICIPANT

May. 2022 - Feb.2024

- Development LiDAR-IMU extrinsic calibration method focusing on mobile robots - [Certification]
- Presented at the Hyundai Motor Group Future Mobility Research Exchange in KSAE 2023 workshop

Publication

INTERNATIONAL JOURNAL

- 2024.06 **“GRIL-Calib: Targetless Ground Robot IMU-LiDAR Extrinsic Calibration Method using Ground Plane Motion Constraints”**, Taeyoung Kim, Gyuhyeon Pak and Euntai Kim. *RA-L*
<https://ieeexplore.ieee.org/document/10506583>
- 2021.11 **“Standard for the Quantification of a Sterilization Effect Using an Artificial Intelligence Disinfection Robot”**, Heeju Hong, Wonkook Shin, Jieun Oh, Sunwoo Lee, Taeyoung Kim, Woosub Lee, Jongsuk Choi, Seungbeum Suh and Kanggeon Kim, *Sensors* 21, no. 23: 7776. <https://doi.org/10.3390/s21237776>

INTERNATIONAL CONFERENCE

- 2022.7 **“Robust Feature Tracking for Better Visual-Inertial System using Dynamic Mask”**, Gyuhyeon Pak, Taeyoung Kim, Euntai Kim - **[Paper]** *ICCAS 2022*
- 2021.7 **“Dense Monocular SLAM applied Depth Estimation”**, Taeyoung Kim, Omer Faruk Ince, JongBeom Baek, Jun-Sik Kim, KangGeon Kim - **[Paper]**, **[Video]** *UR 2021 (Work in progress)*

DOMESTIC CONFERENCE

- 2023.6 **“Comparative analysis of LiDAR-inertial odometry/SLAM algorithm performance for ground robots”**, Taeyoung Kim, Yechan Park, Euntai Kim - **[Paper]** *ICROS 2023*
- 2021.5 **“Recognition of disinfection targets and generation of semantic map for disinfection robot”**, TaeHwan Kim, Taeyoung Kim, GiJae Lee, KangGeon Kim - **[Paper]** *KROS 2021*

Honors & Awards

AWARDS

- 2023.12 **Outstanding Research Awards**, for Academic Excellence *Yonsei Univ.*
- 2023.10 **4th Place on LiDAR-inertial track**, ICCV 2023 SLAM Challenge - **[Certification]**, **[Video]** *AirLab, Carnegie Mellon Univ.*
- 2020.11 **Dean’s List**, for Academic Excellence *KwangWoon Univ.*
- 2020.9 **5th Place on B-track**, Korea Health Datathon 2020 *NAVER CLOUD PLATFORM*
- 2019.10 **Dean’s List**, for Academic Excellence *KwangWoon Univ.*

HONORS

- 2023 **Full tuition Scholarship**, *Hyundai NGV*
- 2022 for the students who have been based on Recruitment Conditions on Hyundai Motors Group
- 2021 **National Science and Engineering Undergraduate Scholarship**, *Korea Student Aid Foundation*
- 2020 for the students who have been recommended by the university (**Full tuition Scholarship**)
- 2019-2 **Full tuition Scholarship**, for Top seat last semester *KwangWoon Univ.*

Skills

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|--------------------|-------------------------|
| Programming | C++ / C, Python, Matlab |
| DevOps | Git, Docker, ROS2 / ROS |
| Languages | Korean, English |

Extracurricular Activity

Technical Blogs

WRITERS

- You can easily access the blog using **[this link]**.
- Writing some posts about lecture summary, paper review, some tips for developments.
- To share what I have studied with others and to remember it longer.

Github blog

May. 2020 - Present

Open Source Contribution Academy (2021 - 2022)

Ministry of Science and ICT

2022 MENTOR, 2021 MENTEE

Aug. 2021 - Nov. 2022

- I am in the process of translating a Pytorch tutorial into Korean that I want to contribute to the spread of PyTorch.
- Using Github, I developed the ability to collaborate and contribute to open source.
- The open source repository I've contributed can be found [\[tutorials-kr\]](#).

CLOVA AI RUSH 2021

NAVER AI Lab, NAVER CLOVA

PARTICIPANT

May. 2021 - Jun.2021

- Only 150 students are allowed to participate in this project.
- I developed my own deep learning model related to multi-label classification.
- I ranked 30th on Project 1-3.

2021 Spring Capstone Design

KwangWoon Univ.

PROJECT

Mar. 2021 - Jun.2021

- I made a wireless charging electric vehicle charging robot.
- I designed the control input algorithm, trained deep learning model, and developed the ROS package.
- The source code related to this project is on my [\[Github repository\]](#).

Monocular Depth Estimation with ORB-SLAM2

BARAM (Robotics Academic Group)

PERSONAL TOY PROJECT

Sep. 2020 - Nov. 2020

- I was curious about the performance of the recent depth estimation model.
- I used 'Monocular Depth Estimation with Transfer Learning pretrained MobileNetV2' model and applied to ORB-SLAM2 also compared with ORB-SLAM2(Monocular mode), ORB-SLAM2(RGB-D mode)
- The source code related to this toy project is on my [\[Github repository\]](#).