

# HOWOONG JUN

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## RESEARACH INTERESTS

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Collision Avoidance, Reinforcement Learning, Unmanned Aerial Vehicle, Mobile Robots, Robot Vision, Visual Place Recognition, Deep Learning, Visual Localization, 3D Reconstruction

## EDUCATION

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**Seoul National University, Republic of Korea** Mar. 2021 – Present  
*Ph.D Candidate in Artificial Intelligence*

- Advisor: Prof. Songhwai Oh

**Seoul National University, Republic of Korea** Mar. 2017 – Feb. 2019  
*M.S. in Electrical and Computer Engineering*

- Thesis: Collision Avoidance by Learning Collision
- Advisor: Prof. Beom Hee Lee, *Fellow, IEEE*
- Research Focus: Robotics & Intelligent System

**Seoul National University, Republic of Korea** Mar. 2010 – Feb. 2017  
*B.S. in Electrical and Computer Engineering*  
*(Combined Minor: Engineering Biotechnology)*

- Thesis: Controlling Quadrotor using Wearable Device
- Advisor: Prof. Songhwai Oh

## RESEARCH EXPERIENCE

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**Graduate Student Research** Mar. 2021 – Present  
*Robot Learning Laboratory (RLLab), Seoul National University*

- Field: Image-based robotics

**Artificial Intelligent Research** Mar. 2019 – Dec.2022  
*SK Telecom Co., Ltd*

- Autonomous shuttle bus project
- Visual SLAM algorithm for HD map update project
- Visual localization project for mobile devices
- Visual target localization for security drones

**Graduate Student Research** Feb. 2017 – Feb. 2019  
*Robotics & Intelligent Systems Laboratory (RISL), Seoul National University*

- Developed collision avoidance method with reinforcement learning

**Undergraduate Student Research** Jul. 2016 – Dec. 2016  
*Robot Learning Laboratory (RLL), Seoul National University*

- Developed new control system for quadrotor by wearable device

## PUBLICATIONS

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### International Conferences

- **Howoong Jun**, Hyeonwoo Yu, and Songhwai Oh, “Renderable Street View Map-based Localization: Leveraging 3D Gaussian Splatting for Street-level Positioning” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct. 14-18, 2024.
- Minsoo Kim, Obin Kwon, **Howoong Jun**, and Songhwai Oh, “RNR-Nav: A Real-World Visual Navigation System Using Renderable Neural Radiance Maps” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct. 14-18, 2024.
- **Howoong Jun**, Sangil Lee, and Songhwai Oh, “EventPointNet: Robust Keypoint Detection with Neuromorphic Camera Data” *IEEE International Conference on Control, Automation, and Systems (ICCAS)*, Nov. 27-31, 2022.
- Hyemin Ahn, Obin Kwon, Kyungdo Kim, Jaeyeon Jeong, **Howoong Jun**, Hongjung Lee, Dongheui Lee, and Songhwai Oh, “Visually Grounding Language Instruction for History-Dependent Manipulation” *IEEE International Conference on Robotics and Automation (ICRA)*, May 23-27, 2022.
- **H. W. Jun**, H. J. Kim, and B. H. Lee, “Goal-Driven Navigation for Non-holonomic Multi-Robot System by Learning Collision” *IEEE International Conference on Robotics and Automation (ICRA)*, May 20-24, 2019.

### Domestic Conferences

- **Howoong Jun** Hyeonwoo Yu, and Songhwai Oh, “Leveraging 3D Gaussian Splatting and Street View Database for Street-Level Positioning”, *20th Korea Robotics Society Annual Conference*, Feb. 12-14, 2025.
- **Howoong Jun** and Songhwai Oh, “Analyzing Local Feature Methods for Visual Navigation”, *21st Conference on Information and Control Systems*, Oct. 20-23, 2021.
- **Howoong Jun** and Beom Hee Lee, “Setting a Safe Boundary for Holonomic to Non-Holonomic Conversion”, *14th Korea Robotics Society Annual Conference*, January 20-23, 2019.
- **Howoong Jun** and Beom Hee Lee, “High Dimensional Dynamic Obstacle Avoidance Method by using Low Dimensional Training Environment”, *33rd Institute of Control, Robotics and Systems Annual Conference*, May 17-19, 2018.
- **Howoong Jun**, Han Jun Kim, and Beom Hee Lee, “SLAM Compensating Method in the Vulnerable Situations by IMU Odometry”, *13th Korea Robotics Society Annual Conference*, Jan. 21-24, 2018.

## WORK EXPERIENCE

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**Sequor Robotics, Seoul, Republic of Korea**

Jan. 2023 –

*Product Manager/Researcher*

- Co-founder

**SK Telecom Co., Ltd, Seongnam, Republic of Korea**

Mar. 2019 – Dec. 2022

*Manager & Researcher*

- ICT R&D Center, New Mobility TF, Autonomous Vehicle Project

- AIX Center, Mobility Labs, HD Map Update Project
- T3K, 5GX Location Labs, SLAM Project

**Samsung Electronics Co., Ltd, Suwon, Republic of Korea**  
*Internship*

Jul. 2015 – Aug. 2015

- IT & Mobile Communication Group

**Seoho Electric Co., Ltd, Anyang, Republic of Korea**  
*Skilled Industrial Personnel Engineer(Alternative Military Service)*

Jan. 2012 – Mar. 2014

- Developed combined motion control and anti-collision system for Continuous Ship Unloader (CSU)
- Developed Auto Generated Steering System (AGSS) for Rubber Tyred Gantry Crane (RTGC)
- Developed Vision Auto Landing System (VALS) for automated yard crane

## TEACHING EXPERIENCE

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**Instructor**

Spring, 2022

*Kwangwoon University*

- Robot Programming, Department of Robotics

**Teaching Assistant**

Spring & Fall, 2021

*Seoul National University (SNU)*

- IoT, AI, and Big Data (M2177.004900\_001), School of Engineering

**Volunteer Instructor**

Mar. 2017 – Jun. 2017

*Seoul National University (SNU)*

- Tutor of “Programming Methodology”, Electrical and Computer Engineering

**Volunteer Instructor**

Jan. 2012

*Korea Student Aid Foundation (KOSAF)*

- Tutor at Naejung Middle School, Gyeonggi-do, Seong-Nam, Republic of Korea

## REVIEW ACTIVITY

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**Journals**

- *IEEE Robotics and Automation Letters (RA-L)*
- *IEEE Transactions on Robotics (T-RO)*

**Conferences**

- *IEEE International Conference on Robotics and Automation (ICRA)*
- *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
- *International Conference on Ubiquitous Robots (UR)*

## HONORS, AWARDS, SCHOLARSHIPS

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- SK Telecom AI Graduate Scholarship Sep. 2017 – Dec. 2018
- National Science and Engineering Scholarship Mar. 2010 – Aug. 2016
- Seoul National University ECE Volunteer Service Award Jan. 2012

## SKILLS

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**Computer Languages**

C/C++, C#, Visual Basic, MFC, Matlab, Python, ROS, PLC

**Tools**

PyTorch, Tensorflow, Keras, Open CV(<https://opencvlib.weebly.com/>)