

Obin Kwon

Information	Senior Robotics Machine Learning Engineer , Tesla; Sunnyvale, CA, United States E-mail: obin.kwon000@gmail.com; Mobile: +1 (217)-693-2387 Homepage: https://obin-hero.github.io ; Linkedin: https://www.linkedin.com/in/obin-kwon-a99a37193/ Google Scholar: https://scholar.google.com/citations?user=1YyI3QcAAAAJ
Research Area	Embodied AI, Scene Representation, Agentic Robot Behavior, Multimodal Foundation Models Scene representations, multimodal interaction, and robot learning for long-horizon, goal-directed embodied agents.
Skills	Programming: Python, C++, MATLAB ML/Robotics: PyTorch, TensorFlow, ROS/ROS 2, OpenCV, MuJoCo, Isaac Sim Research/Engineering: multimodal foundation models, audio-vision-language modeling, robot learning, teleoperation, model training/evaluation
Experience	Tesla , Senior Robotics Machine Learning Engineer Oct. 2025 - Present <i>Palo Alto, California, United States</i> - Optimus & FSD KIMLAB , Postdoctoral Research Associate July 2024 - Oct. 2025 <i>University of Illinois Urbana-Champaign; Advisor: Prof. Joohyung Kim</i> - Modular teleoperation frameworks for data collection across diverse devices, robot embodiments, and task settings. - Portable bimanual manipulation systems with multimodal sensing and imitation-learning pipelines. Sequor Robotics , AI/Robotics Researcher Oct. 2023 - June 2024 <i>Seoul, Korea</i> - Scene representation and spatial understanding for map-based mobile robot autonomy. - Visual localization and learning-based navigation systems for real-world warehouse robots. NAVER LABS , Research Intern Jan. 2023 - July 2023 <i>Seongnam, Korea</i> - Learning-based visual localization in complex environments using simple wayfinding maps.
Education	Seoul National University , M.S. and Ph.D. 2018 – 2024 Electrical and Computer Engineering; Advisor: Prof. Songhwai Oh Research: visual navigation, scene representation, and memory-based embodied agents Dissertation: <i>Scene Representation Learning for Visual Navigation</i> ; Distinguished Dissertation Award Seoul National University , B.S. in Electrical and Computer Engineering 2014 – 2018

Publications

Obin Kwon, Sankalp Yamsani, Noboru Myers, Sean Taylor, Jooyoung Hong, Kyungseo Park, Alex Alspach, and Joohyung Kim, “PAPRLE: Plug-And-Play Robotic Limb Environment: A Modular Ecosystem for Robotic Limbs,” *IEEE Robotics & Automation Magazine*, 2026.

[Keywords: Teleoperation, Manipulation, Embodied AI, Robot Learning](#)

Noboru Myers, **Obin Kwon**, Sankalp Yamsani, and Joohyung Kim, “CHILD (Controller for Humanoid Imitation and Live Demonstration): A Whole-Body Humanoid Teleoperation System,” *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, 2025.

[Keywords: Teleoperation, Humanoid Robotics, Whole-Body Control](#)

Jeongho Park, **Obin Kwon**, and Songhwai Oh, “Spatially-Conditional 3D Furniture Generation Model for Indoor Scene Generation,” *IEEE International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2024.

[Keywords: Scene Generation, 3D Model Generation](#)

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. 2024. (Oral Presentation)

[Keywords: Visual Navigation, Localization and Mapping, Neural Rendering, 3D Reconstruction](#)

Obin Kwon, Dongki Jung, Youngji Kim, Soohyun Ryu, Suyong Yeon, Songhwai Oh, and Donghwan Lee, “WayIL: Image-based Indoor Localization with Wayfinding Maps,” *IEEE International Conference on Robotics and Automation (ICRA)*, 2024.

[Keywords: Visual Localization, Tracking & State Estimation, BEV-map](#)

Jeongho Park, **Obin Kwon**, and Songhwai Oh, “Attention-Based Randomized Ensemble Multi-Agent Q-Learning,” *IEEE International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2023.

[Keywords: Multi-Agent Reinforcement Learning, Ensemble Learning](#)

Obin Kwon, Jeongho Park, and Songhwai Oh, “Renderable Neural Radiance Map for Visual Navigation,” *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun. 2023. (Highlight)

[Keywords: Visual Navigation, Localization and Mapping, Neural Rendering, 3D Reconstruction](#)

Nuri Kim, **Obin Kwon**, Hwiyeon Yoo, Yunho Choi, Jeongho Park, and Songhwai Oh, “Topological Semantic Graph Memory for Image-Goal Navigation,” *Conference on Robot Learning (CoRL)*, Dec. 2022. (Oral Presentation)

[Keywords: Visual Navigation, Semantic Scene Graph, Object Detection, Graph-based Localization and Navigation](#)

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 2022. (* equal contribution)

[Keywords: Vision-and-Language Manipulation, Language Instruction Following, History-Dependent Manipulation](#)

Obin Kwon, Nuri Kim, Yunho Choi, Hwiyeon Yoo, Jeongho Park, and Songhwai Oh,

“Visual Graph Memory with Unsupervised Representation for Visual Navigation,” *IEEE/CVF International Conference on Computer Vision (ICCV)*, Oct. 2021.

Keywords: Visual Scene Graph, Graph-based Localization and Navigation, Imitation Learning, Reinforcement Learning

Obin Kwon and Songhwal Oh, “Image-Goal Navigation Algorithm using Viewpoint Estimation,” *IEEE International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2021.

Keywords: Visual Navigation, Reinforcement Learning, Representation Learning

Minyoung Hwang, **Obin Kwon**, and Songhwal Oh, “Geometric Understanding of Reward Function in Multi-Agent Visual Exploration,” *IEEE International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2021.

Keywords: Multi-Agent Reinforcement Learning, Visual Exploration

Obin Kwon and Songhwal Oh, “Learning to Use Topological Memory for Visual Navigation,” *IEEE International Conference on Control, Automation and Systems (ICCAS)*, Oct. 2020.

Keywords: Visual Scene Graph, Imitation Learning, Reinforcement Learning

Honors	Distinguished Dissertation Award - Electrical and Computer Engineering, Seoul National University	August 2024
	Lecture & Research Scholarship - Seoul National University	Spring 2024
	Brain Korea 21 Plus Scholarship - Seoul National University	Fall 2020-Spring 2022, Fall 2023
	Kim Jeong-sik Special Scholarship - Kwanak Corporation, SNU Electrical and Computer Scholarship Foundation - Full tuition + α	Spring 2015 - Fall 2017.
	Merit-based University Admission Scholarship - Yongin City Scholarship Foundation	Spring 2014
	Research Experiences	Superhuman Multimodal Sensing for Manipulation, - Funded by Toyota Research Institute
	Robot Learning: Efficient, Safe, and Socially-Acceptable Machine Learning, - Funded by Ministry of Science and ICT (MSIT), Korea	2019 - 2024
	AI Technology for Guidance of Mobile Robots with Uncertain Maps, - Funded by Ministry of Science and ICT (MSIT), Korea	2019 - 2023
	Autonomous Navigation Multi-Agent Deep Reinforcement Learning, - Funded by Hyundai Autoever	2020 - 2021
Teaching Experiences	Teaching Assistant @ Seoul National University - Deep Reinforcement Learning (Topics in Control and Automation) - Theory and Lab of IoT, AI, and Big Data - Introduction to Intelligent Systems	Spring 2021 Fall 2019 Fall 2018

**Professional
Services**

Area Chair

- Conference on Robot Learning (CoRL), 2025-2026

Reviewer

- IEEE Robotics and Automation Letters.
- IEEE Transactions on Robotics.
- IEEE Transactions on Pattern Analysis and Machine Intelligence.
- IEEE Transactions on Automation Science and Engineering.
- Robotics: Science and Systems.
- IEEE/CVF Conference on Computer Vision and Pattern Recognition.
- IEEE/CVF International Conference on Computer Vision.
- Conference on Robot Learning.
- IEEE International Conference on Robotics and Automation.
- IEEE/RSJ International Conference on Intelligent Robots and Systems.
- Neural Information Processing Systems.
- International Conference on Ubiquitous Robots.

References

Prof. Joohyung Kim

- Associate Professor at Department of Electrical and Computer Engineering, University of Illinois Urbana-Champaign (UIUC).
- Email: joohyung@illinois.edu

Prof. Songhwai Oh

- Professor at Department of Electrical and Computer Engineering, Seoul National University (SNU).
- Email: songhwai@snu.ac.kr

Prof. Hyemin Ahn

- Assistant Professor at Artificial Intelligence Graduate School (AIGS), Ulsan National Institute of Science and Technology (UNIST).
- Email: hyemin.ahn@unist.ac.kr

Prof. Sungjoon Choi

- Assistant Professor at Department of Artificial Intelligence, Korea University.
- Email: sungjoon-choi@korea.ac.kr