

Juno Kim

PhD Student · Embodied AI · Robot Perception · Vision–Language–Action

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RESEARCH INTERESTS

Embodied AI, Robot Perception, Vision–Language–Action (VLA) models, 3D Scene Understanding, Robot Learning, and Sim2Real Transfer — with a focus on integrating explicit 3D perception with policy learning for robust manipulation and mobile robotics.

EDUCATION

Ph.D. in Interdisciplinary Program in Artificial Intelligence, Seoul National University 2022 – present
Advisor: Prof. Byoung-Tak Zhang · Biointelligence Lab (Expected: Feb 2028) GPA: 3.87 / 4.30

B.Eng. in Computer Convergence Software, Korea University 2018 – 2022
Minor: Artificial Intelligence GPA: 4.21 / 4.50

PUBLICATIONS

Underlined bold = author. * equal contribution. † corresponding author.

International Conferences

- [1] **J. Kim***, Y. Park*, H.-J. Yoon*, B.-T. Zhang†. **Scene-Q: Confidence-Aware Coarse-to-Fine Querying of 3D Scenes with Selective VLM Reasoning**. *IROS 2026 (to appear)*.
- [2] **J. Kim***, H.-J. Yoon*, Y. Park*, B.-T. Zhang†. **CDIS: Cross-Dimensional Class-Agnostic 3D Instance Segmentation via 2D Mask Tracking and 3D–2D Projection Merging**. *IROS 2025*.
- [3] Y. Park*, H.-J. Yoon*, **J. Kim***, B.-T. Zhang†. **DA-Fusion: Deformable Attention-Based RGB-D Fusion Transformer for Unseen Object Instance Segmentation**. *ICRA 2025*.
- [4] H.-J. Yoon*, **J. Kim***, Y. Park*, J.-K. Lee, B.-T. Zhang†. **Seg2Grasp: A Robust Modular Suction Grasping in Bin Picking**. *IROS 2024*.
- [5] **J. Kim***, Y. Park*, H.-J. Yoon*, B.-T. Zhang†. **Ov-Map: Open-Vocabulary Zero-Shot 3D Instance Segmentation Map for Robots**. *IROS 2024*.

Workshops

- [6] H.-J. Yoon, **J. Kim**, Y. Park, B.-T. Zhang†. **Visual Perception-Based Assistive Mobile Robot System for Manipulation Tasks**. *ICRA Workshop, 2023*.

Domestic Conferences

- [7] **J. Kim**, B.-T. Zhang†. **Autonomous Recycling Robot System Using Heuristic Grasping Algorithms**. *KCC 2023*. Outstanding Paper Award
- [8] H.-J. Yoon, Y. Park, **J. Kim**, Y. Yoo, B.-T. Zhang†. **Cashier-Free Counter System Using Artificial Intelligence with Robot Arm**. *KSC 2022*.
- [9] Y. Yoo, H.-J. Yoon, **J. Kim**, Y. Park, B.-T. Zhang†. **Product Identification System Based on Image Feature Similarity for Logistics Automation**. *LOGIST 2022*.

RESEARCH EXPERIENCE

Graduate Researcher — Biointelligence Lab, Seoul National University 2022.9 – present
Advisor: Prof. Byoung-Tak Zhang

- Conduct research in robot perception, embodied AI, and Vision–Language–Action (VLA) models for manipulation and mobile robotics.
- Developed learning and perception methods for 3D instance segmentation, open-vocabulary scene understanding, and grasping in robotic systems.
- Proposed approaches for improving VLA robustness under visual distribution shift by integrating explicit perception with policy learning.

- Developed Real-to-Sim-to-Real pipelines for adapting pretrained VLA models to mobile manipulation using scene reconstruction and scalable trajectory generation.
- Built and evaluated deep learning and robotic systems in simulation and the real world using PyTorch, RGB-D perception, and robotic simulation platforms.

Research Intern — Korea AI Labs, Korea University 2021.12 – 2022.02

- Built a multi-modal model on top of KGAT and KGIN to predict and recommend popular items from Naver shopping data.

Research Intern — Machine Learning & Vision Lab, Korea University 2020.12 – 2021.09

- Reproduced *Diffusion Improves Graph Learning* and *Graph Contrastive Learning with Adaptive Augmentation*.
- Introduced node gradient as a new feature-importance factor and designed new augmentations based on it.

HONORS & AWARDS

1st Place (Presidential Award) — ZEUS Arm-Robot Competition 2022
International Robot Contest (R-Biz Challenge)

1st Place (Champion) — RoboCup@Home International AI Robot Competition 2023
DSPL League

1st Place (Minister of Trade, Industry & Energy Award) — Humanoid AI Challenge 2026

1st Place (Minister of Science & ICT Award) — AI Competition for Space Radio Disaster Prediction 2023

Director's Award — Disaster Safety Data Hackathon 2024
National Disaster Management Research Institute

1st Place (Grand Prize) — Creative Autonomous Research Competition 2022, 2023
Interdisciplinary Program in Artificial Intelligence, Seoul National University

Outstanding Paper Award — Korea Computer Congress (KCC) 2023

Honorable Mention — Logistics Paper Competition 2022
Korean Society of Logistics Science & Technology

Dean's List — Korea University 2021
GPA 4.5 / 4.5 (Spring 2021) · Student of the Semester · Academic Excellence Award

National Excellent Student in Science & Engineering 2020 – 2021

SCHOLARSHIPS & FELLOWSHIPS

AI Fellowship Scholarship 2022 – 2025

National Excellent Student in Science & Engineering Full Scholarship 2020 – 2021

Academic Excellence Scholarship 2020

Social Service and Leadership Scholarship 2018 – 2019

TECHNICAL SKILLS

Programming Python, C, C++
Frameworks PyTorch, RGB-D perception, robotic simulation platforms
Domains 3D instance segmentation, open-vocabulary scene understanding, grasping, VLA, Sim2Real
Languages English — TOEIC 950, TEPS 469