

BYUNGWOO JEON

imbw2024@kaist.ac.kr \diamond <https://rootyjeon.github.io> \diamond github.com/rootyjeon

RESEARCH INTEREST

The north star of my research is to develop a unified and scalable framework aligned with multi-modalities and human preferences for various vision-centric tasks. To this end, I am delving into multi-modal understanding (*e.g.*, VLM) and robot learning (*e.g.*, VLA), with a focus on building effective multi-modal representations of the 3D world for real-world applications.

- **Multi-modal understanding**
 - Reasoning [C2, W2, W1, P5, P3]
 - Unified modeling [P5, P2]
 - World modeling
- **High-dimensional vision**
 - Spatial understanding [C2, W2, P3, P1]
 - Temporal understanding [C1, P1]
 - Motion & pose estimation [C1, P4]
- **Robot learning**
 - Action modeling & planning [W1]
 - Imitation learning

PUBLICATIONS

C: conference, J: journal, W: workshop, P: preprint / * equal contribution, † equal advising

- [C2] Vision-aligned Latent Reasoning for Multi-modal Large Language Model
Byungwoo Jeon, Yoonwoo Jeong, Hyunseok Lee, Minsu Cho[†], Jinwoo Shin[†]
International Conference on Machine Learning (ICML), 2026
- [C1] TrackIME: Enhanced Video Point Tracking via Instance Motion Estimation
Seong Hyeon Park, Huiwon Jang, Byungwoo Jeon, Sukmin Yun, Paul Hongsuck Seo, Jinwoo Shin
*Conference on Neural Information Processing Systems (NeurIPS), 2024, **Spotlight Presentation (326/15671=2.08%)***
- [P5] Latent Reasoning in Continuous Space for Unified Multimodal Models
Byungwoo Jeon, Yoonwoo Jeong, Hyunseok Lee, Minsu Cho[†], Jinwoo Shin[†]
Under review
- [P4] Physically Plausible Multi-View Object Swapping for Robot Data Augmentation
Jonghoon Lee*, Seong Hyeon Park*, Minha Lee, Byungwoo Jeon, Jinwoo Shin
Under review
- [P3] Cog3DMap: Multi-View Vision-Language Reasoning with 3D Cognitive Maps
Chanyoung Gwak*, Yoonwoo Jeong*, Byungwoo Jeon, Hyunseok Lee, Jinwoo Shin[†], Minsu Cho[†]
Under review
- [P2] Visual Tokenization with Hierarchical Abstraction for Unified Multimodal Modeling
JB Kim, Hyeonmo Kang, Byungwoo Jeon, June Suk Choi, Kyungmin Lee, Jinwoo Shin[†], Jeonghoon Kim[†]
Under review
- [P1] CADs: Consistent and Accurate Depth Estimation via Synthesizing Depth Maps with Image-based Rendering
Subin Kim*, Seong Hyeon Park*, Byungwoo Jeon, Sihyun Yu, Kihyuk Sohn, Jinwoo Shin
Under review
- [W2] SpatialBoost: Enhancing Visual Representation through Language-Guided Reasoning
Byungwoo Jeon*, Dongyoung Kim*, Huiwon Jang, Insoo Kim, Jinwoo Shin
NeurIPS Workshop on Space in Vision, Language, and Embodied AI, 2025
- [W1] Hierarchical Vision Language Action Model Using Success and Failure Demonstrations
Jeongeun Park, Jihwan Yoon, Byungwoo Jeon, Juhan Park, Jinwoo Shin, Kyungjae Lee, Namhoon Cho, Sangdoo Yun, Sungjoon Choi
CoRL Workshop on Safe and Robust Robot Learning for Operation in the Real World, 2025

EDUCATION

KAIST, Ph.D. student in Artificial Intelligence (advisor: Prof. Jinwoo Shin) Sep 2024 - Current
Korea University, B.S. in Computer Science and Engineering, Statistics Mar 2020 - Aug 2024

WORK EXPERIENCE

ALINLAB, Research Intern (advisor: Prof. Jinwoo Shin) Jeongja, South Korea / Mar 2023 - Aug 2024
Arcreal, ML Engineer (host: Prof. Jinwoo Shin) Gangnam, South Korea / Jan 2023 - Jan 2024
MLVLAB, Research Intern (advisor: Prof. Hyunwoo J. Kim) Anam, South Korea / Jul 2022 - Dec 2022
M-monstar, Fullstack Engineer Pangyo, South Korea / Jul 2021 - Aug 2021

EXTERNAL COLLABORATOR

POSTECH CVLAB, Working on VLM reasoning [C2, P5, P3] (advisor: Prof. Minsu Cho) Apr 2025 - Current
Korea Univ. RILAB, Working on VLA reasoning [W1] (advisor: Prof. Sungjoon Choi) Jul 2025 - Current

PROJECTS

Industry Projects

NVIDIA, Latent World Models (2026–)
RLWRLD, ALIN-VLA: Robot Foundation Model from ALIN-LAB (2025–2026)
SAMSUNG, Semiconductor Pattern Generation (2025–2026)

Personal Projects

Google DSC, Google Solution Challenge: Recovery (2024), digiHow (2023)
Google DSC, Horang Studio: Diffusion-based personalized AI profile service (2023)

SERVICES

Conference Reviewer: ECCV'26
Workshop Reviewer: Space in Vision, Language, and Embodied AI (SpaVLE) @ NeurIPS'25

HONORS & AWARDS

Silver Prize, K-Data Science Hackathon, 2023 (\$2,000)
Top 8, Artificial Intelligence Grand Challenge, 2022
Dean's List, Korea University, 2020–2023

EXTRACURRICULAR ACTIVITIES

Google Developer Student Clubs (Google DSC) @ Korea University, Lead and Founder Aug 2022 - Jul 2023

SELECTED TALKS

Korea Univ., Google DSC, "Meta Runner on AI," Mar 2026
Yonsei & Korea Univ., Google DSC, "Towards the New World of Computing: CV on Real-world," Dec 2024
Korea Univ., Google DSC, "Recent Advances in Machine Learning," Nov 2023

SKILLS

- **Language**
 - **Python** Advanced
 - **C/C++** Advanced
- **ML/DL**
 - **PyTorch** Advanced
 - **TensorFlow** Advanced

MENTORING

- **Jonghoon Lee**, Ph.D. student at KAIST AI
Topic: 3D/4D mesh editing & 6D pose estimation [P4] Apr 2025 - Current
- **Jaewon Yeom**, now senior undergrad at Korea Univ. CSE
Topic: Discrete diffusion models, Online RL on VLA Jan 2025 - Current
- **Kiyoung Kwon**, now senior undergrad at SNU AI
Topic: Agentic AI for Science Jan 2026 - Current
- **Minha Lee**, now senior undergrad at Korea Univ. CSE
Topic: 3D/4D mesh editing [P4] Mar 2026 - Current
- **Seoyeon Byun**, now senior undergrad at Korea Univ. CSE
Topic: 3D/4D neural rendering, **Collaborate**: Google DSC 3rd Lead Aug 2022 - Aug 2024
- **Seonghu Jeon**, M.S. student at KAIST AI
Topic: 3D/4D neural rendering, **Collaborate**: Google DSC 3rd AI Core Mar 2022 - Aug 2024

REFERENCE

Jinwoo Shin, Full Professor at KAIST

E-mail: jinwoos@kaist.ac.kr

Minsu Cho, Full Professor at POSTECH

E-mail: mscho@postech.ac.kr

Sungjoon Choi, Assistant Professor at Korea Univ.

E-mail: sungjoon-choi@korea.ac.kr

Seong Hyeon Park, Ph.D. student at KAIST

E-mail: seonghyp@kaist.ac.kr

Kyungmin Lee, Ph.D. student at KAIST

E-mail: kyungmnlee@kaist.ac.kr

Yoonwoo Jeong, Ph.D. student at POSTECH

E-mail: jeongyw12382@postech.ac.kr