BYUNGWOO JEON

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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 [W2, W1, P3, P2]
  - Hallucination [P3]
  - World modeling
- **High-dimensional vision**
  - Spatial understanding [W2, P1]
  - Temporal understanding [C1, P1]
  - Motion estimation [C1]
- **Robot learning**
  - Action modeling & planning [W1, P2]
  - Imitation learning

PUBLICATIONS

C: conference, J: journal, W: workshop, P: preprint / ∗ equal contribution, † corresponding authors

[P3] Vision-aligned Latent Reasoning for Multi-modal Large Language Model
Byungwoo Jeon, Yoonwoo Jeong, Hyunseok Lee, Minsu Cho†, and Jinwoo Shin†
Under review

[P2] Hierarchical Vision Language Action Model Using Success and Failure Demonstrations
Jeongeun Park, Jihwan Yoon, Byungwoo Jeon, Juhan Park, Jinwoo Shin, Namhoon Cho, Kyungjae Lee, Sangdoo Yun, Sungjoon Choi
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, and Jinwoo Shin
Under review

[W2] SpatialBoost: Enhancing Visual Representation through Language-Guided Reasoning
Byungwoo Jeon*, Dongyoung Kim*, Huiwon Jang, Insoo Kim, and Jinwoo Shin
NeurIPS Workshop on Space in Vision, Language, and Embodied AI, 2025

[W1] Learning Feasibility from Failure Data in Vision–Language–Action Models
Jeongeun Park, Jihwan Yoon, Byungwoo Jeon, Juhan Park, Kyungjae Lee, Namhoon Cho, Sangdoo Yun, Sungjoon Choi
CoRL Workshop on Safe and Robust Robot Learning for Operation in the Real World, 2025

[C1] TrackIME: Enhanced Video Point Tracking via Instance Motion Estimation
Seong Hyeon Park, Huiwon Jang, Byungwoo Jeon, Sukmin Yun, Paul Hongsuck Seo, and Jinwoo Shin
*Conference on Neural Information Processing Systems (**NeurIPS**), 2024, Spotlight Presentation (326/15671=2.08%)*

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 [P3] (advisor: Prof. Minsu Cho) — Apr 2025 - Current
Korea Univ. RILAB, Working on VLA reasoning [W1, P2] (advisor: Prof. Sungjoon Choi) — Jul 2025 - Current

EXTRACURRICULAR ACTIVITIES

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

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

PROJECTS

RLWRLD, "ALIN-VLA: Robot Foundation Model from ALIN-LAB," 2025 - 2026
SAMSUNG, "Semiconductor Pattern Generation," 2025 - 2026
Google DSC, "Google Solution Challenge: Recovery," 2024
Google DSC, "Horang Studio: Diffusion-based personalized AI profile service," 2023
Google DSC, "Google Solution Challenge: digiHow," 2023

SELECTED TALKS

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 — Apr 2025 - Current
  Topic: 3D/4D Mesh Editing
- **Jaewon Yeom**, now junior undergrad at Korea Univ. CSE — Jan 2025 - Current
  Topic: Discrete Diffusion Models, Online RL on VLA
- **Seoyeon Byun**, now senior undergrad at Korea Univ. CSE — Aug 2022 - Aug 2024
  Project: Horang Studio, Google DSC 3rd Lead
- **Seonghu Jeon**, M.S. student at KAIST AI — Mar 2022 - Aug 2024
  Project: Horang Studio, Google DSC AI Core

REFERENCE

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