

# 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**
  - Alignment [W2]
  - Reasoning [W2, W1, P2]
  - Hallucination
- **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

- [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  
Byungwoo Jeon, Jeongeun Park, Jihwan Yoon, 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%)***
- [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*

## EDUCATION

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

## WORK EXPERIENCE

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

## EXTERNAL COLLABORATOR

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

## EXTRACURRICULAR ACTIVITIES

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Google Developer Student Clubs (GDSC) @ Korea University, Lead and Founder	Aug 2022 - Jul 2023
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## HONORS & AWARDS

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

## PROJECTS

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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

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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

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

## MENTORING

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

## REFERENCE

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**Jinwoo Shin**, Full Professor at KAIST

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**Minsu Cho**, Associate Professor at POSTECH

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**Sungjoon Choi**, Assistant Professor at Korea Univ.

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**Yoonwoo Jeong**, Ph.D. student at POSTECH, incoming Researcher at Meta

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