

# 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

**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

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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
  - **Javasciprt** Intermediate
- **ML/DL**
  - **PyTorch** Advanced
  - **TensorFlow** Advanced

## MENTORING

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- **Jonghoon Lee**, now incoming Ph.D. student at KAIST AI  
**Topic:** 3D Mesh Editing Apr 2025 - Current
- **Jaewon Yeom**, now junior undergrad at Korea Univ. CSE  
**Topic:** Discrete Diffusion Models, Online RL on VLA Jan 2025 - Current
- **Seoyeon Byun**, now senior undergrad at Korea Univ. CSE  
**Project:** Horang Studio, Google DSC 3rd Lead Aug 2022 - Aug 2024
- **Seonghu Jeon**, now incoming M.S. student at KAIST AI  
**Project:** 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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**Seong Hyeon Park**, Ph.D. student at KAIST  
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**Kyungmin Lee**, Ph.D. student at KAIST  
E-mail: [kyungmnlee@kaist.ac.kr](mailto:kyungmnlee@kaist.ac.kr)

**Yoonwoo Jeong**, Ph.D. student at POSTECH, incoming Researcher at Meta  
E-mail: [jeongyw12382@postech.ac.kr](mailto:jeongyw12382@postech.ac.kr)