Byungkun Lee

Ph.D. Candidate in Artificial Intelligence

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Summary

A robotics researcher focused on building generalizable robotic policies for real-world manipulation. My current work studies **how to effectively incorporate 3D information into robot foundation models**. Currently a Ph.D. candidate at the DAVIAN Lab, KAIST AI (advisor: Prof. Jaegul Choo). Previously worked as a research intern at Neurometka, mentored by Joonho Lee.

Highlights

- Author of 8 published papers at top-tier venues in machine learning, robotics, and beyond (NeurIPS ×2, ICML ×2, IROS, RLC, CIKM, WWW) and 3 preprints, including 6 (co-)first-author works. My key works include:
  - Visual Representations for Robot Manipulation [P1, C1, P2, C2]
  - Reinforcement Learning [C3, C4, C5, C6] and RL-based grasping at Neurometka (slide)
- Full-stack real-robot experience: demonstration collection with a self-designed teleoperation system, policy training, and evaluation on multiple robot arms. [github]

Field of Interest

My research interests include, but are not confined to:

- 3D representation for large robot foundation models
- Policy learning and real-robot deployment: imitation learning and reinforcement learning
- Visual representation learning for control

Education

Korea Advanced Institute of Science and Technology (KAIST) — *Seoul, Republic of Korea*

Ph.D. in Artificial Intelligence (Advisor: Prof. Jaegul Choo, DAVIAN Lab) — *Mar. 2022 - Present*

Korea Advanced Institute of Science and Technology (KAIST) — *Seoul, Republic of Korea*

M.S. in Artificial Intelligence — *Mar. 2020 - Feb. 2022*

Korea University — *Seoul, Republic of Korea*

B.S. in Computer Science — *Mar. 2014 - Feb. 2020*

Work Experience (Including Internship)

Research Intern — *Seoul, Republic of Korea*

Neurometka — *Mar. 2025 - Sep. 2025*

- Mentored by Joonho Lee.
- Developed an RL-based grasping algorithm by leveraging inductive biases from pretrained grasp detectors. [slide]

Publications

(* equal contribution)

Visual Representations for Robot Manipulation

[P1] **Byungkun Lee***, Dongyoon Hwang*, Dongjin Kim, Hojoon Lee, Minho Park, and Jaegul Choo, "See like a Robot: Robot-Centric Pointmaps for Vision-Language-Action Models," arXiv preprint, 2026. [paper] [project page]

[C1] Dongyoon Hwang*, **Byungkun Lee***, Dongjin Kim, Hyojin Jang, Hoiyeong Jin, Jueun Mun, Minho Park, Hojoon Lee, Hyunseung Kim, and Jaegul Choo, "3D HAMSTER: Hierarchical VLAs through 3D Trajectory Guidance," in *Proc. Int. Conf. Intell. Robot. Syst. (IROS)*, 2026. [paper] [code] [project page] [models]

[P2] **Byungkun Lee**, Hojoon Lee, Dongyoon Hwang, Donghu Kim, Hyunseung Kim, Kyungmin Lee, Yunho Kim, and Jaegul Choo, "All-For-One: Distilling Visual Foundation Models to a Fast, Memory-Efficient Visuomotor Policy," preprint, 2026. [paper]

[C2] Dongyoon Hwang*, **Byungkun Lee***, Hojoon Lee, Hyunseung Kim, and Jaegul Choo, "Adapting Pretrained ViTs with Convolution Injector for Visuo-Motor Control," in *Proc. Int. Conf. Machine Learning (ICML)*, 2024.

[paper] [code] [project page]

Reinforcement Learning

[C3] Donghu Kim, Youngdo Lee, Hojoon Lee, Johan Obando-Ceron, **Byungkun Lee**, Aaron Courville, Pablo Samuel Castro, Jaegul Choo, and Clare Lyle, "V-Simba: Unleashing the Architectural Potential of RL in Visual Continuous Control," in *Reinforcement Learning Conference (RLC)*, 2026. [paper]

[C4] Hyunseung Kim, **Byungkun Lee**, Hojoon Lee, Dongyoon Hwang, Donghu Kim, and Jaegul Choo, "Do's and Don'ts: Learning Desirable Skills with Instruction Videos," in *Proc. Neural Information Processing Systems (NeurIPS)*, 2024. [paper] [project page]

[C5] Hyunseung Kim*, **Byungkun Lee***, Hojoon Lee, Dongyoon Hwang, Sejik Park, Kyushik Min, and Jaegul Choo, "DISCO-DANCE: Learning to Discover Skills through Guidance," in *Proc. Neural Information Processing Systems (NeurIPS)*, 2023. [paper] [code] [project page]

[C6] Hojoon Lee, Koanho Lee, Dongyoon Hwang, Hyunho Lee, **Byungkun Lee**, and Jaegul Choo, "On the Importance of Feature Decorrelation for Unsupervised Representation Learning in Reinforcement Learning," in *Proc. Int. Conf. Machine Learning (ICML)*, 2023. [paper] [code]

Others

[P3] Dohyun Lee*, Minho Park*, Jeonghoon Park, Dongyoon Hwang, Junha Hyung, Sungwon Hwang, **Byungkun Lee**, and Jaegul Choo, "PAM: Procedural Assistance Memory for Proactive Robots," preprint, 2026. [paper] [code] [project page]

[C7] Hojoon Lee*, Hawon Jeong*, **Byungkun Lee***, and Jaegul Choo, "ST-RAP: A Spatio-Temporal Framework for Real Estate Appraisal," in *Proc. ACM Int. Conf. Information and Knowledge Management (CIKM)*, short paper, 2023. [paper] [code]

[C8] Hojoon Lee*, Dongyoon Hwang*, Hyunseung Kim, **Byungkun Lee**, and Jaegul Choo, "DraftRec: Personalized Draft Recommendation for Winning in MOBA Games," in *Proc. ACM Web Conference (WWW)*, 2022. [paper] [code]

Talks

RL Korea *Seoul, Republic of Korea*

Presenter for <Pretraining for Intelligent Reinforcement Learning Agent> *Dec. 2024*

Crevisse Partners *Seoul, Republic of Korea*

Presenter for <Pretraining for Intelligent Reinforcement Learning Agent> *Dec. 2023*

Honors & Awards

2023 **CIKM Travel Award (3,000 USD)**, Crevisse Partners

2019 **Graduation Project Award, 2nd Place (1,500 USD)**, Korea University

2018 **National Science & Engineering Scholarship (4,000 USD)**, Korea University

2018 **Dean's List**, Korea University

2014 **1st Prize, Service Design Project**, Samsung Electronics

Academic Services

Reviewer, NeurIPS, ICML, ICLR, CoRL, AAAI, WACV, IEEE RA-L