

Hojoon Lee

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RESEARCH INTERESTS

I'm interested in developing humanoid robots for assisting households and providing companionship. Unlike language or image models, teaching robots complex physical tasks is challenging due to limited human demonstration data. I believe robots should learn through their own experiences using synthetic data generated by simulators and reinforcement learning (RL). **Thus, my future research aims to develop RL algorithms that scale effectively, solve multiple tasks simultaneously, and transfer efficiently between tasks.**

Previously, my research focused on:

- 1. Designing compute- and sample-efficient RL algorithms: [ICML'25](#) , [ICLR'25](#) , [ICML'24](#) , [NeurIPS'23](#).
- 2. Applying RL to industry, including video games and recommender systems: [GranTurismo](#) , [LOL](#) , [BrownDust](#).

EDUCATION

KAIST M.S / PH.D. STUDENT IN AI (GPA: 4.1 / 4.3). • Advisor: Jaegul Choo .	Seongnam, Korea Mar.2020 - Present
Korea University B.S IN COMPUTER SCIENCE (GPA: 4.05 / 4.5).	Seoul, Korea Mar.2014 - Feb.2020

WORK

Meta Reality Labs RESEARCH INTERN • Embodied AI (TBD). • Mentor: Nitin Kamra ,	Seattle, USA May.2025 - Nov.2025
Krafton AI RESEARCH INTERN • Investigate whether LLM can learn Chess through RL Fine-Tuning. • Mentor: Jongho Park , and Dongmin Park ,	Seoul, Korea Feb.2025 - Apr.2024
Sony AI RESEARCH INTERN • Developed a vision-based RL agent in a racing game, GranTurismo 7 . • Mentor: Takuma Seno , Kaushik Subramanian , and Peter stone .	Tokyo, Japan Feb.2024 - Aug.2024
KakakEnterprise AI RESEARCH INTERN • Developed an open-source RL framework, Jorlidy (300+ ☆). • Mentor: Kyushik Min .	Seongnam, Korea Sep.2021 - Nov.2021
Neowiz AI RESEARCH INTERN • Developed an RL agent in a turn-based game, Brave Nine .	Seongnam, Korea Mar.2019 - Jun.2019

PUBLICATIONS

A Champion-level Vision-based RL Agent for Competitive Racing in Gran Turismo 7 • Hojoon Lee* , Takuma Seno*, Jun Jet Tai*, Kaushik Subramanian, Kenta Kawamoto, Peter R.Wurman, Peter Stone • arXiv / video	RA-L'25 Poster (@ICRA'26)
SimbaV2: Hyperspherical Normalization for Scalable Deep Reinforcement Learning • Hojoon Lee* , Youngdo Lee*, Takuma Seno, Donghu Kim, Peter Stone, Jaegul Choo • arXiv / project page / code / dataset	ICML'25 Spotlight
SimBa: Simplicity Bias For Scaling Up Parameters in Deep Reinforcement Learning • Hojoon Lee* , Dongyoon Hwang*, ..., Kaushik Subramanian, Peter R.Wurman, Jaegul Choo, Peter Stone, Takuma Seno • arXiv / project page / code (90+ ☆)	ICLR'25 Spotlight

Do's and Don'ts: Learning Desirable Skills with Instruction Videos

- Hyunseung Kim, Byungkun Lee, **Hojoon Lee**, Dongyoon Hwang, Donghu Kim, Jaegul Choo
- [arXiv](#) / [project page](#)

NeurIPS'24

Poster

Slow and Steady Wins the Race: Maintaining Plasticity with Hare and Tortoise Networks

- Hojoon Lee**, Hyeonsoo Cho, Hyunseung Kim, Donghu Kim, Dugki Min, Jaegul Choo, Clare Lyle
- [arXiv](#) / [code](#)

ICML'24

Poster

Investigating Pre-Training Objectives for Generalization in Vision-Based RL

- Donghu Kim*, **Hojoon Lee***, Kyungmin Lee*, Dongyoon Hwang, Jaegul Choo
- [arXiv](#) / [project page](#) / [code](#)

ICML'24

Poster

Adapting Pretrained ViTs with Convolution Injector for Visuo-Motor Control

- Donyoon Hwang*, Byungkun Lee*, **Hojoon Lee**, Hyunseung Kim, Jaegul Choo
- [arXiv](#) / [project page](#)

ICML'24

Poster

PLASTIC: Enhancing Input and Label Plasticity for Sample Efficient Reinforcement Learning

- Hojoon Lee***, Hanseul Cho*, Hyunseung Kim*, Daehoon Gwak, Joonkee Kim, Jaegul Choo, Se-Young Yun, Chulhee Yun
- [arXiv](#) / [code](#) / [poster](#)

NeurIPS'23

Poster

Learning to Discover Skills through Guidance

- Hyunseung Kim*, Byungkun Lee*, **Hojoon Lee**, Dongyoon Hwang, Kyushik Min, Sejik Park, Jaegul Cho
- [arXiv](#)

NeurIPS'23

Poster

On the Importance of Feature Decorrelation for Unsupervised Representation Learning in RL

- Hojoon Lee**, Gwanho Lee, Dongyoon Hwang, Hyunho Lee, Byungkyeun Lee, and Jaegul Choo
- [arXiv](#)

ICML'23

Poster

ST-RAP: A Spatio-Temporal Framework for Real Estate Appraisal

- Hojoon Lee***, Hawon Jeong*, Byungkun Lee*, and Jaegul Choo
- [arXiv](#)

CIKM'23

Short, Poster

Towards Validating Long-Term User Feedbacks in Interactive Recommender System

- Hojoon Lee**, Dongyoon Hwang, Kyusik Min, and Jaegul Choo
- [arXiv](#)

SIGIR'22

Short, **Honorable Mention**

DraftRec: Personalized Draft Recommendation for Winning in MOBA Games

- Hojoon Lee***, Dongyoon Hwang*, Hyunseung Kim, Byungkun Lee, and Jaegul Choo
- [arXiv](#)

WWW'22

Poster

CURRENT AND FORMER MENTEES

Youngdo Lee	Co-authored 1 paper (KAIST, MS)	2025
Kyungmin Lee	Co-authored 1 paper (KAIST, MS/PhD)	2023-2025
Donghu Kim	Co-authored 2 papers (Korea Univ, BS → KAIST, MS)	2023-2025
Hyeonsoo Cho	Co-authored 1 paper (Konkuk Univ, BS → KAIST, MS)	2023
Dongyoon Hwang	Co-authored 6 papers (Korea Univ, BS → KAIST, MS/PhD)	2020-2024
Hyunseung Kim	Co-authored 4 papers (Korea Univ, BS → KAIST, MS/PhD → Krafton AI)	2020-2024

HONORS & AWARDS

Crevisse Partners	CIKM Travel Award (\$3,000)	2023
ACM SIGIR	Best Short Paper Honorable Mention	2022
Korea Government	Full Academic Scholarship (\$10,000)	2021
Korea Government	Full Academic Scholarship (\$10,000)	2020
Korea University	Graduation Project Silver Prize (\$2,000)	2019
Seongnam City	College Scholarship (\$4,000)	2017
U.S Army	Eight Army General Paik Sun Yup Leadership Award	2017

INVITED TALKS		
BeNeRL Seminar	Designing Neural Network Architecture for Deep Reinforcement Learning	2024
Sony AI	Towards Plastic Neural Network	2024
Konkuk University	Towards Plastic Neural Network	2024
RL Korea	Pretraining for Intelligent Reinforcement Learning Agent	2023

ACADEMIC SERVICE		
Reviewer	Conference on Neural Information Processing Systems (NeurIPS)	2023-2025
Reviewer	International Conference on Learning Representations (ICLR)	2024-2025
Reviewer	International Conference on Machine Learning (ICML)	2024-2025
Reviewer	International Conference on Intelligent Robots and Systems (IROS)	2025
Reviewer	Conference on Lifelong Learning Agents (CoLLAs)	2025
Reviewer	Association for the Advancement of Artificial Intelligence (AAAI)	2024

TECHNICAL-SKILLS	
Proficient	Git, Python, PyTorch, Tensorflow, Jax
Experienced	C, Docker, SQL, Hadoop