

Hojoon Lee

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Research Interest

My goal is to develop a scalable robotic foundation model that can continually adapt and generalize.

I enjoy collaborating with diverse teams, mentoring juniors, and building real-world systems.

Previous works include:

- Scalable RL & Plasticity ([Preprint'25](#), [Preprint'25](#), [ICML'25](#), [ICLR'25](#), [ICML'24](#), [NeurIPS'23](#)).
- Robotics ([Preprint'25](#), [Preprint'25](#), [Preprint'25](#), [RA-L'25](#)).
- RL Post-training ([COLMw'25](#), [WWW'22](#)).
- Self-supervised learning ([ICML'24](#), [ICML'23](#)).
- Skill Discovery ([NeurIPS'24](#), [NeurIPS'23](#)).

Education

2022.03 – 2026.02 KAIST, PhD in Artificial Intelligence (Advisor: [Jaegul Choo](#)).

Thesis: *Maintaining Plasticity for Scalable Deep Reinforcement Learning*.

Committee: [Jaegul Choo](#), [Chulhee Yun](#), [Kimin Lee](#), [Clare Lyle](#), [Peter Stone](#).
[slide](#)

2020.03 – 2022.02 KAIST, MS in Artificial Intelligence.

Thesis: *Personalized Draft Recommendation System for Victory in League of Legends*.
[thesis](#)

2014.03 – 2020.02 Korea University, BS in Computer Science.

Work Experience

2025.05 – 2025.11 Research Intern @ Meta Reality Labs (Mentor: [Nitin Kamra](#), [Karl Ridgeaway](#))

Designed an autonomous reward design agent for dexterous manipulation.
[paper](#)

2025.02 – 2025.04 Research Intern @ Krafton AI (Mentor: [Dongmin Park](#), [Jongho Park](#))

Developed a chess-playing agent by fine-tuning an LLM with reinforcement learning.
[paper](#)

2024.02 – 2024.08 Research Intern @ Sony AI (Mentor: [Takuma Seno](#), [Kaushik Subramanian](#), [Peter Stone](#))

Developed a vision-based autonomous racing agent in GranTurismo 7.
[paper](#), [video](#)

2021.09 – 2021.11 Research Intern @ Kakao Enterprise (Mentor: [Kyushik Min](#))

Implemented an open-source reinforcement learning library for research.
[code](#) (300+☆)

2019.03 – 2019.07 Research Intern @ Neowiz (Mentor: [Jaejin Yoon](#))

Developed a reinforcement learning agent for the tactical RPG game, Browndust.
[poster](#)

Research Topics and Publications

Maintaining Plasticity for Scalable RL

- Preprint'25* **Unleashing the Architectural Potential of RL in Visual Continuous Control**
Donghu Kim, Youngdo Lee, Hojoon Lee, Johan Obando-Ceron, ByungKun Lee,
Aaron Courville, Pablo Samuel Castro, Jaegul Choo, Clare Lyle.
[paper](#)
- Preprint'25* **FIRE: Frobenius-Isometry Reinitialization for Balancing Stability-Plasticity Tradeoff**
Isaac Han, Sangyeon Park, Seungwon Oh, Donghu Kim, Hojoon Lee, Kyungjoon Kim.
[paper](#)
- ICML'25
(spotlight)* **SimbaV2: Hyperspherical Normalization for Scalable RL**
Hojoon Lee, Youngdo Lee*, Takuma Seno, Donghu Kim, Peter Stone, Jaegul Choo.*
[paper](#), [website](#), [code](#) (50+☆)
- ICLR'25
(spotlight)* **Simba: Simplicity Bias for Scaling Up Parameters in Deep RL**
Hojoon Lee, Dongyoon Hwang*, Donghu Kim, Hyunseung Kim, Jun Jet Tai, Kaushik Subramanian, Peter R.Wurman, Jaegul Choo, Peter Stone, Takuma Seno.*
[paper](#), [website](#), [code](#) (100+☆)
- ICML'24* **Slow and Steady Wins the Race: Maintaining Plasticity with Hare and Tortoise**
Hojoon Lee, Hyeonseo Cho, Hyunseung Kim, Donghu Kim, Jaegul Choo, Clare Lyle.
[paper](#)
- NeurIPS'23* **PLASTIC: Improving Input and Label Plasticity for Sample-Efficient RL**
Hojoon Lee, Hanseul Cho*, Hyunseung Kim*, Daehoon Gwak, Joonkee Kim, Jaegul Choo, Seyoung Yun, Chulhee Yun.*
[paper](#)
- Robotics**
- Preprint'25* **RDA: Reward Design Agent for Reinforcement Learning**
Hojoon Lee, Ajay Subramanian, Ben Abbatematteo, Pedro Matias, Vijay Veerabadran, Karl Ridgeway, Nitin Kamra.
[paper](#)
- Preprint'25* **PHUMA: Physically Grounded Humanoid Locomotion Dataset**
Kyungmin Lee, Sibeon Kim*, Minho Park, Dongyoon Hwang, Hojoon Lee, Jaegul Choo.*
[paper](#), [website](#), [code](#) (150+☆)
- Preprint'25* **ACG: Action Coherence Guidance For Flow-based VLA Models.**
Minho Park, Kinam Kim*, Junha Hyung, Hyojin Jang, Hoijeong Jin, Jooyeol Yun, Hojoon Lee, Jaegul Choo.*
[paper](#), [website](#), [code](#)
- RA-L'25* **A Champion-level Vision-based Racing Agent for Competitive Racing in GT7.**
Hojoon Lee, Takuma Seno, Jun Jet Tai, Kaushik Subramanian, Kenta Kawamoto, Peter Stone, Peter R.Wurman.
[paper](#), [video](#)

RL Post-training

- CoLMw'25 Can Large Language Models Develop Strategic Reasoning? Post-training insights from Learning to Play Chess
Dongyoon Hwang, Hojoon Lee*, Jaegul Choo, Dongmin Park, Jongho Park*
[paper](#)
- WWW'22 DraftRec: Personalized Draft Recommendation System for Victory in MOBA games
Hojoon Lee, Dongyoon Hwang*, Hyunseung Kim, Byungkun Lee, Jaegul Choo*
[paper](#)

Self-Supervised Learning

- ICML'24 Investigating Pre-training Objectives for Generalization in Vision-Based RL
Donghu Kim, Hojoon Lee*, Kyungmin Lee*, Dongyoon Hwang, Jaegul Choo.*
[paper](#)
- ICML'23 On the importance of Feature Decorrelation for Representation Learning in RL
Hojoon Lee, Gwanho Lee, Dongyoon Hwang, Hyunho Lee, Byungkun Lee, Jaegul Choo.
[paper](#)

Skill Discovery

- NeurIPS'24 Do's and Don'ts: Learning Desirable Skills with Instruction Videos
Hyunseung Kim, Byungkun Lee, Hojoon Lee, Dongyoon Hwang, Donghu Kim, Jaegul Choo.
[paper](#)
- NeurIPS'23 Learning to Discover Skills through Guidance
Hyunseung Kim, Byungkun Lee*, Hojoon Lee, Dongyoon Hwang, Kyuhsik Min, Jaegul Choo.*
[paper](#)

Mentoring

- 2025.03 – 2025.10 [Isaac Han](#): Advised on [Preprint'25](#) (GIST PhD)
- 2025.03 – 2025.10 [Kyuungmin Lee](#): Advised on [Preprint'25](#) (KAIST PhD)
- 2025.03 – 2025.10 [Sibeon Kim](#): Advised on [Preprint'25](#) (KAIST MS)
- 2025.03 – 2025.10 [Minho Park](#): Mentored on [Preprint'25](#) (KAIST PhD)
- 2024.10 – 2025.03 [Donghu Kim](#): Mentored on [Preprint'25, ICML'24](#) (KAIST MS)
- 2024.10 – 2025.03 [Youngdo Lee](#): Mentored on [ICML'24](#) (KAIST MS → Krafton AI)
- 2023.09 – 2024.02 [Hyeonseo Cho](#): Mentored on [ICML'24](#) (Konkuk BS → KAIST MS)
- 2021.09 – 2023.02 [Dongyoon Hwang](#): Co-authored 5 papers (Korea Univ BS → KAIST PhD)
- 2021.09 – 2023.02 [Hyunseung Kim](#): Co-authored 4 papers (Korea Univ BS → KAIST PhD → Krafton AI)

Skills

- Technical C, Python, PyTorch, Jax, Tensorflow, Git, CI/CD, Docker, Isaac, Mujoco
- Lingual Korean (native), English (business fluent)

Talks and Presentations

- 2024.11 BeNeRL: Designing Neural Network Architecture for Deep RL [slide](#)
- 2024.05 Sony AI: Towards Plastic Neural Network [slide](#)
- 2024.02 Konkuk University: Towards Plastic Neural Network [slide](#)
- 2023.12 RL Korea: Pretraining for Intelligent Reinforcement Learning Agent [slide](#)

Honors and Awards

- 2023.06 Crevisse Partners: CIKM Travel Award (3,000 USD)
- 2022.10 ACM SIGIR: Best Short Paper Honorable Mention Award
- 2021.03 Korea Government: Full Academic Scholarship (10,000 USD)
- 2020.03 Korea Government: Full Academic Scholarship (10,000 USD)
- 2019.12 Korea University: Graduation Project Award (1,500 USD)
- 2017.09 Seongnam City: College Scholarship (4,000 USD)
- 2017.02 US Army: General Paik Sun Yup Leadership Award [article](#)

Academic Services

Reviewer NeurIPS, ICML, ICLR, AAAI, CoLLAs, ICRA, IROS, CoG

Military Services

2015.04-2017.03 KATUSA (Korean Augmentation to the U.S. Army), Discharged as Sergeant