Hojoon Lee

✉ joonleesky@kaist.ac.kr | ⌂ joonleesky.github.io | ⌗ github

RESEARCH INTERESTS

I'm interested in developing embodied AI that can continuously learn and adapt in dynamic environments, including:

1. Designing frameworks to integrate foundation models for long-term planning.

2. Designing compute- and sample-efficient RL models for short-term execution and rapid adaptation.

EDUCATION

KAIST   *Seongnam, Korea*
M.S / PH.D. STUDENT IN AI (GPA: 4.1 / 4.3).   *Mar.2020 - Present*
- Advisor: Jaegul Choo.

Korea University   *Seoul, Korea*
B.S IN COMPUTER SCIENCE (GPA: 4.05 / 4.5).   *Mar.2014 - Feb.2020*

WORK

Krafton AI   *Seoul, Korea*
RESEARCH INTERN   *Feb.2025 - Apr.2024*
- LLM + RLHF in interactive game environments.

Sony AI   *Tokyo, Japan*
RESEARCH INTERN   *Feb.2024 - Aug.2024*
- Developed a vision-based RL agent in a racing game, GranTurismo 7.
- Mentor: Takuma Seno, Kaushik Subramanian, and Peter stone.

KakakEnterprise   *Seongnam, Korea*
AI RESEARCH INTERN   *Sep.2021 - Nov.2021*
- Developed an open-source RL framework, Jorldy (300+ ☆).
- Mentor: Kyushik Min.

Neowiz   *Seongnam, Korea*
AI RESEARCH INTERN   *Mar.2019 - Jun.2019*
- Developed an RL agent in a turn-based game, Brave Nine.

PUBLICATIONS

SimbaV2: Hyperspherical Normalization for Scalable Deep Reinforcement Learning   *Preprint*
- **Hojoon Lee***, Youngdo Lee*, Takuma Seno, Donghu Kim, Peter Stone, Jaegul Choo
- arXiv / project page / code / dataset

A Champion-level Vision-based RL Agent for Competitive Racing in Gran Turismo 7   *Preprint*
- **Hojoon Lee***, Takuma Seno*, Jun Jet Tai*, Kaushik Subramanian, Kenta Kawamoto, Peter R.Wurman, Peter Stone
- arXiv / video

SimBa: Simplicity Bias For Scaling Up Parameters in Deep Reinforcement Learning   *ICLR'25*
- **Hojoon Lee***, Dongyoon Hwang*, ..., Kaushik Subramanian, Peter R.Wurman, Jaegul Choo, Peter Stone, Takuma Seno   *Spotlight*
- arXiv / project page / code (70+ ☆)

Do's and Don'ts: Learning Desirable Skills with Instruction Videos   *NeurIPS'24*
- Hyunseung Kim, Byungkun Lee, **Hojoon Lee**, Dongyoon Hwang, Donghu Kim, Jaegul Choo   *Poster*
- arXiv / project page

Slow and Steady Wins the Race: Maintaining Plasticity with Hare and Tortoise Networks   *ICML'24*
- **Hojoon Lee**, Hyeonseo Cho, Hyunseung Kim, Donghu Kim, Dugki Min, Jaegul Choo, Clare Lyle   *Poster*
- arXiv / code

Investigating Pre-Training Objectives for Generalization in Vision-Based RL   *ICML'24*
- Donghu Kim*, **Hojoon Lee***, Kyungmin Lee*, Dongyoon Hwang, Jaegul Choo   *Poster*
- arXiv / project page / code

Adapting Pretrained ViTs with Convolution Injector for Visuo-Motor Control   *ICML'24*
- Donyoon Hwang*, Byungkun Lee*, **Hojoon Lee**, Hyunseung Kim, Jaegul Choo   *Poster*
- arXiv / project page

PLASTIC: Enhancing Input and Label Plasticity for Sample Efficient Reinforcement Learning   *NeurIPS'23*
- **Hojoon Lee***, Hanseul Cho*, Hyunseung Kim*, Daehoon Gwak, Joonkee Kim, Jaegul Choo, Se-Young Yun, Chulhee Yun   *Poster*
- arXiv / code / poster

Learning to Discover Skills through Guidance   *NeurIPS'23*
- Hyunseung Kim*, Byungkun Lee*, **Hojoon Lee**, Dongyoon Hwang, Kyushik Min, Sejik Park, Jaegul Cho   *Poster*
- arXiv

On the Importance of Feature Decorrelation for Unsupervised Representation Learning in RL   *ICML'23*
- **Hojoon Lee**, Gwanho Lee, Dongyoon Hwang, Hyunho Lee, Byungkyeun Lee, and Jaegul Choo   *Poster*
- arXiv

ST-RAP: A Spatio-Temporal Framework for Real Estate Appraisal   *CIKM'23*
- **Hojoon Lee***, Hawon Jeong*, Byungkun Lee*, and Jaegul Choo   *Short, Poster*
- arXiv

Towards Validating Long-Term User Feedbacks in Interactive Recommender System   *SIGIR'22*
- **Hojoon Lee**, Dongyoon Hwang, Kyusik Min, and Jaegul Choo   *Short, **Honorable Mention***
- arXiv

DraftRec: Personalized Draft Recommendation for Winning in MOBA Games   *WWW'22*
- **Hojoon Lee***, Dongyoon Hwang*, Hyunseung Kim, Byungkun Lee, and Jaegul Choo   *Poster*
- arXiv

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*
Hyeonseo 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	International Conference on Learning Representations (ICLR)	*2024-2025*
Reviewer	Conference on Neural Information Processing Systems (NeurIPS)	*2023-2024*
Reviewer	International Conference on Machine Learning (ICML)	*2024-2025*
Reviewer	Association for the Advancement of Artificial Intelligence (AAAI)	*2024*

TECHNICAL-SKILLS

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