Seungyong Moon

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Research Interests

I research developing autonomous agents with strong robustness, generalization, and reasoning capabilities using reinforcement learning. I am currently interested in training language models to perform planning and effectively utilize external tools.

Education

Seoul National University Mar 2019–Feb 2026
PhD in Computer Science (expected)

- Advisor: Hyun Oh Song

Seoul National University Mar 2011–Feb 2019
BS in Mathematical Science, BA in Economics, Minor in Computer Science

- Honers: Summa Cum Laude
- Leave of absence to fulfill mandatory military service (2013–2015)

Work Experience

Research Intern Amsterdam, Netherlands
Qualcomm Sept 2024–Jan 2025

- Working on training language models to execute code traces using reinforcement learning.

Research Intern Seoul, South Korea
KRAFTON June 2023–Sept 2023

- Worked on improving the spatial reasoning of language model agents for gaming environments.

Research Intern Seoul, South Korea
DeepMetrics June 2022–Sept 2022

- Worked on developing reinforcement learning algorithms for ventilator control.

Research Intern Seongnam-si, South Korea
NAVER Corp. July 2018–Aug 2018

- Worked on developing synthetic data generation algorithm for paraphrase identification.

Preprints

[**P1**] **Seungyong Moon**, Bumsoo Park, Hyun Oh Song
Guided Stream of Search: Learning to Better Search with Language Models via Optimal Path Guidance
arXiv, 2024

Publications

[**C6**] **Seungyong Moon**, Junyoung Yeom, Bumsoo Park, Hyun Oh Song
Discovering Hierarchical Achievements in Reinforcement Learning via Contrastive Learning
Neural Information Processing Systems (NeurIPS), 2023

[**C5**] **Seungyong Moon**, JunYeong Lee, Hyun Oh Song
Rethinking Value Function Learning for Generalization in Reinforcement Learning
Neural Information Processing Systems (NeurIPS), 2022

[**C4**] Deokjae Lee, **Seungyong Moon**, Junhyeok Lee, Hyun Oh Song
Query-Efficient and Scalable Black-Box Adversarial Attacks on Discrete Sequential Data via Bayesian Optimization
International Conference on Machine Learning (ICML), 2022

[C3] **Seungyong Moon***, Gaon An*, Hyun Oh Song
Preemptive Image Robustification for Protecting Users against Man-in-the-Middle Adversarial Attacks
AAAI Conference on Artificial Intelligence (AAAI), 2022

[C2] Gaon An*, **Seungyong Moon***, Jang-Hyun Kim, Hyun Oh Song
Uncertainty-Based Offline Reinforcement Learning with Diversified Q-Ensemble
Neural Information Processing Systems (NeurIPS), 2021

[C1] **Seungyong Moon***, Gaon An*, Hyun Oh Song
Parsimonious Black-Box Adversarial Attacks via Efficient Combinatorial Optimization
International Conference on Machine Learning (ICML), 2019 (long talk)

Awards and Scholarships

NeurIPS Scholar Award	2023
NAVER PhD Fellowship Award	2022
NeurIPS Top Reviewers	2022
Yulchon AI Star Scholarship	2022
Qualcomm Innovation Fellowship Finalists	2020,2022
KFAS Computer Science Graduate Student Scholarship	2019–2024
The National Scholarship for Science and Engineering	2015–2016
Gwanak Association Scholarship	2012

Teaching Experience

Teaching Assistant — Fall 2020, Fall 2022
Machine Learning

Teaching Assistant — Spring 2019
Introduction to Deep Learning

Undergraduate Student Instructor — Fall 2017
Basic Calculus 2

Undergraduate Student Instructor — Spring 2017
Basic Calculus 1

Academic Services

Conference Reviewer
NeurIPS (2021-2024), ICML (2022-2024), AAAI (2022-2024), ICLR (2024-2025), RLC (2024), AISTATS (2025)

Journal Reviewer
Neurocomputing (2021), Machine Learning (2023), Transactions on Intelligent Vehicles (2023)

Skills

Programming Languages

- Advanced: Python, PyTorch, JAX, TensorFlow, LaTeX
- Intermediate: C++, MATLAB

Languages

- Korean (native)
- English (fluent)