Seungyong Moon

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Summary

Deep learning researcher focusing on advancing autonomous agents through principled decision-making frameworks. My work integrates reinforcement learning, synthetic data generation, and self-supervised learning to address complex reasoning and planning problems at scale.

Education

PhD **Seoul National University**, Computer Science & Engineering — Seoul, South Korea, Feb 2027
- Advisor: Hyun Oh Song
- Relevant Coursework: Probabilistic Graphical Models, Numerical Analysis for Deep Learning, Advanced Data Structure, Advanced Theory in Computation

BA/BS **Seoul National University**, Economics/Mathematical Sciences — Seoul, South Korea, Feb 2019
- Minor in Computer Science & Engineering
- Summa Cum Laude (GPA: 4.10/4.30, ranked 1st out of 34 students)
- Relevant Coursework: Real Analysis, Studies in Microeconomics (graduate), Introduction to Deep Learning, Advanced Artificial Intelligence (graduate)

Experience

Qualcomm AI Research, Research Intern — Amsterdam, Netherlands, Sept 2024 – Jan 2025
- Developed synthetic data generation methods to improve algorithmic reasoning in large language models.
- Built a reinforcement learning training framework with verifiable rewards for large language models.

Krafton, Research Intern — Seoul, South Korea, June 2023 – Sept 2023
- Developed a self-supervised reinforcement learning method in Minecraft-like game environments.
- Designed an agentic framework to improve the spatial reasoning of GPT-4 in game environments.

DeepMetrics, Research Intern — Seoul, South Korea, June 2022 – Sept 2022
- Built a data preprocessing pipeline and SQL database for ventilator waveform data.
- Developed imitation and reinforcement learning methods for autonomous ventilator control.

Naver Search & Clova, Research Intern — Seongnam-si, South Korea, July 2018 – Aug 2018
- Developed a data augmentation method to improve paraphrase identification in seq2seq models.
- Implemented and benchmarked multiple attention mechanisms in TensorFlow.

Skills

Programming: Python, C++, MATLAB

Deep Learning Frameworks: PyTorch, JAX, TensorFlow

Libraries & Tools: NumPy, Pandas, SciPy, Transformers, vLLM, SGLang, veRL, Git, Docker, Slurm

Languages: English (fluent), Korean (native)

Publications

Learning to Better Search with Language Models via Guided Reinforced Self-Training — NeurIPS 2025
Seungyong Moon, Bumsoo Park, Hyun Oh Song
arxiv.org/abs/2410.02992

Discovering Hierarchical Achievements in Reinforcement Learning via Contrastive Learning — NeurIPS 2023
Seungyong Moon, Junyoung Yeom, Bumsoo Park, Hyun Oh Song
arxiv.org/abs/2307.03486

Rethinking Value Function Learning for Generalization in Reinforcement Learning — NeurIPS 2022
Seungyong Moon, JunYeong Lee, Hyun Oh Song
arxiv.org/abs/2210.09960

Query-Efficient and Scalable Black-Box Adversarial Attacks on Discrete Sequential Data via Bayesian Optimization — ICML 2022
Deokjae Lee, ***Seungyong Moon***, Junhyeok Lee, Hyun Oh Song
arxiv.org/abs/2206.08575

Preemptive Image Robustification for Protecting Users against Man-in-the-Middle Adversarial Attacks — AAAI 2022
Seungyong Moon*, Gaon An*, Hyun Oh Song
arxiv.org/abs/2112.05634

Uncertainty-Based Offline Reinforcement Learning with Diversified Q-Ensemble — NeurIPS 2021
Gaon An*, ***Seungyong Moon****, Jang-Hyun Kim, Hyun Oh Song
arxiv.org/abs/2110.01548

Parsimonious Black-Box Adversarial Attacks via Efficient Combinatorial Optimization — ICML 2019 (oral)
Seungyong Moon*, Gaon An*, Hyun Oh Song
arxiv.org/abs/1905.06635

Awards and Scholarships

- NeurIPS Top Reviewers (2022, 2025)
- NeurIPS Scholar Award (2023)
- NAVER PhD Fellowship Award (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)

Academic Services

- NeurIPS reviewer (2021 – 2025)
- ICML reviewer (2022 – 2026)
- AAAI reviewer (2022 – 2026)
- ICLR reviewer (2024 – 2026)
- AISTATS reviwer (2025 – 2026)