SEUNGPIL LEE

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Personal Statement

Passionate master's student studying artificial intelligence. Interested in Brain-Inspired AI, Natural Language Processing and Reinforcement Learning. Also, maintaining keen interest in interdisciplinary subjects such as Cognitive Science and Science, Technology and Society (STS).

EDUCATION

Gwangju Institute of Science and Technology (GIST) *March 2025 – present*
Master's Program, Major in AI Convergence

Gwangju Institute of Science and Technology (GIST) *March 2018 – December 2024*
B.S. in Electrical Engineering and Computer Science *GPA: 3.66/4.50*
Minor in Mathematics, Minor in Literature

UC Berkeley *June 2019 – August 2019*
Berkeley Summer Session Program *GPA: 4.00/4.00*

PUBLICATIONS

Preprints

- **Seungpil Lee**, Donghyeon Shin, Yunjeong Lee, and Sundong Kim. "Can Large Language Models Develop Gambling Addiction?" *arXiv preprint*, 2025.

Journal Articles

- **Seungpil Lee***, Woochang Sim*, Donghyeon Shin*, Sanha Hwang, Wongyu Seo, Jiwon Park, Seokki Lee, Sejin Kim, and Sundong Kim. "Reasoning Abilities of Large Language Models: In-Depth Analysis on the Abstraction and Reasoning Corpus." *ACM Transactions on Intelligent Systems and Technology* (**ACM TIST**), 2024.
- Sanha Hwang, **Seungpil Lee**, Sejin Kim, and Sundong Kim. "Solution Augmentation for ARC-AGI Problems Using GFlowNet: A Probabilistic Exploration Approach." *Transactions on Machine Learning Research* (**TMLR**), 2025.

Conference Papers

- **Seungpil Lee***, Donghyeon Shin*, Klea Lena Kovacec, and Sundong Kim. "From Generation to Selection: Findings of Converting Analogical Problem-Solving into Multiple-Choice Questions." *Findings of EMNLP* (**EMNLP Findings**), 2024.
- Hosung Lee*, Sejin Kim*, **Seungpil Lee**, Sanha Hwang, Jihwan Lee, Byung-Jun Lee, and Sundong Kim. "ARCLE: The Abstract and Reasoning Corpus Learning Environment for Reinforcement Learning." *Conference on Lifelong Learning Agents* (**CoLLAs**), 2024.

Workshop Papers

- **Seungpil Lee***, Woochang Sim*, Donghyeon Shin*, Sejin Kim, and Sundong Kim. "Reasoning Abilities of Large Language Models through the Lens of Abstraction and Reasoning." *NeurIPS Workshop on System-2 Reasoning at Scale*, 2024.
- Donghyeon Shin*, **Seungpil Lee***, Klea Lena Kovacec, and Sundong Kim. "Regulation Using Large Language Models to Generate Synthetic Data for Evaluating Analogical Ability." *IJCAI Workshop on Analogical Abstraction*, 2024.

Domestic Publications

- **Seungpil Lee**, Jihwan Lee, and Sundong Kim. "Evaluating Prior Knowledge of ARC Using World Models." *Korea Software Congress*, 2023.
- Jihwan Lee, **Seungpil Lee**, Sejin Kim, and Sundong Kim. "Extracting the Core Knowledge of ARC with the World Model." *Korea Software Congress*, 2023.
- Donghyeon Shin, Sanha Hwang, Seokki Lee, Yunho Kim, **Seungpil Lee**, and Sundong Kim. "MC-LARC Benchmark to Measure LLM Reasoning Capability." *Korea Software Congress*, 2023.

* indicates equal contribution

SKILLS

Programming	C, C++, Java, JavaScript, Python
Tools	LaTeX, Spring Boot, PyTorch, Hugging Face
Language	Korean (Native), English (Intermediate)

EXPERIENCE

Microsoft Research Asia (MSRA), Shanghai   *March 2026 – August 2026*
Research Intern, Collaborative Research Program

- Developing structured memory frameworks with test-time memory generation for self-evolving agents on compositional reasoning tasks

DataScience Lab, GIST   *September 2023 – present*
Undergraduate Intern → Master's Student

- LLM evaluation with cognitive science tools (Language of Thought Hypothesis)
- LLM alignment using RLVR methods; Mechanistic interpretability with Sparse Autoencoders

Teaching Assistant, Computer Networking   *September 2023 – December 2025*

- Designed assignments connecting theory to implementation; SDN demo with Ryu and Mininet

Development Team, Korea Navy   *January 2022 – September 2023*

- Developed App and Web services as back-end developer

BioComputing Lab, GIST   *June 2020 – January 2021*
Undergraduate Intern

- Developed Spiking Neural Network methods with synthetic gradients

AWARDS & FUNDING

National Research Foundation of Korea (NRF) Funding   *Sep 2025 – Sep 2026*
Research funding for outstanding master's students

Best Undergraduate Thesis Award, GIST EECS   *February 2025*
Awarded for graduation thesis on MC-LARC benchmark

Korean Government Scholarship, GIST College   *March 2018 – August 2024*
Full scholarship for students at GIST

Scholarship for Summer Session Abroad   *June – August 2019*
UC Berkeley Summer Session scholarship

Navy AI Competition   *August 2023*
Award in drone object detection competition

K-StartUp Finals   *November 2023*
Advanced to finals as ML researcher and back-end developer

EXTRA-CURRICULAR

Published Author – Short Story Collection   *2019*
Published a 400-page short story collection exploring consciousness and identity

AGIST – Deep Learning Study Group   *August 2020 – January 2021*
Presentations on Spiking Neural Networks with STDP learning