Seokki Lee

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Education

MS/Ph.D of Artificial Intelligence — *Gwangju Institute of Science and Technology*
MS/Ph.D integrated degree program — *August 2023 – Present*
Research Field: System-2 Reasoning, Human-like Reasoning, Cognitive Science, Neuro-symbolic, Knowledge Graph, Abstraction and Reasoning, Program Synthesis, Inductive Logic Programming

Bachelor of Information Science and Engineering — *Ritsumeikan University BKC*
Bachelor's degree program — *April 2019 – March 2023*
Major: Information Science and System Engineering
Thesis: LiDAR data-based pedestrian orientation recognition with the aid of super-resolution GAN
Final GPA: 4.24/5.00

Teaching & Leadership Experience

Lab Leader — *January 2026 – Present*
DataScience Lab, GIST — *Gwangju, Korea*
Facilitate lab operations through administrative coordination, event planning, and mentoring programs. Foster collaborative research environment and assist new members with smooth integration into lab activities and ongoing projects.

Technical Assistant — *March 2025 – June 2025*
AI Graduate School, GIST — *Gwangju, Korea*
Supported the instructor in the Artificial General Intelligence course by managing student presentation plan, actively engage students to be involved in discussions, and grading assignments and test results.

Technical Assistant — *September 2024 – December 2024*
AI Graduate School, GIST — *Gwangju, Korea*
Supported the instructor in the Machine Learning and Deep Learning course by answering students' occasional questions, proctoring exams, and grading assignments and test results.

Happy ARC Day Event Organizer, Master of Ceremony — *February 2024*
Data Science Lab, AI Graduate School, GIST — *Gwangju, Korea*
Abstract Reasoning Corpus dataset solving event held by Data Science Lab. Led the entire event with 50 participants and got an average of 9.5 points out of 10 for satisfaction and quality.

Educational Supporter — *September 2022 – January 2023*
Ritsumeikan University BKC — *Shiga, Japan*
Supported the instructor in the Embedded Systems course by answering students' occasional questions outside of class and checking assignments and test results.

Publications

ARCTraj: A Dataset and Benchmark of Human Reasoning Trajectories for Abstract Problem Solving
S. Kim, H. Choi, S. Lee, S. Kim
KDD 2026 Datasets and Benchmarks (To Appear), August 2026
Introduces ARCTraj, a dataset of 10,000+ human reasoning trajectories on 400 ARC tasks with object-level actions and temporal annotations, enabling interpretable AI models to learn structured problem-solving strategies through trajectory-based supervision.

Reasoning Abilities of LLMs: In-Depth Analysis on the Abstraction and Reasoning Corpus
S. Lee, W. Shim, D. Shin, W. Seo, J. Park, S. Lee, S. Hwang, S. Kim, S. Kim
ACM Transactions on Intelligent Systems and Technology (ACM-TIST), January 2025
Conducted three experiments on logical coherence, compositionality, and productivity to measure the intelligence of large language models using the Abstraction and Reasoning Corpus benchmark.

Abductive Symbolic Solver on Abstraction and Reasoning Corpus
M. Lim*, S. Lee*, L. Woletemaryam*, S. Kim
Oral Presentation at LNSAI@IJCAI 2024, August 2024
Proposes a symbolic solver that resembles human-like solving processes using knowledge graphs and domain-specific languages to address the challenging Abstraction and Reasoning Corpus tasks.

O2ARC 3.0: A Platform for Solving and Creating ARC Tasks
S. Shim, D. Ko, H. Lee, S. Lee, D. Song, S. Hwang, S. Kim, S. Kim
Demo Presentation at IJCAI 2024, February 2024
Presents an interactive platform with unit movements, gamification factors, and task-creator tools for analyzing human problem-solving traces on the Abstraction and Reasoning Corpus.

MC-LARC Benchmark to Measure LLM Reasoning Capability
D. Shin, S. Hwang, S. Lee, Y. Kim, S. Kim
Korean Software Congress (KSC), Busan, Korea, June 2023
Introduces MC-LARC, a novel multi-choice dataset based on grid descriptions, to evaluate large language models' reasoning capabilities on the Abstraction and Reasoning Corpus benchmark.

Pedestrian Orientation Estimation based on Super-Resolution of LiDAR Data
S. Lee, Y. Gu, I. Goncharenko, S. Kamijo
IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, USA, January 2023
Applies image super-resolution techniques to 2D-represented LiDAR data for pedestrian orientation estimation, demonstrating performance enhancement through the super-resolution process.

Academic Activities

Principia Analogiae 2025
Lisbon, Portugal (Instituto Superior Técnico), June 19-22, 2025
Attended international workshop on analogical reasoning in artificial Intelligence.

Korea Science and Technology Fair 2025
Daejeon, South Korea, April 16-18, 2025
Operated exhibition booth demonstrating research on AI reasoning systems and ARC-AGI solving tool.

Neural Information Processing Systems (NeurIPS) 2024
Vancouver, Canada (Vancouver Convention Center), December 9-15, 2024
Attended technical sessions and poster presentations on machine learning research.

International Joint Conference on Artificial Intelligence (IJCAI) 2024
Jeju, South Korea (International Convention Center), August 2-9, 2024
Presented oral presentation at LNSAI Workshop and participated in technical sessions.

Technical Skills

Programming Languages: Python, C++, Java, JavaScript, Prolog, LISP
Machine Learning: PyTorch, TensorFlow, scikit-learn, Transformers
Tools & Platforms: Git, Docker, LaTeX, Jupyter
Specialized: ARC-AGI benchmarking, Trajectory analysis, Symbolic learning, Hierarchical Knowledge Graph

Language skills

Korean	Native
English	Fluent
Japanese	Fluent