

Sejin Kim

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EDUCATION

Mar. 2017 ~ Feb. 2023	Korea Advanced Institute of Science and Technology School of Computing	Daejeon, Korea
	Thesis: Region-Level Spatio-Temporal Prediction Based on Transfer Learning for Data-Poor Cities <i>Advisor: Jae-Gil Lee</i> <i>Ph.D. in Computer Science</i>	
Sep. 2013 ~ Aug. 2016	Korea Advanced Institute of Science and Technology School of Computing	Daejeon, Korea
	Thesis: Design and implementation of cost-based query optimization for Odysseus/OOSQL <i>Advisor: Kyu-Young Whang</i> <i>M.S. in Computer Science</i>	
Mar. 2009 ~ Aug. 2013	Korea Advanced Institute of Science and Technology School of Computing	Daejeon, Korea
	<i>B.S. in Computer Science</i>	

RESEARCH EXPERIENCES

- Postdoctoral Researcher at AI Graduate School, Gwangju Institute of Science and Technology, Korea (Apr. 2023 ~ Present)
- Researcher at GraphAI Research, GraphAI Co. Ltd., Korea (Feb. 2023 ~ Mar. 2023)
- Researcher at Advanced Information Technology Research Center, Korea Institute of Science and Technology, Korea (Sep. 2016 ~ Feb. 2017)

WORKING EXPERIENCE

- **GIST AI Graduate School** - Postdoctoral Researcher, Apr. 2023 - Present
- **WITLab** - Lecturer for Korea Olympiad in Informatics (KOI), Mar. 2017 - Feb. 2023
- **GraphAI Labs** - AI Reseracher, Feb. 2023 - Mar. 2023
- **KAIST AITRC** - DB Researcher, Sep. 2016 - Aug. 2017

RESEARCH INTERESTS

- Human-like AI
- Artificial general intelligence
- Reinforcement learning
- Program synthesis

CONFERENCE

1. Park, J.* , Kim, Y., **Kim, S.**, Lee, B., Kim, S.†, (2025), "DIAR: Diffusion-model-guided Implicit Q-learning with Adaptive Revaluation", ICLR (*submitted*).
2. Kim, Y.* , Park, J., Kim, H., **Kim, S.**, Lee, B., Kim, S.†, (2025), "Diffusion-Based Offline RL for Improved Decision-Making in Augmented Single ARC Task", ICLR (*submitted*).
3. **Kim, S.*** , Lee, H., Kim, S.†, (2025), "Addressing and Visualizing Misalignments in Human Task-Solving Trajectories", AAI (*submitted*).
4. **Kim, S.*** , Kim, S.†, (2024), "System-2 Reasoning via Generality and Adaptation", NeurIPS Sys2 Reason Workshop (*accepted*).
5. Lee, S.* , Sim, W.* , Shin, D., **Kim, S.**, Kim, S.†, (2024), "Reasoning Abilities of Large Language Models through the Lens of Abstraction and Reasoning", NeurIPS Workshop (*accepted*).
6. Lee, J.* , Sim, W.* , **Kim, S.**†, Kim, S.† (2024), "Enhancing Analogical Reasoning in the Abstraction and Reasoning Corpus via Model-Based RL", IJCAI IARML Workshop.
7. Shim, S.* , Ko, D.* , Lee, H., Lee, S., Song, D., Hwang, S., **Kim, S.**, Kim, S.†, (2024), "O2ARC 3.0: A Platform for Solving and Creating ARC Tasks", IJCAI Demo.
8. Lee, H.* , **Kim, S.*** , Lee, S., Hwang, S., Lee, J., Lee, B.†, Kim, S.†, (2024), "ARCLE: The Abstraction and Reasoning Corpus Learning Environment for Reinforcement Learning", CoLLAs.
9. Park, J.* , Im, J.* , Hwang, S.* , Lim, M.* , Ualibekova, S., **Kim, S.**, Kim, S.†, (2023), "Unraveling the ARC Puzzle: Mimicking Human Solutions with Object-Centric Decision Transformer", ICML ILHF Workshop.
10. Kim, S., Song, H., **Kim, S.**, Lee, J.-G.†, (2020), "Revisit Prediction by Deep Survival Analysis", PAKDD.
11. Yea, S.-G., **Kim, S.**, TO, J.-M., Lee, J.-G.†, (2016), "SentiWorld: Understanding Emotions between Countries Based on Tweets", ICWSM Demo.

JOURNAL

1. Lee, S.* , Sim, W.* , Shin, D., Hwang, S., Seo, W., Park, J., Lee, S., **Kim, S.** & Kim, S.†, (2024), "Reasoning Abilities of Large Language Models: In-Depth Analysis on the Abstraction and Reasoning Corpus", *ACM TIST* (*under review*).
2. Whang, K.-Y.* , Na, I., Yun, T.-S., Park, J.-A., Cho, K.-H., **Kim, S.**, Yi, I. & Lee, B.-S., (2020), "Building Social Networking Services Systems using the Relational Shared-Nothing Parallel DBMS", *Data & Knowledge Engineering*, 125, 101756.

CONFERENCE (DOMESTIC)

1. Lee, J., Lee, S., **Kim, S.**†, Kim, S.†, (2023), "Extracting the Core Knowledge of ARC with the World Model", Korea Software Congress.
2. Gu, G., Sim, W., Im, J., **Kim, S.**, Kim, S.†, (2023), "Using Contrastive Learning for Abstraction and Reasoning Task", Korea Software Congress.

3. Lee, H., **Kim, S.**, Kim, S.[†], (2023), "ARCLE: Gymnasium Environment for Abstraction and Reasoning Corpus", Korea Software Congress.
4. Park., J., Im., J., Lee, Y., Shin, D., **Kim, S.**, Kim, S.[†], (2023), "Abstraction and Reasoning Challenge with Decision Transformer", Korea Computer Congress.
5. Sim, W., Jin, H., **Kim, S.**, Kim, S., (2023), "The Possibility of Prompt Engineering for ARC Problem Solving", Korea Computer Congress.
6. Shin, Y., Park, D., Kang, J., **Kim, S.**[†], (2022), "Contrastive Learning with Segment Supervision for Semi-Supervised Time Series Classification", Korea Software Congress.
7. Kim, B., Na, J., Byun, Y., **Kim, S.**, Lee., J.-G.[†], (2022), "Autoencoder ODEs for Time Series Anomaly Detection", Korea Software Congress.
8. Kim, J., Kim, D., **Kim, S.**, Kang, J., Park, D., Lee., J.-G.[†], (2022), "Performance Comparison of Self-Driving Models With and Without LIDAR Sensors Based on Reinforcement Learning in AWS DeepRacer Platform ", Korea Computer Congress.
9. Trirat, P., Shin, Y., **Kim, S.**[†], Kim, M.[†], (2021), "Generating a Machine Learning Model with a Few Sentences", Korea Software Congress.
10. Kim, B., Kim, S., **Kim, S.**, Lee, J.-G.[†], (2019), "Customer Revisit Prediction Using Macroscale Mobility Information", Korea Software Congress.
11. **Kim, S.**[†], (2018), "A Comparison of Implementation Method of Spatial Operator in Spatial OLAP ", Korea Computer Congress.

JOURNAL (DOMESTIC)

1. Sim, W., Jin, H., **Kim, S.**, Kim, S.[†], (2024), "The Possibility of Prompt Engineering for ARC Problem Solving", KIISE Transactions on Computing Practices.

PATENTS

1. Lee, J.-G., Lee, C., Kim, J., **Kim, S.**, "Retrieval System for Geosocial Networks and Method of the Same", KR-Registration No. 10-2055900-0000
2. Lee, H., **Kim, S.**, Kim, S., "Method and System for Implementing a Reinforcement Learning Environment Capable of Solving Abstraction and Reasoning Challenge", KR-Application No. 10-2024-0101165

GRANTS

- Developing Abstraction and Reasoning Capability for AI Model, NRF, Sep. 2024 - Aug. 2026 (PI: **Sejin Kim**).
- Development of Artificial Complex Intelligence for Conceptually Understanding and Inferring like Human, IITP, Apr. 2023 - Dec. 2027. (PI: Ohwoog Kwon)
- Enhancing AI Model Reliability Through Domain-Specific Automated Value Alignment Assessment, IITP, Sep. 2024 - Aug. 2027. (PI: Hwanjun Song)

TEACHING ASSISTANT

- CS101 **Introduction to Programming**, School of Computing, KAIST
- CS360 **Introduction to Databases**, School of Computing, KAIST
- CS560 **Database Systems**, School of Computing, KAIST
- CS664 **Advanced Database Systems**, School of Computing, KAIST

- KSE525 **Data Mining and Knowledge Discovery**, Dept. of Knowledge Service Engineering, KAIST
- KSE625 **Analytical Methodologies for Big Data**, Dept. of Knowledge Service Engineering, KAIST