Data Science Lab

https://sundong.kim

AI Graduate School

Sundong Kim

Assistant Professor

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Education
- 2019: Ph.D. in Knowledge Service Engineering, KAIST
- 2015: M.S. in Industrial and Systems Engineering, KAIST
- 2013: B.S. in Industrial and Systems Engineering, KAIST

Positions
- 2022–: Assistant Professor, AI Graduate School, GIST
- 2019–2022: Young Scientist Fellow, Institute for Basic Science
- 2018: Research Intern, Microsoft Research Asia
- 2012: Consulting Intern, Deloitte

Join us

As a faculty in GIST AI, I have a few MS/PhD slots every year. You have to get admission from the department first in order to be eligible to join our lab. Especially, I enjoy working with motivated undergraduate interns, as long as (1) the period is at least 6 months long (winter/summer vacation + following academic semester), and (2) there's a good research fit. There are a few undergrad interns in the lab at any given time.

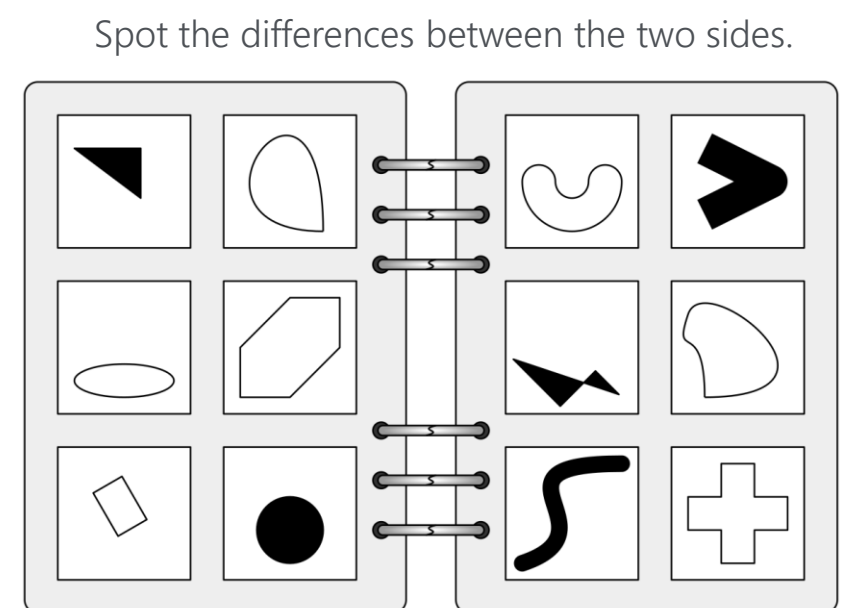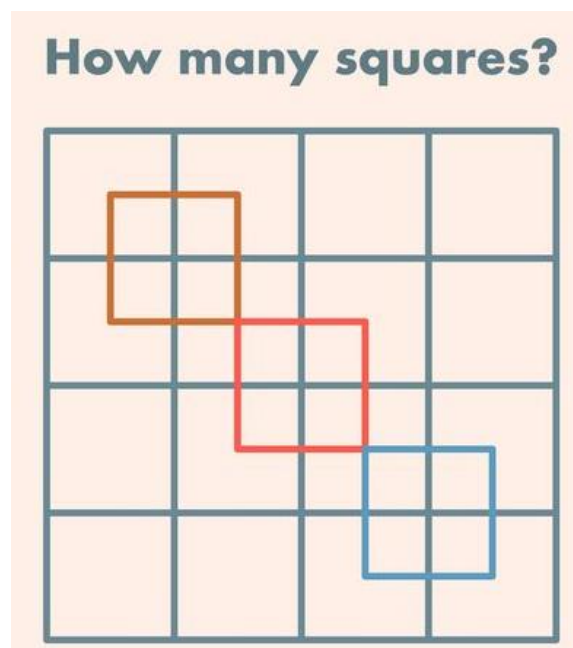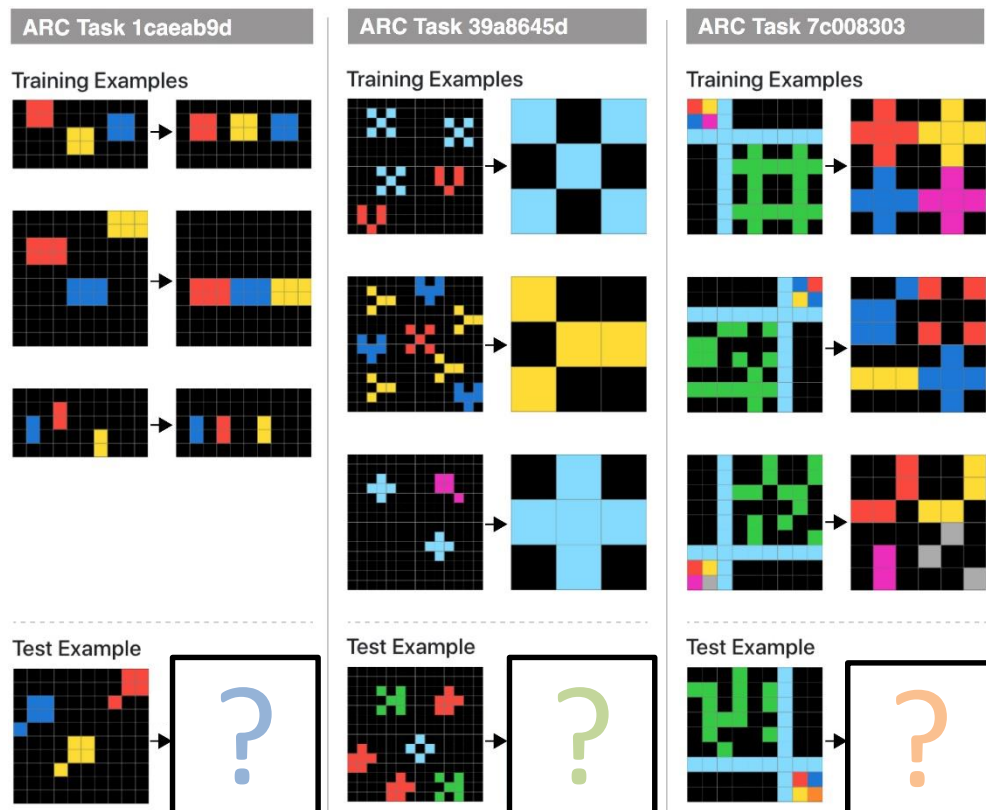* **Check the below QR code for your consideration.**

Research Directions

Our lab aims to build a human-like AI with a focus on abstraction and reasoning:
- Development of AI models capable of human-level abstract thinking and reasoning
- Research on improving the ability of AI models to understand and learn abstract concepts
- Study of methods to enhance the interpretability and transparency of AI models for abstraction and reasoning tasks
- Investigation into the integration of multiple modalities (e.g. vision, language) for abstraction and reasoning tasks
- Exploration of how human-level abstract reasoning can be achieved through self-supervised learning

Methodologies
- Representation learning
- Imitation learning
- Predictive Analytics
- Few-shot learning
- Explainable AI
- Object-centric learning
- Reinforcement learning
- Program synthesis

ARC Task 1caeab9d — Training Examples — Test Example

ARC Task 39a8645d — Training Examples — Test Example

ARC Task 7c008303 — Training Examples — Test Example

How many squares?

Spot the differences between the two sides.

Publications (as of Jan 2023)

AI/ML Conferences

- DualFair: Fair Representation Learning at Both Group and Individual Levels via Contrastive Self-Supervision, **WWW 2023**
- FedX: Unsupervised Federated Learning with Cross Knowledge Distillation, **ECCV 2022**
- Coherence-based Label Propagation over Time series for Accelerated Active Learning, **ICLR 2022**
- Knowledge Sharing via Domain Adaptation in Customs Fraud Detection, **AAAI 2022**
- Improving Unsupervised Image Clustering With Robust Learning, **CVPR 2021**
- Mitigating Embedding and Class Assignment Mismatch in Unsupervised Image Classification, **ECCV 2020**
- DATE: Dual Attentive Tree-aware Embedding for Customs Fraud, **KDD 2020**
- Carpe Diem, Seize the Samples Uncertain "at the Moment" for Adaptive Batch Selection, **CIKM 2020**
- Neural User Embedding from Browsing Events, **ECML-PKDD 2020**
- Revisit Prediction by Deep Survival Analysis, **PAKDD 2020**
- Utilizing In-Store Sensors for Revisit Prediction, **ICDM 2018**

Journals

- Active Learning for Human-in-the-Loop Customs Inspection, IEEE Transactions on Knowledge and Data Engineering 2022
- Response to COVID-19 with Probabilistic Programming, Frontiers in Public Health 2022
- Disruption in the Chinese E-Commerce During COVID-19, Frontiers in Computer Science 2021
- Ada-Boundary: Accelerating the DNN Training via Adaptive Boundary Batch Selection, Machine Learning 2020
- A Systemic Framework of Predicting Customer Revisit with In-Store Sensors, Knowledge and Information Systems, 2019

Workshops

- Playgrounds for Abstraction and Reasoning, NeurIPS Workshop 2022
- Customs Fraud Detection in the Presence of Concept Drift, ICDM Workshop 2021
- Embedding Heterogeneous Hierarchical Structures, IC2S2 (Extended Abstract) 2021

Alumni

Graduate Students at IBS/KAIST Data Science Group (DS Group):

- Donghyun Ahn, 2022
- Sungwon Park (→ PhD at DS Group, Intern at MSRA), 2020-2022
- Sungwon Han (→ PhD at DS Group, Intern at MSRA, UToronto), 2020-2022
- Eunji Lee (→ Visiting UCLA), 2021-2022

Undergraduate Students at IBS/KAIST Data Science Group:

- Sheikh Shafayat, 2022
- Prin Phunyaphibarn, 2022
- Subin Kim (→ MS at KAIST CS), 2022
- Chaeyoon Jeong (→ MS at DS Group), 2021-2022
- Sihyeon Kim (→ MS at KAIST AI), 2021-2022
- Assem Zhunis (→ MS at DS Group), 2021-2022
- Kien Hoang (→ MS at EPFL), 2021
- Aitolkyn Baigutanova (→ MS at DS Group), 2021
- Gaukhartas Alina (→ SWE intern at Google), 2021
- Yuan Yuan (→ PhD at Tsinghua University), 2021
- Jaechan So, (→ Frontend Engineer at Ridi), 2020
- Khanh Thi Nguyen, (→ Software Engineer at Grab), 2020
- Tung-Duong Mai (→ SWE at Samsung Electronics), 2020-2021
- Yu-Che Tsai (→ PhD at National Taiwan University), 2019-2020

Graduate Students at KAIST Data Mining Group:

- Yooju Shin (→ PhD Student at KAIST DM Lab), 2017, 2021-2022
- Minseok Kim (→ Applied Scientist at Amazon Alexa AI), 2017, 2019-2020
- Hwanjun Song (→ Research Scientist at Naver AI → Research Scientist at Amazon AWS AI), 2019-2022

Undergraduate Students at KAIST Data Mining Group:

- Beomyoung Kim (→ ML Engineer at Tanker AI, alternative services), 2019

amazon

Google

Microsoft Research

NAVER CLOVA

EPFL ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

GIST 광주과학기술원
Gwangju Institute of Science and Technology