Seohui Bae

CONTACT
INFORMATION
LG AI Research
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LINKS: GOOGLE SCHOLAR

RESEARCH
INTERESTS
My research is dedicated to scientifically understanding/emerging intelligence. I am especially interested in human-like intelligence, i.e., intelligence built out of deep nets, is highly adaptive and general-purpose, and is emergent from embodied interactions in rich ecosystems. Generally, I question to answer **"How does intelligence come from?"**

WORK
EXPERIENCE

LG AI Research, South Korea
AI SCIENTIST(FULL-TIME)   **Nov 2022 - Present**
- Research Area: Machine Learning [**P1-P4,W1-W3**]
- Supervisor: Dr. Woohyung Lim

Deargen, Start-up, South Korea
RESEARCH SCIENTIST INTERN(FULL-TIME)   Dec 2018 - Feb 2019
- Top-5 performers published [**J3**]
RESEARCH SCIENTIST INTERN(PART-TIME)   Aug 2017 - Apr 2018
- Top-3 in Global ML Challenge

EDUCATION

KAIST, South Korea

M.S., Graduate School of Artificial Intelligence   Mar 2020 - Feb 2022
- Research Area: Machine Learning [**C1,T**]
- Advisor: Prof. Eunho Yang (KAIST AI)

B.S., Biological Science, Computer Science(minor)   Mar 2015 - Feb 2020
- Area of Interest: Neuroscience [**J1-J2,W1**],
  Machine Learning [**J3**]
- Advisor: Prof. Jinhee Han (KAIST BS)

Korea Science Academy of KAIST, South Korea

High School Diploma   Mar 2012 - Feb 2015

PUBLICATIONS
(SELECTED)

**Machine
Intelligence**

(C: conference, W: workshop, J: journal, P: preprint/reviewing/working paper, * equal contribution)

[P4] Your Large Language Model is an Actionable Forecasting Agent
Seohui Bae, Jun Seo, Soyeon Park, Dongwan Kang, Jinseok Yang, Hyeokjun Choe, Woohyung Lim [pdf]

[P3] Assimilate Your Neuron: Expanding Action Space of Language Model Agents via Neural Functions Acquisition
Seohui Bae*, Jeonghye Kim*, Youngchul Sung, Woohyung Lim [pdf]

[P2] Learning to Extrapolate Implicit Neural Representation in Parameter Manifold
Seohui Bae, Jaehoon Lee, Jun Seo, Wonbin Ahn, Woohyung Lim [pdf]

[W4] Adaptive Information Routing for Multimodal Time Series Forecasting
Jun Seo, Hyeokjun Choe, **Seohui Bae**, Soyeon Park, Jinseok Yang, Dongwan Kang, Woohyung Lim
NeurIPS 2024 Workshop on Time Series in the Age of Large Models [pdf]

[W3] ShERPA: Shifting basin for Enhanced Robustness via Permuted Activations
Dong Kyu Cho, Jinseok Yang, Jun Seo, **Seohui Bae**, Dongwan Kang, Soyeon Park,

Hyeokjun Choe, Woohyung Lim
ICLR 2024 Workshop on Mathematical and Empirical Understanding of Foundation Models
[pdf]

[W2] Gradient Surgery for One-shot Unlearning on Generative Model
Seohui Bae, Seoyoon Kim, Hyemin Jung, Woohyung Lim
ICML 2023 Workshop on Generative AI and Law [pdf]

[P1] Towards True Deletion of Group Influence in Deep Network
Seohui Bae, Woohyung Lim
Under Review [pdf]

[C1] GTA: Graph Truncated Attention for Retrosynthesis
Seung-woo Seo, You Young Song, June Yong Yang, **Seohui Bae**, Hankook Lee, Jinwoo Shin, Sung Ju Hwang, Eunho Yang
AAAI 2021 [pdf]

[J3] Community Assessment of the Predictability of Cancer Protein and Phosphoprotein Levels from Genomics and Transcriptomics
Mi Yang, Francesca Petralia,.., Bora Lee, **Seohui Bae**, Eunji Heo, .., Julio Saez-Rodriguez
Ranked **Top-3** in NCI-CPTAC DREAM **Global ML Challenge** 2018
Cell Systems 2020, 11(2), 186-195 [pdf]

Human Intelligence	[J2] Exploration driven by a medial preoptic circuit facilitates fear extinction in mice

**Human
Intelligence**

[J2] Exploration driven by a medial preoptic circuit facilitates fear extinction in mice
Anna Shin, Jia Ryoo, Kwanho Shin, Junesu Lee, **Seohui Bae**, Dae-Gun Kim, Sae-Geun Park, Daesoo Kim
Communications Biology, 6, 106, 2023 [pdf]

[W1] Brain Functional Connectivity in Language Switching of Bilinguals
Hiroyuki Akama, **Seohui Bae**, Miaomei Lei
The 36th Annual Meeting of Japanese Cognitive Science Society, 2019 [pdf]

[J1] Medial preoptic circuit induces hunting-like actions to target objects and prey
Sae-Geun Park, Yong-Cheol Jeong, Dae-Gun Kim, Min-Hyung Lee, Anna Shin, Geunhong Park, Jia Ryoo, Jiso Hong, **Seohui Bae**, Cheol-Hu Kim, Pill-Seung Lee, Daesoo Kim
Nature Neuroscience 21, 364-372, 2018 [pdf]

PROJECTS

Research Scientist, LG AI Research

- Projects: Building Foundation Model for time-series, Benchmark for Multi-modal Time-series Forecasting, Holistic Evaluation on LLM RAG, > 5 Paper works
- Tech stack: LLava, xx, xx.

Research Assistant, Consulting Group

- Projects:
- Tech stack:
- I had my second gap year here which was a lot of fun!

Undergraduate Intern, KAIST

- Projects: Retrosynthesis
- Tech stack:

Research Scientist Intern, Start-up

- Projects:
- Tech stack:
- I had my first gap year here which was a lot of fun!

Visiting Student Researcher, Tokyo Institute of Technology

- Projects:
- Tech stack:

Undergraduate Intern, KAIST

- Projects:
- Tech stack:

HONORS

Global 3rd Prize, NCI-CPTAC DREAM ML Challenge, NIH, USA, 2018 [**J3**]

National Science & Technology Scholarship, Korea, 2015-2018
(National academic scholarship for *top 5%* STEM students; $10,000)

Student Honor Club, Korean Academy of Science and Technology, 2013-Present

TEACHING

Lecturer, AI/DX for Samsung Electronics, Elice Inc., Aug 2022 - Nov 2022

Lecturer, AI Mentorship Program, KAIST CT, Mar 2021 - Dec 2021

Academic Mentor, Korea Science Outreach Program, KAIST, Aug 2018 - Dec 2018

Teaching Assistant, Introduction to CS (CS101), KAIST, Aug 2018 - Dec 2018

Academic Mentor, LG-KAIST Sponsoring Program, KAIST, Mar 2016 - Aug 2016

SERVICES

Workshop Co-organizer

- *1st-Workshop on Actionable Forecasting Agent* @ International Conference on Machine Learning (ICML) 2025 (*Under Review*)

Conference Reviewer

- International Conference on Learning Representation (ICLR) 2025
- Neural Information Processing Systems (NeurIPS) 2024

Short Paper(/Workshop/Tiny Paper) Reviewer

- International Conference on Learning Representation (ICLR) 2024
- International Conference on Machine Learning (ICML) 2023
- Association for the Advancement of Artificial Intelligence (AAAI) 2023

Journal Reviewer

- ACM Computing Surveys 2024

SKILLS

Programming Language: Python, C/C++

Deep Learning Framework: PyTorch, JAX, PyTorch Geometric (PyG)