

Sehyun Kwon

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Research interest

Representations, Foundation models

Education

Seoul National University <i>Ph.D in Artificial Intelligence (Advisor: Ernest K. Ryu)</i>	Sep 2022 – Feb 2025
Seoul National University <i>M.S. in Mathematical Sciences (Advisor: Ernest K. Ryu)</i>	Feb 2020 – Sep 2022
Dankook University <i>B.S. in Mathematics Education</i>	Feb 2014 – Feb 2020

Work Experiences

Samsung Research -Staff Engineer <ul style="list-style-type: none">Developed lightweight retrieval models for on-device deployment in Galaxy S26Pre-training and fine-tuning on-device Vision-Language Models.	Mar 2025 – present Seoul, Korea
NAVER AI Lab - Research Scientist Intern <ul style="list-style-type: none">Conducted research on Vision Language Representations	Jun 2024 – Nov 2024 Jeongja, Korea
KRAFTON AI - Research Scientist Intern <ul style="list-style-type: none">Conducted research on Large Language Models	Jun 2023 – Jan 2024 Seoul, Korea

Publications

J: Journal C: Conference P: Preprint W: Workshop *: Co-first author

- [P] **Geometric Collapse in Compositional Dense Retrieval**
 - Sehyun Kwon, Sahngmin Yoo
 - Preprint, 2026
- [J] **Task Diversity Shortens the In-Context Learning Plateau**
 - Jaeyeon Kim*, Sehyun Kwon*, Joo Young Choi, Jongho Park, Jaewoong Cho, Jason D.Lee, Ernest K. Ryu
 - Transactions on Machine Learning Research (TMLR), 2025
- [C] **Image Clustering Conditioned on Text Criteria**
 - Sehyun Kwon, Jaeseung Park, Minkyu Kim, Jaewoong Cho, Ernest K. Ryu, Kangwook Lee
 - International Conference on Learning Representations (ICLR), 2024.
- [C] **Rotation and Translation Invariant Representation Learning with Implicit Neural Representations**
 - Sehyun Kwon, Joo Young Choi, Ernest K. Ryu
 - International Conference on Machine Learning (ICML), 2023.
 - Learning invariant representations from real-world data, such as semiconductor data.
- [W] **Diffusion Probabilistic Models Generalize when They Fail to Memorize**
 - Taeho Yoon, Joo Young Choi, Sehyun Kwon, Ernest K. Ryu
 - International Conference on Machine Learning Workshop (ICML Workshop), 2023.
- [C] **WGAN with an Infinitely Wide Generator Has No Spurious Stationary Points**
 - Albert No, Taeho Yoon, Sehyun Kwon, Ernest K. Ryu
 - International Conference on Machine Learning ICML, 2021.

Fellowships and Awards

- 2024 Youlchon AI Star Fellowship
- 2023 Samsung DS excellent paper award
- 2023 3rd Prize for Best Poster Award at the SNU AI Spring Retreat.
- 2022 Outstanding TA Award for the Mathematical Foundations of Deep Neural Networks course.

Teaching Experiences

Seoul National University, Teaching Assistant

Mar 2020 – 2024

- Generative AI and Foundation Models (Spring 2024)
- Mathematical Foundations of Deep Neural Networks (Spring 2024)
- Mathematical Foundations of Deep Neural Networks (Fall 2022)
- Mathematical Foundations of Deep Neural Networks (Fall 2021) - *Outstanding TA Award Winner*
- Calculus for Humanities and Social Sciences 2 (Fall 2021)
- Mathematical Algorithms 1 (Graduate) (Spring 2021)
- Engineering Mathematics 2 (Spring 2021)
- Mathematics for Business (Fall 2020)
- Information Society and Mathematics (Fall 2020)
- Calculus 1 (Spring 2020)

Services

Reviewer at ICML, ICLR, NeurIPS, AACL, 2023–2025