

# Sehyun Kwon

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## Research interest

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### Representations, Foundation models

## Education

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

## Work Experiences

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<b>Samsung Research</b> -Staff Engineer	Mar 2025 – present Seoul, Korea
• Developed lightweight retrieval models for on-device deployment in Galaxy S26 • Pre-training and fine-tuning on-device Vision-Language Models.	
<b>NAVER AI Lab</b> - Research Scientist Intern	Jun 2024 – Nov 2024 Jeongja, Korea
• Conducted research on Vision Language Representations	
<b>KRAFTON AI</b> - Research Scientist Intern	Jun 2023 – Jan 2024 Seoul, Korea
• Conducted research on Large Language Models	

## Publications

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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

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- 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

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<b>Seoul National University, Teaching Assistant</b>	Mar 2020 – 2024
<ul style="list-style-type: none"><li>• Generative AI and Foundation Models (Spring 2024)</li><li>• Mathematical Foundations of Deep Neural Networks (Spring 2024)</li><li>• Mathematical Foundations of Deep Neural Networks (Fall 2022)</li><li>• Mathematical Foundations of Deep Neural Networks (Fall 2021) - <i>Outstanding TA Award Winner</i></li><li>• Calculus for Humanities and Social Sciences 2 (Fall 2021)</li><li>• Mathematical Algorithms 1 (Graduate) (Spring 2021)</li><li>• Engineering Mathematics 2 (Spring 2021)</li><li>• Mathematics for Business (Fall 2020)</li><li>• Information Society and Mathematics (Fall 2020)</li><li>• Calculus 1 (Spring 2020)</li></ul>	

## Services

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