SUNGBIN SHIN

Ph.D. Student in Computer Science and Engineering, POSTECH
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RESEARCH INTERESTS

Large-scale optimization for foundation models: distributed/efficient training of LLMs and understanding high-dimensional learning dynamics.

EDUCATION

Pohang University of Science and Technology (POSTECH) *Feb 2023 – Present*
Ph.D. in Computer Science and Engineering
Advisor: Prof. Namhoon Lee
GPA: 4.19 / 4.3

Pohang University of Science and Technology (POSTECH) *Feb 2019 – Feb 2023*
B.S. in Computer Science and Engineering
GPA: 4.04 / 4.3 (Summa Cum Laude)

EXPERIENCE

Google *May 2023 – Apr 2024*
Student Researcher

- Collaborated remotely with the Model Optimization Team.
- Published a paper at EMNLP 2024 on LLM pruning.

Lee Optimization Group, POSTECH *Feb 2022 – Feb 2023*
Undergraduate Research Intern

- Advised by Prof. Namhoon Lee.
- Published a paper at ICML 2023 on interpretable machine learning.

PUBLICATIONS

(denotes equal contribution)*

1. **Mitigating Staleness in Asynchronous Pipeline Parallelism via Basis Rotation**
   Hyunji Jung*, **Sungbin Shin***, Namhoon Lee

International Conference on Machine Learning (ICML), 2026.

2. **Critical Influence of Overparameterization on Sharpness-aware Minimization**
   Sungbin Shin*, Dongyeop Lee*, Maksym Andriushchenko, Namhoon Lee
   Conference on Uncertainty in Artificial Intelligence (UAI), 2025.
   (Earlier version presented at *ICML Workshop on High-dimensional Learning Dynamics*, 2023.)
   [Best Paper Award at Joint Conference of the Korean Artificial Intelligence Association (JKAIA) 2023]

3. **Rethinking Pruning Large Language Models: Benefits and Pitfalls of Reconstruction Error Minimization**
   Sungbin Shin, Wonpyo Park, Jaeho Lee, Namhoon Lee
   Conference on Empirical Methods in Natural Language Processing (EMNLP), 2024.

4. **Semi-supervised Concept Bottleneck Models**
   Jeeon Bae, **Sungbin Shin**, Namhoon Lee
   ICML Workshop on AI & HCI, 2023.

5. **A Closer Look at the Intervention Procedure of Concept Bottleneck Models**
   Sungbin Shin, Yohan Jo, Sungsoo Ahn, Namhoon Lee
   International Conference on Machine Learning (ICML), 2023.
   (Earlier version presented at *NeurIPS Workshop on Trustworthy and Socially Responsible Machine Learning (TSRML)*, 2022.)

PATENTS

1. **Method for Image Classification Model Generating and Image Processing System Using the Image Classification Model**
   Namhoon Lee, **Sungbin Shin**, Yohan Jo, Sungsoo Ahn
   International Patent Application No. PCT/KR2024/096195 (*Filed Sep 2024*)
   Korean Patent Application No. 10-2023-0112549 (*Filed Aug 2023*)

TALKS

- **The Effects of Overparameterization on Sharpness-aware Minimization: An Empirical and Theoretical Analysis** *Dec 2023*
  Joint Conference of the Korean Artificial Intelligence Association (JKAIA) 2023

Honors and Awards

- **Kwanjeong Educational Foundation Scholarship** *2023 – 2025*
  The most prestigious private scholarship in South Korea, awarded to top-tier graduate students based on a highly competitive selection of academic and research excellence. Provides comprehensive support including full tuition and stipends (4 semesters).
- **Best Paper Award**, Joint Conference of the Korean Artificial Intelligence Association *2023*
- **POSTECH CSE Global Leadership Program Scholarship** *2020 – 2022*
  Departmental scholarship awarded for three semesters based on outstanding academic and research potential.
- **National Scholarship of Excellence (Science & Engineering)** *2019 – 2023*
  Highly competitive full-tuition scholarship awarded to top-tier students in STEM fields for the entire undergraduate period by the Korea Student Aid Foundation (KOSAF).

Teaching Experience

POSTECH *Spring 2026*
Teaching Assistant, Optimization for Data Science

POSTECH *Spring 2024*
Teaching Assistant, Deep Learning

POSCO AI Experts Training Program *Fall 2022*
Teaching Assistant, Machine Learning & Deep Learning

Professional Services

- **Reviewer**, Conference on Neural Information Processing Systems (NeurIPS) *2026*
- **Reviewer**, International Conference on Machine Learning (ICML) *2026*
- **Reviewer**, Transactions on Machine Learning Research (TMLR) *2025 – Present*