Jaeyong Song

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Accelerated Intelligent Systems Lab. (AISys) @ Seoul National University

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Research Interest: SYSTEMS & ARCHITECTURES FOR DEEP LEARNING

Distributed Deep Learning, Accelerators, Large Language Models (LLMs), Graph Neural Networks (GNNs)

EDUCATION

- **Seoul National University** — Seoul, Korea
  Ph.D. Candidate - Electrical & Computer Engineering; Current GPA: 4.20/4.3 — September 2023 - February 2027

- **Yonsei University** — Seoul, Korea
  M.S. - Computer Science; GPA: 4.25/4.3 — September 2021 - August 2023

- **Yonsei University** — Seoul, Korea
  B.E. - Applied Statistics, B.S. - Computer Science; GPA: 4.17/4.3 (3.96/4.0, Rank: 2/88) — - August 2021

PUBLICATIONS

[1]: indicates co-first authors.

- **FlexiWalker: Extensible GPU Framework for Efficient Dynamic Random Walks with Runtime Adaptation**:
  Seongyeon Park, Jaeyong Song, Changmin Shin, Sukjin Kim, Junguk Hong, Jinho Lee   *EuroSys*, 2026

- **FALA: Locality-Aware PIM-Host Cooperation for Graph Processing with Fine-Grained Column Access**:
  Changmin Shin, Jaeyong Song, Seongmin Na, Jun Sung, Hongsun Jang, Jinho Lee   *MICRO*, 2025

- **Piccolo: Large-Scale Graph Processing with Fine-Grained In-Memory Scatter-Gather**: Changmin Shin,
  Jaeyong Song, Hongsun Jang, Dogeun Kim, Jun Sung, Taehee Kwon, Jae Hyung Ju, Frank Liu, Yeonkyu Choi, and Jinho Lee
  HPCA, 2025

- **GraNNDis: Fast Distributed Graph Neural Network Training Framework for Multi-Server Clusters**:
  Jaeyong Song, Hongsun Jang, Hunseong Lim, Jaewon Jung, Youngsok Kim, and Jinho Lee   *PACT*, 2024

- **A Case for In-Memory Random Scatter-Gather for Fast Graph Processig**: Changmin Shin[1], Taehee Kwon[1],
  Jaeyong Song, Jae Hyung Ju, Fank Liu, and Jinho Lee   *IEEE CAL*, 2024

- **PeerAiD: Improving Adversarial Distillation from a Specialized Peer Tutor**: Jaewon Jung, Hongsun Jang,
  Jaeyong Song, and Jinho Lee   *CVPR*, 2024

- **AGAThA: Fast and Efficient GPU Acceleration of Guided Sequence Alignment for Long Read Mapping**:
  Seongyeon Park, Junguk Hong, Jaeyong Song, Hajin Kim, Youngsok Kim, and Jinho Lee   *PPoPP*, 2024

- **Pipette: Automatic Fine-grained Large Language Model Training Configurator for Real-World Clusters**:
  Jinkyu Yim[1], Jaeyong Song[1], Yerim Choi, Jaebeen Lee, Jaewon Jung, Hongsun Jang, and Jinho Lee   *DATE*, 2024

- **Smart-Infinity: Fast Large Language Model Training using Near-Storage Processing on a Real System**:
  Hongsun Jang, Jaeyong Song, Jaewon Jung, Jaeyoung Park, Youngsok Kim, and Jinho Lee   *HPCA* (**Best Paper Award Honorable Mention**), 2024

- **Fast Adversarial Training with Dynamic Batch-level Attack Control**: Jaewon Jung, Jaeyong Song, Hongsun Jang,
  Hyeyoon Lee, Kanghyun Choi, Noseong Park, and Jinho Lee   *DAC*, 2023

- **Pipe-BD: Pipelined Parallel Blockwise Distillation**: Hongsun Jang, Jaewon Jung, Jaeyong Song, Joonsang Yu,
  Youngsok Kim, and Jinho Lee   *DATE*, 2023

- **Optimus-CC: Efficient Large NLP Model Training with 3D Parallelism Aware Communication Compression**:
  Jaeyong Song[1], Jinkyu Yim[1], Jaewon Jung, Hongsun Jang, Hyung-Jin Kim, Youngsok Kim, and Jinho Lee   *ASPLOS*, 2023

- **SGCN: Exploiting Compressed-Sparse Features in Deep Graph Convolutional Network Accelerators**: Mingi
  Yoo[1], Jaeyong Song[1], Jounghoo Lee, Namhyung Kim, Youngsok Kim, and Jinho Lee   *HPCA*, 2023

- **Slice-and-Forge: Making Better Use of Caches for Graph Convolutional Network Accelerator**: Mingi Yoo[1],
  Jaeyong Song[1], Hyeyoon Lee, Jounghoo Lee, Namhyung Kim, Youngsok Kim, and Jinho Lee   *PACT* (**Best Paper**), 2022

- **Making a Better Use of Caches for GCN Accelerators with Feature Slicing and Automatic Tile Morphing**:
  Mingi Yoo[1], Jaeyong Song[1], Jounghoo Lee, Namhyung Kim, Youngsok Kim, and Jinho Lee   *IEEE CAL*, 2021

Honors and Awards

- **Best Paper Award** @ PACT '22 (Slice-and-Forge) - Oct. 2022
- **Best Paper Award Honorable Mention** @ HPCA '24 (Smart-Infinity) - Mar. 2024
- Encouragement Prize (Top 6%) @ The $30th$ Samsung Humantech Paper Award - Feb. 2024
- Excellence Prize @ LG Display AI & Big Data Competition - Dec. 2022
- Yonsei Social Entrepreneurship Award - Database-based learning management system development - Jan. 2020
- Academic (Highest) Honors (Undergraduate, four times) - 2016-1 (honors), 2019-1 (honors), 2019-2 (highest honors), 2021-1 (honors) - GPA: 3.96/4.0 (4.17/4.3, Rank: 2/88)
- Commendation from Jeju Provincial Police Agency - Commendation from the local police commissioner - Oct. 2017

Teaching Experience

- **Embedded Systems Design**   Seoul National University
  Teaching Assistant   *Fall 2024*
- **Digital Systems Design and Lab.**   Seoul National University
  Teaching Assistant   *Fall 2023*
- **Logic Circuit Design**   Yonsei University
  Teaching Assistant   *Fall 2021*