Daegun Yoon

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RESEARCH INTERESTS

Machine Learning: Scalable distributed machine learning via gradient sparsification (ICPP'23, HiPC'23, SUPE'23)
Parallel Processing: High performance parallel graph processing on GPUs (SUPE'22, Sensors'22)
Distributed System: Efficient distributed messaging system (SUPE'21, CCPE'20)

POSITIONS

Researcher in Electronics and Telecommunications Research Institute (**ETRI**), Republic of Korea — Jan. 2024 - Present

EDUCATION

Ph.D. in Department of Artificial Intelligence, Ajou University, Republic of Korea — Sep. 2018 - Feb. 2024
Advisor: Prof. Sangyoon Oh
B.S. in Department of Software, Ajou University, Republic of Korea — Mar. 2013 - Aug. 2018

SELECTED PUBLICATIONS

C2. **Daegun Yoon**, Sangyoon Oh, "MiCRO: Near-Zero Cost Gradient Sparsification for Scaling and Accelerating Distributed DNN Training", 30th IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC), Dec. 2023.
C1. **Daegun Yoon**, Sangyoon Oh, "DEFT: Exploiting Gradient Norm Difference between Model Layers for Scalable Gradient Sparsification", 52nd International Conference on Parallel Processing (ICPP), Aug. 2023.
J5. **Daegun Yoon**, Minjoong Jeong, Sangyoon Oh, "SAGE: toward on-the-fly gradient compression ratio scaling", The Journal of Supercomputing (SUPE), Feb. 2023.
J4. **Daegun Yoon**, Minjoong Jeong, Sangyoon Oh, "WAVE: designing a heuristics-based three-way breadth-first search on GPUs", The Journal of Supercomputing (SUPE), Nov. 2022.
J3. **Daegun Yoon**, Sangyoon Oh, SURF: "Direction-Optimizing Breadth-First Search Using Workload State on GPUs", Sensors, Jun. 2022.
J2. **Daegun Yoon**, Zhetao Li, Sangyoon Oh, "Balanced content space partitioning for pub/sub: a study on impact of varying partitioning granularity", The Journal of Supercomputing (SUPE), Apr. 2021.
J1. **Daegun Yoon**, Gyudong Park, Sangyoon Oh, "Exploring a system architecture of content-based publish/subscribe system for efficient on-the-fly data dissemination", Concurrency and Computation: Practice and Experience (CCPE), Nov. 2020.

PATENTS

P2. Sangyoon Oh, **Daegun Yoon**, "APPARATUS AND METHOD FOR ADAPTIVE GRAPH TRAVERSAL BASED ON WORKLOAD ANALYSIS", Korea Patent, Jun. 2023.
P1. Minho Park, Sangyoon Oh, **Daegun Yoon**, Jaehyun Ham, "METHOD AND APPARATUS FOR PARTITIONING OF EVENT, COMPUTER-READABLE STORAGE MEDIUM AND COMPUTER PROGRAM", Korea Patent, Jul. 2022.

SELECTED RESEARCH PROJECTS

R5. **Electronics and Telecommunications Research Institute**, "Analog AI Computing". — Jan. 2024 - Present
R4. **Samsung Display**, "Development of High Efficiency HPC Job Scheduling Algorithm". — Jan. 2023 - Dec. 2023
R3. **National Research Foundation of Korea**, "Research on Effective and Accuracy-Guaranteed Distributed Deep Learning in Transient Resource-Based Cloud". — Mar. 2021 - Dec. 2023
R2. **Korea Institute of Science and Technology Information**, "Research on Optimizing Memory Utilization and Communication Scheduling of Sharded Data Parallel for Accelerating Large-Scale Distributed Deep Learning". — Mar. 2022 - Oct. 2022
R1. **Agency for Defense Development**, "Development of Architecture and Collaborative Model Technology for Interoperability of Future Tactical Network". — Sep. 2018 - Oct. 2022

PROFESSIONAL SERVICES

Reviewer: The Journal of Supercomputing (2023, 2024)
Reviewer: International Journal of Machine Learning and Cybernetics (2024)
Reviewer: ACM Transactions on Multimedia Computing Communications and Applications (2023)

TEACHING EXPERIENCES

Teaching Assistant: "Software Engineering", Department of Software, Ajou University — Spring 2021
Teaching Assistant: "Digital Circuits", Department of Software, Ajou University — Fall 2022