

# 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)

## EDUCATION

<b>Ph.D.</b> in Department of Artificial Intelligence, Ajou University, Republic of Korea Advisor: Prof. Sangyoon Oh	Sep. 2018 - Present
<b>B.S.</b> 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**, Gydong 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

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|--|-----------------------|
| R4. <b>Samsung Display</b> , “Development of High Efficiency HPC Job Scheduling Algorithm”.  | Jan. 2023 - Present   |
| R3. <b>National Research Foundation of Korea</b> , “Research on Effective and Accuracy-Guaranteed Distributed Deep Learning in Transient Resource-Based Cloud”.  | Mar. 2021 - Present   |
| R2. <b>Korea Institute of Science and Technology Information</b> , “Research on Optimizing Memory Utilization and Communication Scheduling of Sharded Data Parallel for Accelerating Large-Scale Distributed Deep Learning”. | Mar. 2022 - Oct. 2022 |
| R1. <b>Agency for Defense Development</b> , “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)

## TEACHING EXPERIENCES

<b>Teaching Assistant:</b> “Software Engineering”, Department of Software, Ajou University	Spring 2021
<b>Teaching Assistant:</b> “Digital Circuits”, Department of Software, Ajou University	Fall 2022