Ho Seok Kim

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RESEARCH INTERESTS

Computer Architecture, Memory Systems, AI Accelerators, HW & SW Co-optimization for AI

EDUCATION

Korea University   Mar. 2023 – Feb. 2025 (Expected)
M.S. in Computer Science and Engineering   *Seoul, Korea*
- Advised by Professor Sung Woo Chung
- GPA: 4.42 / 4.5

Korea University   Mar. 2017 – Feb. 2023
B.S. in Computer Science and Engineering   *Seoul, Korea*
- Graduated with Honors
- GPA: 3.91 / 4.5 (Major GPA: 4.08 / 4.5)
- Two-year break for military service (Apr. 2019 - Nov. 2020)

RESEARCH EXPERIENCE

Research Assistant   Mar. 2023 – Current
SoC & Microprocessor Research Lab. (Advisor: Professor Sung Woo Chung)   *Seoul, Korea*
- Exploiting the data pattern found during undergraduate research, designed an error correction code (ECC) for energy-efficient and accurate DNN inference on HBM. (***paper based on work accepted for ISLPED 2024***)
- Conducted power and thermal simulations of a real-world processing-in-memory (PIM) device (GDDR6-AiM) when running various DNN inference applications using Gem5-Aladdin, DRAMsim3, and HotSpot 7.0.
- Participated in "Thermal Aware In-memory Accelerators Based on 3D Stacked Memories" supported by KRF.
- Participated in "System-Level Thermal Management Technique for 2.5D and 3D Stacked Structures considering the Surrounding Environment" supported by Samsung Electronics' System LSI.
- Participated in "Memory-Centric Architecture Using the Reconfigurable PIM Devices" supported by IITP.
- Participated in "DRAM Based Memory Hierarchy Design and Application" supported by Samsung Electronics' Memory Division.

Undergraduate Researcher   Sept. 2022 – Feb. 2023
SoC & Microprocessor Research Lab. (Advisor: Professor Sung Woo Chung)   *Seoul, Korea*
- Conducted research on finding data patterns in DNN weights of various numerical formats across various models.

Undergraduate Researcher   Jun. 2021 – Aug. 2022
Operating Systems Lab. (Advisor: Professor Chuck Yoo)   *Seoul, Korea*
- Designed an accurate weighted multi-path routing algorithm for datacenter network switches, especially for virtual network switches such as Open vSwitch, published or submitted papers based on work.
- Gave poster presentation on "Predicton of Multi-Path Weights for Accurate Traffic Distribution of Datacenter Switches" at KCC 2022.
- Gave virtual presentation on "Analysis of Multipath Routing Techniques for Datacenter Switches" at KSC 2021.

PUBLICATIONS

Hoseok Kim, Seung Hun Choi, Young-ho Gong, Joonho Kong, and Sung Woo Chung, **"Sparrow ECC: A Lightweight ECC Approach for HBM Refresh Reduction towards Energy-efficient DNN Inference"**, *ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)*, 2024.

Yeonho Yoo, Gyeongsik Yang, Jeunghwan Lee, Changyong Shin, **Hoseok Kim**, and Chuck Yoo, **"TeaVisor: Network Hypervisor for Bandwidth Isolation in SDN-NV"**, *IEEE Transactions on Cloud Computing (TCC)*, 2022.

(Domestic) **Hoseok Kim**, Yeonho Yoo, Gyeongsik Yang, and Chuck Yoo, **"Predicton of Multi-Path Weights for Accurate Traffic Distribution of Datacenter Switches"**, *Korea Computer Congress (KCC)*, 2022.

(Domestic) **Hoseok Kim**, Yeonho Yoo, Gyeongsik Yang, and Chuck Yoo, **"Analysis of Multipath Routing Techniques for Datacenter Switches"**, *Korea Software Congress (KSC)*, 2021.

Honors and Awards

Young Fellow, Design Automation Conference	Jun. 2024
Semester High Honors, Korea University	Spring 2021, Fall 2021, Spring 2022, Fall 2022
Participation Award, Korea Computer Congress	Jul. 2022
Participation Award, Korea Software Congress	Dec. 2021

Teaching Experience

Teaching Assistant	Fall 2023
Logic Design (Instructor: Professor Sung Woo Chung)	*COSE221*

- Undergraduate level course, 80+ students
- Gave six 1.25 hour lectures on basics of Verilog HDL and logic synthesis using an Altera DE2 FPGA board.
- Designed several Verilog HDL coding assignments.

Professional Service

Reviewer	ACM/IEEE International Conference on Computer-Aided Design (ICCAD) 2024

Language Proficiency

IBT TOEFL	109 (Reading: 30, Listening: 30, Speaking: 22, Writing: 27)

References

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