

Hoseok Kim

<https://hskim1324.github.io> | thomas1324@korea.ac.kr

RESEARCH INTERESTS

Computer Architecture and Systems, Energy-efficient Computing

EDUCATION

Korea University

M.S. in Computer Science and Engineering

Mar. 2023 – Feb. 2025 (Expected)

Seoul, Korea

- Advised by Professor Sung Woo Chung
- GPA: 4.44 / 4.5

Korea University

B.S. in Computer Science and Engineering

Mar. 2017 – Feb. 2023

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)

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. (**Best Paper Award**)

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.

RESEARCH EXPERIENCE

Research Assistant

SoC & Microprocessor Research Lab. (Advisor: Professor Sung Woo Chung)

Mar. 2023 – Current

Seoul, Korea

- Designed an error correction code (ECC) for energy-efficient and accurate DNN inference on HBM, leveraging data patterns found during undergraduate research. (**a paper based on this work won the best paper award in ISPLED 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.
- Gave oral presentation on “Sparrow ECC: A Lightweight ECC Approach for HBM Refresh Reduction towards Energy-efficient DNN Inference” at ISLPED 2024, **best paper award** among 167 submissions.
- Gave poster presentation on “Sparrow ECC: A Lightweight ECC Approach for HBM Refresh Reduction towards Energy-efficient DNN Inference” at DAC 2024 Young Fellows Program.

Undergraduate Researcher

SoC & Microprocessor Research Lab. (Advisor: Professor Sung Woo Chung)

Sept. 2022 – Feb. 2023

Seoul, Korea

- Conducted research to identify data patterns in DNN weights across various numerical formats and models.

Undergraduate Researcher

Operating Systems Lab. (Advisor: Professor Chuck Yoo)

Jun. 2021 – Aug. 2022

Seoul, Korea

- Designed an accurate weighted multi-path routing algorithm for datacenter network switches, especially for virtual network switches such as Open vSwitch, published and 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.

HONORS AND AWARDS

Best Paper Award , ACM/IEEE International Symposium on Low Power Electronics and Design	Aug. 2024
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

PATENTS

(Domestic) Sung Woo Chung, **Hoseok Kim**, and Seung Hun Choi, “**Error Correction Code of High-Bandwidth Memory Device and Operating Method Thereof**”, *Korea Application Number: 10-2024-0140286*, 2024.

TEACHING EXPERIENCE

Teaching Assistant	Fall 2023
<i>Logic Design (Instructor: Professor Sung Woo Chung)</i>	<i>COSE221</i>
<ul style="list-style-type: none">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.	

TECHNICAL SKILLS

Advanced: C, C++, Python, Shell
Moderate: Verilog, ARM Assembly, Linux
Novice: Java

LANGUAGE PROFICIENCY

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

REFERENCES

Sung Woo Chung

Professor
Department of Computer Science and Engineering
College of Informatics
Korea University

Email: swchung@korea.ac.kr

<http://smr1.korea.ac.kr>

Gyeongsik Yang

Assistant Professor
Department of Computer Science and Engineering
College of Informatics
Korea University

Email: g_yang@korea.ac.kr

<https://ss.korea.ac.kr>