

# Jiho Kim

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## RESEARCH INTERESTS

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My research interests are in computer architecture, interconnection networks, storage, and GPU. I focus on improving performance and efficiency through new architectural designs for storage (in particular, we propose to exploit interconnection networks in SSD for new opportunities), and I am currently working on scale-out storage system that includes system software as well as storage architecture. I have also worked on research related to GPU architecture (multi-tenancy, scheduling for latency minimization) and hardware security (side-channel/covert-channel attack & defense).

## EXPERIENCE

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### MangoBoost

*System Architect*

Seoul, South Korea

*May. 2023 – Present*

### Samsung Memory

*Intern at Advanced Solution Technology*

Hwaseong, South Korea

*Dec. 2022 – Feb. 2023*

- Enabling chip-to-chip communication for SmartSSD 2.0

### KAIST

*Research Assistant*

Daejeon, South Korea

*Aug. 2017 – Jul 2018*

- GPU on-chip network analysis and profiling on High-Bandwidth Memory (HBM)

### Hanyang University

*Research Assistant at department of Computer Science*

Seoul, South Korea

*Aug. 2017 – Jul 2018*

- GPU Multitasking and CUDA kernel scheduling

## EDUCATION

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### Korea Advanced Institute of Science and Technology (KAIST)

*Ph.D Candidate in the School of Electrical Engineering*

*Advisor: Prof. John Kim*

Daejeon, South Korea

*Aug. 2018 – Present*

### Hongik University

*B.S and M.S in Electrical and Electronics Engineering*

*Advisor: Prof. Yongjun Park*

*Co-advisor: Prof. Seowon Heo*

Seoul, South Korea

*Mar. 2009 – Jul. 2017*

## PUBLICATIONS

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### Decoupled SSD: Rethinking SSD Architecture through Network-based Flash Controllers

**Jiho Kim**, Myoungsoo Jung and John Kim

International Symposium on Computer Architecture (ISCA) 2023

### Networked SSD: Flash Memory Interconnection Network for High-Bandwidth SSD

**Jiho Kim**, Seokwon Kang, Yongjun Park, and John Kim

International Symposium on Microarchitecture (MICRO) 2022

### Decoupled SSD: Reducing Data Movement on NAND-Based Flash SSD

**Jiho Kim**, Myoungsoo Jung and John Kim

IEEE Computer Architecture Letter (CAL) 2021

### Network-on-Chip Microarchitecture-based Covert Channel in GPUs

Jaeguk Ahn, **Jiho Kim**, Hans Kasan, Leila Delshadtehrani, Wonjun Song, Ajay Joshi, John Kim

International Symposium on Microarchitecture (MICRO) 2021

### Trident: A Hybrid Correlation-Collision GPU Cache Timing Attack for AES Key Recovery

Jaeguk Ahn, Cheolgyu Jin, **Jiho Kim**, Minsoo Rhu; Yunsi Fei, David Kaeli; John Kim  
International Symposium on High Performance Computer Architecture (HPCA) 2021

**Bandwidth Bottleneck in Network-on-Chip for High-Throughput Processors (POSTER)**

**Jiho Kim**, Sanghun Cho, Minsoo Rhu, Ali Bakhoda, Tor M Aamodt and John Kim  
Parallel Architectures and Compilation Techniques (PACT) 2020

**Navigator: dynamic multi-kernel scheduling to improve GPU performance**

**Jiho Kim**, John Kim and Yongjun Park  
Design Automation Conference (DAC) 2020

**GATE: A Generalized Dataflow-level Approximation Tuning Engine For Data Parallel Architectures**

Seokwon Kang, Yongseung Yu, **Jiho Kim** and Yongjun Park  
Design Automation Conference (DAC) 2019

**Improving GPU multitasking efficiency using dynamic resource sharing**

**Jiho Kim**, Jason Jong Kyu Park, Dongsuk Jeon and Yongjun Park  
IEEE Computer Architecture Letter (CAL) 2018

**Efficient GPU multitasking with latency minimization and cache boosting**

**Jiho Kim**, Minsung Chu and Yongjun Park  
IEICE Electronics Express 2017

TEACHING

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**Teaching Assistant**

<i>KAIST EE595 Introduction to Computer Architecture</i>	<i>Fall 2022</i>
<i>KAIST EE595 Hardware Security</i>	<i>Spring 2022</i>
<i>KAIST EE595 Parallel Computer Architecture</i>	<i>Fall 2021</i>
<i>KAIST EE312 Introduction to Computer Architecture</i>	<i>Spring 2021</i>
<i>KAIST EE209 Programming Structures for Electrical Engineering</i>	<i>Fall 2020</i>
<i>KAIST EE209 Programming Structures for Electrical Engineering</i>	<i>Spring 2020</i>
<i>KAIST EE312 Introduction to Computer Architecture</i>	<i>Fall 2019</i>
<i>KAIST EE209 Programming Structures for Electrical Engineering</i>	<i>Spring 2019</i>
<i>KAIST EE305 Introduction to Electronics Design Lab</i>	<i>Fall 2018</i>

**Others**

<i>2020 SK Hynix ASK program</i>	<i>Winter 2019</i>
<i>2019 SK Hynix ASK program</i>	<i>Winter 2018</i>

RELEVANT COURSES (GPA: 3.98)

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EE511 - Computer Architecture  
EE817 - Advanced Parallel Architecture  
EE878 - Hardware Accelerators for Machine Learning  
IS593 - Hardware Security Techniques  
EE790 - Memory and its SoC Technology  
EE477 - Database and Big Data Systems  
AI506 - Data Mining and Search  
CS530 - Operating System  
AI607 - Graph Mining

SKILLS

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Strong C/C++, CUDA, OpenCL, Python, R, Verilog, MySQL, Simulators (GPGPU-Sim, SimpleSSD, booksim, etc)

LANGUAGES

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English - Intermediate level, Korean - Native