Jungi Jeong

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Research Interests

My primary area of interest is computer architecture. Throughput my graduate studies, I have explored how computer architecture can support crash consistency and transactions in **persistent memory**. However, my interests are not limited to persistent memory but span across CPU micro-architecture and virtual memory. In particular, I am interested in researching **next-generation processor architecture** with innovative memory technologies such as persistent memory.

Keywords: computer architecture, CPU microarchitecture, persistent memory, compilers

Employment

Google LLC, CA, USA ..... Mar 2022–Present

CPU Performance Architect

Purdue University, IN, USA ..... Mar 2020–Jan 2022

Post Doctoral Research Associate

Host: Professor Changhee Jung

Education

KAIST, Daejeon, South Korea ..... Mar 2015–Feb 2020

Ph.D. in School of Computing

Advisor: Professor Seungryoul Maeng and Professor Youngjin Kwon

KAIST, Daejeon, South Korea ..... Mar 2013–Feb 2015

M.S. in Computer Science

Advisor: Professor Seungryoul Maeng

Hanyang University, Seoul, South Korea ..... Mar 2006–Feb 2013

B.S. in Computer Science and Engineering

Publications

Conference Proceedings

[1] Jainping Zeng, **Jungi Jeong**, and Changhee Jung. `Persistent Processor Architecture`. In *Proceedings of the International Symposium on Microarchitecture (**MICRO**)*, October 2023.

[2] Yuchen Zhou, Jianping Zeng, **Jungi Jeong**, Jongouk Choi, and Changhee Jung. `SweepCache: Intermittence-Aware Cache on the Cheap`. In *Proceedings of the International Symposium on Microarchitecture (**MICRO**)*, October 2023.

[3] **Jungi Jeong**, Jianping Zeng, and Changhee Jung. `Capri: Compiler and Architecture Support for Whole-System Persistence`. In *Proceedings of the International Symposium on High-Performance Parallel and Distributed Computing (**HPDC**)*, June 2022.

[4] **Jungi Jeong** and Changhee Jung. `PMEM-Spec: Persistent Memory Speculation (Strict Persistency Can Trump Relaxed Persistency)`. In *Proceedings of the International Conference on Architectural Support for Programming Languages and Operating Systems (**ASPLOS**)*, April 2021.

[5] **Jungi Jeong**, Jaewan Hong, Seungryoul Maeng, Changhee Jung, and Youngjin Kwon. `Unbounded Hardware Transactional Memory for a Hybrid DRAM/NVM Memory System`. In *Proceedings of the International Symposium on Microarchitecture (**MICRO**)*, October 2020.

[6] Wonsang Kwak, **Jungi Jeong**, Ganguk Lee, Jin-soo Kim, and Seungryoul Maeng. `GPU-delegated Direct I/O Framework Between GPU and NVMe-SSD`. In *Korea Computer Congress (*KCC*)*, July 2019.

[7] **Jungi Jeong**, Chang Hyun Park, Jaehyuk Huh, and Seungryoul Maeng. `Efficient Hardware-assisted Logging with Asynchronous and Direct Update for Persistent Memory`. In *Proceedings of the International Symposium on Microarchitecture (**MICRO**)*, October 2018.

[8] Chang Hyun Park, Taekyung Heo, **Jungi Jeong**, and Jaehyuk Huh. `Hybrid TLB Coalescing: Improving TLB Translation Coverage under Diverse Fragmented Memory Allocations`. In *Proceedings of the International Symposium on Computer Architecture (**ISCA**)*, June 2017.

[9] **Jungi Jeong**, Daewoo Lee, and Seungryoul Maeng. `Application-assisted Writeback for Hadoop Clusters`. In *Proceedings of the International Conference on Cluster Computing (**Cluster**)*, September 2016.

Journal Articles

[10] **Jungi Jeong** and Youngjin Kwon. `Supporting Atomic Durability in Persistent Transactions with Hardware Supports`. *KIISE Journal, Invited article*, June 2019.

[11] Moon Hwan Lee, Yeakyung Row, Oo Sung Son, Uichin Lee, JaeJeong Kim, **Jungi Jeong**, Seungryoul Maeng, and Tek-Jin Nam. `Flower-Pop: Facilitating Casual Group Conversations with Multiple Mobile Devices`. *Wearable and Ubiquitous Technologies (**IMWUT**)*, December 2017.

Academic Services

Program Committee

ICCD 2021 2022, PACT (SRC) 2021

External Journal Reviewer

IEEE Computer Architecture Letter (CAL) 2021

Technical Skills

Programming Languages: C, C++, Python, Shell scripts, Java

Software: Linux Kernel, Gem5 simulator, Pin, git, HDFS

Patents

KO, 10-2106689-0000, "DATA AVAILABILITY SSD ARCHITECTURE FOR PROVIDING USER DATA PROTECTION" ..... April 24, 2020.

KO, 10-1942663-0000, "METHOD AND SYSTEM TO IMPROVE TLB COVERAGE BY USING CHUNKS OF CONTIGUOUS MEMORY" ..... January 21, 2019.

Invited Talks

Capri: Compiler and Architecture Support for Whole-System Persistence

HPDC, Minneapolis, United States ..... Jun 2022

PMEM-Spec: Persistent Memory Speculation

Non-Volatile Memory Workshop, Virtual ..... Mar 2021

Uppsala University, Virtual ..... Mar 2021

ASPLOS, Virtual ..... Apr 2021

Architectural Support for Crash Consistency in Persistent Memory

HP Labs, Virtual ..... Jan 2021

IBM Research Almaden, Virtual ..... Sep 2021

Intel, Virtual ..... Sep 2021

Argonne National Lab, Virtual ..... Sep 2021

Unbounded Hardware Transactional Memory for a Hybrid DRAM/NVM Memory System

MICRO, Virtual ..... Oct 2020

Non-Volatile Memory Workshop, Virtual ..... Mar 2021

Efficient Hardware-assisted Logging with Asynchronous and Direct Update for Persistent Memory

MICRO, Fukuoka, Japan ..... Oct 2018

Korea Software Congress, Pyungchang, South Korea ..... Dec 2018

Ajou University, Suwon, South Korea ..... Oct 2019

Application-assisted Writeback for Hadoop Clusters

IEEE Cluster, Taipei, Taiwan ..... Sep 2016

References

Available upon request

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