

张杰

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张杰博士生于 1990 年 10 月 20 日，现任北京大学计算机学院助理教授、特聘研究员、博士生导师，获得优秀青年科学基金海外项目（海外优青）、英特尔学术英才计划荣誉学者、ACM SIGCSE 新星奖、博雅青年学者。他长期从事存储系统和专用处理器的研究和设计，致力于从计算机体系结构层面出发，解决大数据和人工智能时代对于高性能存储系统的需求，突破冯诺依曼体系结构下数据迁移的瓶颈以及内存墙的限制。负责和参与科技部重点研发项目（课题负责人）、国家自然科学基金重点项目（北大负责人）和面上项目，得到华为、江波龙、三星电子、海力士、英特尔和西部数据的资助。自 2014 年起，在计算机国际会议及期刊上发表了 50 余篇论文，包括 ISCA、OSDI、SOSP、HPCA、MICRO、ASPLOS、FAST、ATC、NSDI、DAC 和 Eurosys。2025 年入选 HPCA 名人堂（中国大陆最年轻入选者）。在计算机体系结构领域 35 岁以下学者中，发表顶级会议论文数排名中国第一、亚洲第二、全球第六（CSRankings, 2015-2025）。亚洲历史上第三位在所有体系结构和系统顶级会议上发表论文的学者。论文获 2019 年韩国计算机大会（KCC）最佳演讲论文奖和 2019 年非易失性内存研讨会（NVMW）优秀论文提名奖。在存储领域的研究成果被列为 KAIST50 年重大突破之一，并被四十余家新闻媒体报道。

工作经历

北京大学，北京，中国

计算机学院

KAIST, Daejeon, Korea

Electrical Engineering (Computing Division)

助理教授，博导

2021 年 7 月–至今

博士后

March 2020 年 3 月 –2021 年 5 月

教育经历

Yonsei University, Incheon, Korea

PhD in Engineering

University of Texas at Dallas, Richardson, Texas

PhD in Computer Engineering (transfer to Korea)

University of Texas at Dallas, Richardson, Texas

Master of Science in Electrical Engineering

Nanjing University of Posts and Telecommunications, Nanjing, China

BS in Communication Engineering (computer communication)

Advisor: Dr. Myoungsoo Jung

August 2015 – Feb 2020

Advisor: Dr. Myoungsoo Jung

August 2014 – August 2015

Advisor: Dr. Myoungsoo Jung

August 2012 – May 2014

September 2008 – July 2012

论文发表情况

2025

HotStorage

SPDK+: Low Latency or High Power Efficiency? We Take Both

Endian Li, Shushu Yi, Li Peng, Qiao Li, Diyu Zhou, Zhenlin Wang, Xiaolin Wang, Bo Mao, Yingwei Luo, Ke Zhou, [Jie Zhang*](#)

The 17th ACM Workshop on Hot Topics in Storage and File Systems

ICDE

BL-Tree: The Best of Both Worlds by combining B+-Tree on Top and LSM-Tree on Bottom

CCF-A 会议

Maoxin Ye, Zuocheng Wang, Shengzhe Wang, Jiahong Chen, Chunfeng Du, [Jie Zhang](#), Ke Zhou, Suzhen Wu, Bo Mao

IEEE International Conference on Data Engineering

ToS

Enhancing the Performance of Next-Generation SSD Arrays: A Holistic Approach

CCF-A 期刊

[Jie Zhang*](#), Shushu Yi, Xiurui Pan, Qiao Li, Qiang Li, Chenxi Wang, Bo Mao, Myoungsoo Jung

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	<i>ACM Transactions on Storage</i>
TCAD	FlexHMB: A Flexible HMB Design towards Bufferless Mobile Flash
CCF-A 期刊	Yong Peng, Li Peng, Shaocong Sun, Lujia Yin, Qiao Li, Jie Zhang* <i>ACM Transactions on Computer-Aided Design of Integrated Circuits and Systems</i>
ISCA	XHarvest: Rethinking High-Performance and Cost-Efficient SSD Architecture with
CCF-A 会议	CXL-Driven Harvesting Li Peng, Wenbo Wu, Shushu Yi, Xianzhang Chen, Chenxi Wang, Shengwen Liang, Zhe Wang, Nong Xiao, Qiao Li, Mingzhe Zhang, Jie Zhang* <i>IEEE/ACM International Symposium on Computer Architecture</i>
ISCA	ArtMem: Adaptive Migration in Reinforcement Learning-Enabled Tiered Memory
CCF-A 会议	Xinyue Yi, Hongchao Du, Yu Wang, Jie Zhang , Qiao Li, Chun Jason Xue <i>IEEE/ACM International Symposium on Computer Architecture</i>
Eurosys	Daredevil: Rescue Your Flash Storage from Inflexible Kernel Storage Stack
CCF-A 会议	Junzhe Li, Ran Shu, Jiayi Lin, Qingyu Zhang, Ziyue Yang, Jie Zhang , Yongqiang Xiong, Chenxiong Qian <i>20th ACM European Conference on Computer Systems</i>
NSDI	Beehive: A Scalable Disaggregated Memory Runtime Exploiting Asynchrony of
CCF-A 会议	Multithreaded Programs Quanxi Li, Hong Huang, Ying Liu, Yanwen Xia, Jie Zhang , Mosong Zhou, Xiaobing Feng, Huimin Cui, Quan Chen, Yizhou Shan, Chenxi Wang <i>22nd USENIX Symposium on Networked Systems Design and Implementation</i>
HPCA	InstAttention: In-Storage Attention Offloading for Cost-Effective Long-Context LLM
CCF-A 会议	Inference Xiurui Pan, Endian Li, Qiao Li, Shengwen Liang, Yizhou Shan, Ke Zhou, Yingwei Luo, Xiaolin Wang, Jie Zhang* <i>IEEE International Symposium on High-Performance Computer Architecture</i>
HPCA	NeuVSA: A Unified and Efficient Accelerator for Neural Vector Search
CCF-A 会议	Ziming Yuan, Lei Dai, Wen Li, Jie Zhang , Shengwen Liang, Ying Wang, Cheng Liu, Huawei Li, Jiafeng Guo, Peng Wang, Renhai Chen, Gong Zhang <i>IEEE International Symposium on High-Performance Computer Architecture</i>
HPCA	Criticality-Aware Instruction-Centric Bandwidth Partitioning for Data Center Applications
CCF-A 会议	Liren Zhu, Liujia Li, Jianyu Wu, Yiming Yao, Zhan Shi, Jie Zhang , Zhenlin Wang, Xiaolin Wang, Yingwei Luo, Diyu Zhou <i>IEEE International Symposium on High-Performance Computer Architecture</i>
2024	
SOSP	BIZA: Design of Self-Governing Block-Interface ZNS AFA for Endurance and Performance
CCF-A 会议	Shushu Yi, Shaocong Sun, Li Peng, Yingbo Sun, Ming-Chang Yang, Zhichao Cao, Qiao Li, Myoungsoo Jung, Ke Zhou, Jie Zhang*

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ACM Symposium on Operating Systems Principles

MICRO

NeoMem: Hardware/Software Co-Design for CXL-Native Memory Tiering

CCF-A 会议

Zhe Zhou, Yiqi Chen, Tao Zhang, Yang Wang, Ran Shu, Shuotao Xu, Peng Cheng, Lei Qu, Yongqiang Xiong, [Jie Zhang](#), Guangyu Sun

The 57th Annual IEEE/ACM International Symposium on Microarchitecture

MICRO

Cambricon-llm: A chiplet-based hybrid architecture for on-device Inference of 70B LLM

CCF-A 会议

Zhongkai Yu, Shengwen Liang, Tianyu Ma, Yunke Cai, Ziyuan Nan, Di Huang, Xinkai Song, Yifan Hao, [Jie Zhang](#), Tian Zhi, Yongwei Zhao, Zidong Du, Xing Hu Qi Guo, Tianshi Chen

The 57th Annual IEEE/ACM International Symposium on Microarchitecture

ToS

Extremely-Compressed SSDs with I/O Behavior Prediction

CCF-A 期刊

Xiangyu Yao, Qiao Li, Kaihuan Lin, Xinbiao Gan, [Jie Zhang](#), Congming Gao, Zhirong Shen, Quanqing Xu, Chuanhui Yang, Jason Xue

ACM Transactions on Storage

TC

Land of Oz: Resolving Orderless Writes in Zoned Namespace SSDs

CCF-A 期刊

Yingjia Wang, You Zhou, Fei Wu, [Jie Zhang](#), Ming-Chang Yang

IEEE Transactions on Computers

USENIX ATC

ScalaAFA: Constructing User-Space All-Flash Array Engine with Holistic Designs

CCF-A 会议

Shushu Yi, Xiurui Pan, Qiao Li, Qiang Li, Chenxi Wang, Bo Mao, Myoungsoo Jung, [Jie Zhang*](#)
USENIX Annual Technical Conference

USENIX ATC

ScalaCache: Scalable User-Space Page Cache Management with Software-Hardware Coordination

CCF-A 会议

Li Peng, Yuda An, You Zhou, Chenxi Wang, Qiao Li, Chuanning Chen, [Jie Zhang*](#)
USENIX Annual Technical Conference

Arxiv

From RDMA to RDCA: Toward High-Speed Last Mile of Data Center Networks Using Remote Direct Cache Access

Qiang Li, Qiao Xiang, Derui Liu, Yuxin Wang, Haonan Qiu, Xiaoliang Wang, [Jie Zhang](#), Ridi Wen, Haohao Song, Gexiao Tian, Chenyang Huang, Lulu Chen, Shaozong Liu, Yaohui Wu, Zhiwu Wu, Zicheng Luo, Yuchao Shao, Chao Han, Zongjie WU, Jianbo Dong, Zheng Cao, Jinbo WU, Jiwu Shu, Jiesheng Wu

Arxiv

TACO

Characterizing and Optimizing LDPC Performance on 3D NAND Flash Memories

CCF-A 期刊

Qiao Li, Yu Chen, Guanyu Wu, Yajuan Du, Min Ye, Xinbiao Gan, [Jie Zhang](#), Zhirong Shen, Jiwu Shu, Chun Jason Xue

ACM Transactions on Architecture and Code Optimization

ISCA

Flagger: Cooperative Acceleration for Large-Scale Cross-Silo Federated Learning

CCF-A 会议

Aggregation

Xiurui Pan, Yuda An, Shengwen Liang, Bo Mao, Mingzhe Zhang, Qiao Li, Myoungsoo Jung, [Jie Zhang*](#)

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IEEE/ACM International Symposium on Computer Architecture

ASPLOS

Achieving Near-Zero Read Retry for 3D NAND Flash Memory

CCF-A 会议

Min Ye, Qiao Li, Yina Lv, [Jie Zhang](#), Tianyu Ren, Daniel Wen, Tei-Wei Kuo, Chun Jason Xue

ACM International Conference on Architectural Support for Programming Languages and Operating Systems

HPCA

StreamPIM: Streaming Matrix Computation in Racetrack Memory

CCF-A 会议

Yuda An, Yunxiao Tang, Shushu Yi, Li Peng, Xiurui Pan, Guangyu Sun, Zhaochu Luo, Qiao Li, [Jie Zhang*](#)

IEEE International Symposium on High-Performance Computer Architecture

HPCA

BeaconGNN: Large-Scale GNN Acceleration with Asynchronous In-Storage Computing

CCF-A 会议

Yuyue Wang, Xiurui Pan, Yuda An, [Jie Zhang*](#), Glenn Reinman*

IEEE International Symposium on High-Performance Computer Architecture

HPCA

LearnedFTL: A Learning-based Page-level FTL for Reducing Double Reads in Flash-based SSDs

CCF-A 会议

Shengzhe Wang, Zihang Lin, Suzhen Wu, Hong Jiang, [Jie Zhang](#), Bo Mao

IEEE International Symposium on High-Performance Computer Architecture

HPCA

Midas Touch: Invalid-Data Assisted Reliability and Performance Boost for 3D High-Density Flash

CCF-A 会议

QiaoLi, Hongyang Dang, Zheng Wan, Congming Gao, Min Ye, [Jie Zhang](#), Tei-Wei Kuo, Chun Jason Xue

IEEE International Symposium on High-Performance Computer Architecture

2023

NVMW

Optimizations of Linux Software RAID System for Next-Generation Storage

Shushu Yi, Yanning Yang, Yunxiao Tang, Zixuan Zhou, Junzhe Li, Yue Chen, Myoungsoo Jung, [Jie Zhang*](#)

The 14th Annual Non-volatile Memories Workshop

SAC

BcBench: Exploring Throughput Processor Designs based on Blockchain Benchmarking

Xiurui Pan, Yue Chen, Shushu Yi, [Jie Zhang*](#)

The 38th ACM/SIGAPP Symposium on Applied Computing

CAL

Intelligent SSD Firmware for Zero-Overhead Journaling

SCI 3 区

Hanyeoreum Bae, Donghyun Gouk, Seungjun Lee, Jiseon Kim, Sungjoon Koh, [Jie Zhang*](#), Myoungsoo Jung*

IEEE Computer Architecture Letters (CAL)

2022

HotStorage

ScalaRAID: Optimizing Linux Software RAID System for Next-Generation Storage

Shushu Yi, Yanning Yang, Yunxiao Tang, Zixuan Zhou, Junzhe Li, Yue Chen, Myoungsoo Jung,

*Jie Zhang***14th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage 22)*

THPC

Survey on Storage-Accelerator Data Movement*Zixuan Zhou, Shushu Yi, [Jie Zhang*](#)**CCF Transaction on High Performance Computing*

NVMW

Integrating New Photonic-Based Heterogeneous Memory into Throughput Accelerators*[Jie Zhang](#), Myoungsoo Jung,**The 13th Annual Non-volatile Memories Workshop*

NVMW

HAMS: Hardware Automated Memory-over-Storage for Large-scale Memory Expansion*[Jie Zhang](#), Miryeong Kwon, Donghyun Gouk, Sungjoon Koh, Nam Sung Kim,**Mahmut Taylan Kandemir, Myoungsoo Jung**The 13th Annual Non-volatile Memories Workshop***2021**

MICRO

Ohm-GPU: Integrating New Optical Network and Heterogeneous Memory into GPU**CCF-A 会议****Multi-Processors***[Jie Zhang](#), Myoungsoo Jung,**The 54th Annual IEEE/ACM International Symposium on Microarchitecture*

ISCA

Revamping Storage Class Memory with Hardware Automated Memory-Over-Storage Solution**CCF-A 会议***[Jie Zhang](#), Miryeong Kwon, Donghyun Gouk, Sungjoon Koh, Nam Sung Kim,**Mahmut Kandemir, Myoungsoo Jung,**The IEEE/ACM International Symposium on Computer Architecture*

NVMW

Architecting Throughput Processors with New Flash*[Jie Zhang](#), Myoungsoo Jung,**The 12th Annual Non-volatile Memories Workshop*

NVMW

DRAM-less Accelerator for Energy Efficient Data Processing*[Jie Zhang](#), Gyuyoung Park, David Donofrio, John Shalf, Myoungsoo Jung**The 12th Annual Non-volatile Memories Workshop*

NVMW

Manycore-Based Scalable SSD Architecture Towards One and More Million IOPS*[Jie Zhang](#), Miryeong Kwon, Michael Swift, Myoungsoo Jung,**The 12th Annual Non-volatile Memories Workshop***2020**

ISCA

ZnG: Architecting GPU Multi-Processors with New Flash for Scalable Data Analysis**CCF-A 会议***[Jie Zhang](#), Myoungsoo Jung,**The IEEE/ACM International Symposium on Computer Architecture*

FAST	Scalable Parallel Flash Firmware for Many-core Architectures
CCF-A 会议	<i>Jie Zhang, Miryeong Kwon, Michael Swift, Myoungsoo Jung, The 18th USENIX Conference on File and Storage Technologies</i>
HPCA	DRAM-less: Hardware Acceleration of Data Processing with New Memory
CCF-A 会议	<i>Jie Zhang, Gyuyoung Park, David Donofrio, John Shalf, Myoungsoo Jung 26th IEEE International Symposium on High-Performance Computer Architecture</i>
ISPASS	Data Direct I/O Characterization for Future I/O System Exploration
CCF-C 会议	<i>Mohammad Alian, Yifan Yuan, Jie Zhang, Ren Wang, Myoungsoo Jung, Nam Sung Kim The IEEE International Symposium on Performance Analysis of Systems and Software</i>
CAL	FastDrain: Removing Page Victimization Overheads in NVMe Storage Stack
SCI-3 区	<i>Jie Zhang, Miryeong Kwon, Sanghyun Han, Nam Sung Kim, Mahmut Kandemir and Myoungsoo Jung IEEE Computer Architecture Letters (CAL)</i>
2019	
HPCA	FUSE: Fusing STT-MRAM into GPUs to Alleviate Off-Chip Memory Access Overheads
CCF-A 会议	<i>Jie Zhang, Myoungsoo Jung, Mahmut Kandemir, 25th IEEE International Symposium on High-Performance Computer Architecture</i>
IISWC	Faster than Flash: An In-Depth Study of System Challenges for Emerging Ultra-Low Latency SSDs
	<i>Sungjoon Koh, Junkyeok Jang, Changrim Lee, Miryeong Kwon, Jie Zhang, Myoungsoo Jung, The 2019 IEEE International Symposium on Workload Characterization</i>
DAC	FlashGPU: Placing New Flash Next to GPU Cores
CCF-A 会议	<i>Jie Zhang, Miryeong Kwon, Hyojong Kim, Hyesoon Kim, Myoungsoo Jung, The 56th Design Automation Conference (DAC)</i>
TPDS	Exploring Fault-Tolerant Erasure Codes for Scalable All-Flash Array Clusters
CCF-A 期刊	<i>Sungjoon Koh, Jie Zhang, Miryeong Kwon, Jungyeon Yoon, David Donofrio, Nam Sung Kim, Myoungsoo Jung, IEEE Transactions on Parallel and Distributed Systems (TPDS)</i>
NVMW	Addressing Fast-Detrapping for Reliable 3D NAND Flash Design
	<i>Mustafa Shihab, Jie Zhang, Myoungsoo Jung, Mahmut Kandemir, 10th Annual Non-Volatile Memories Workshop -- Nominated as Memorable Paper Award</i>
KCC	Maximizing GPU Cache Utilization with Adjustable Cache Line Management
	<i>Jie Zhang, Myoungsoo Jung, Korean Computer Congress (KCC), 2019 -- Nominated as Excellent Paper Award</i>

2018

- OSDI**
CCF-A 会议 **FlashShare: Punching Through Server Storage Stack from Kernel to Firmware for Ultra-Low Latency SSDs**
Jie Zhang, Miryeong Kwon, Donghyun Gouk, Changlim Lee, Mohammad Alian, Myoungjun Chun, Mahmut Kandemir, Nam Sung Kim, Jihong Kim, Myoungsoo Jung,
13th USENIX Symposium on Operating Systems Design and Implementation
- MICRO**
CCF-A 会议 **Amber: Enabling Precise Full-System Simulation with Detailed Modeling of All SSD Resources**
Donghyun Gouk, Miryeong Kwon, Jie Zhang, Sungjoon Koh, Wonil Choi, Nam Sung Kim, Mahmut Kandemir, Myoungsoo Jung,
The 51st Annual IEEE/ACM International Symposium on Microarchitecture
- TACO**
CCF-B 期刊 **ReveNAND: A Fast-Drift Aware Resilient 3D NAND Flash Design**
Mustafa Shihab, Jie Zhang, Myoungsoo Jung, Mahmut Kandemir,
ACM Transactions on Architecture and Code Optimization (TACO), 2018
- Eurosys**
CCF-A 会议 **FlashAbacus: A Self-governing Flash-based Accelerator for Low-power Systems**
Jie Zhang, Myoungsoo Jung,
The European Conference on Computer Systems (EuroSys), 2018
- IPDPS**
CCF-B 会议 **CIAO: Cache Interference-Aware Throughput-Oriented Architecture and Scheduling for GPUs**
Jie Zhang, Shuwen Gao, Nam Sung Kim, Myoungsoo Jung,
32nd IEEE International Parallel & Distributed Processing Symposium (IPDPS), 2018

2017

- CAL**
SCI-3 区 **SimpleSSD: Modeling Solid State Drive for Holistic System Simulation**
Myoungsoo Jung, Jie Zhang, Ahmed Abulila, Miryeong Kwon, Narges Shahidi, John Shalf,
Nam Sung Kim and Mahmut Kandemir,
IEEE Computer Architecture Letters (CAL), 2017
- IISWC** **Understanding System Characteristics of Online Erasure Coding on Scalable, Distributed and Large-Scale SSD Array Systems**
Sungjoon Koh, Jie Zhang, Miryeong Kwon, Jungyeon Yoon, David Donofrio, Nam Sung Kim, Myoungsoo Jung,
IEEE International Symposium on Workload Characterization (IISWC), 2017
- IISWC** **TraceTracker: Hardware/Software Co-Evaluation for Large-Scale I/O Workload Reconstruction**
Miryeong Kwon, Jie Zhang, Gyuyoung Park, Wonil Choi, David Donofrio, John Shalf,
Mahmut Kandemir, Myoungsoo Jung,

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IEEE International Symposium on Workload Characterization (IISWC), 2017

NPC **An In-depth Performance Analysis of Many-Integrated Core for Communication Efficient Heterogeneous Computing**

CCF-C 会议

Jie Zhang, Myoungsoo Jung,

IFIP International Conference on Network and Parallel Computing (NPC), 2017

NPC/IJPP **Enabling Realistic Logical Device Interface and Driver for NVM Express Enabled Full System Simulations**

CCF-C 会议

Donghyun Gouk, Jie Zhang, Myoungsoo Jung,

IFIP International Conference on Network and Parallel Computing (NPC) and Invited for International Journal of Parallel Programming (IJPP), 2017

2016

HPCA **DUANG: Fast and Lightweight Page Migration in Asymmetric Memory Systems**

CCF-A 会议

Hao Wang, Jie Zhang, Gieseok Park, Sharmila Shridhar, Myoungsoo Jung, Nam Sung Kim, IEEE Symposium on High Performance Computer Architecture (HPCA), 2016

ASBD **A Study for Block-level I/O Trace Reconstruction on All-Flash Arrays**

Miryeong Kwon, Jie Zhang, Gyuyoung Park, Myoungsoo Jung,

Workshop on Architectures and Systems for Big Data (ASBD@ISCA), 2016

NVMSA **An In-Depth Study of Next Generation Interface for Emerging Non-Volatile Memories**

Wonil Choi, Jie Zhang, Shuwen Gao, Jaesoo Lee, Myoungsoo Jung, Mahmut Kandemir, IEEE Non-Volatile Memory Systems and Applications Symposium (NVMSA), 2016

INFLOW **ROSS: A Design of Read-Oriented STT-MRAM Storage for Energy-Efficient Non-Uniform Cache Architecture**

Jie Zhang, Miryeong Kwon, Chanyoung Park, Myoungsoo Jung, Songkuk Kim,

USENIX Workshop on Interactions of NVM/Flash with Operating Systems and Workloads

INFLOW **Couture: Tailoring STT-MRAM for Persistent Main Memory**

Mustafa Shihab, Jie Zhang, Shuwen Gao, Josep Sloan, Myoungsoo Jung,

USENIX Workshop on Interactions of NVM/Flash with Operating Systems and Workloads

2015

ASBD **CoDEN: A Hardware/Software CoDesign Emulation Platform for SSD-Accelerated Near Data Processing**

Jie Zhang, Damian Szmulewicz, Erick Macias, Myoungsoo Jung,

The 5th Workshop on Architecture and System for Big Data (ASBD), 2015

PACT **NVMMU: Direct Solid State Disk Access for GPU-Accelerated Data Processing**

CCF-B 会议

Jie Zhang, David Donofrio, John Shalf, Myoungsoo Jung,

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The 24th International Conference on Parallel Architecture and Compilation Techniques

ICCD

OpenNVM: An Open-Sourced FPGA-based NVM Controller for Low Level Memory

CCF-B 会议

Characterization

Jie Zhang, Giese Park, David Donofrio, Mustafa Shihab, John Shalf and Myoungsoo Jung,

The 33rd International Conference on Computer Design (ICCD), 2015

PACT-SRC

Integrating 3D Resistive Memory Cache into GPGPU for Energy-Efficient Data Processing

Jie Zhang, David Donofrio, John Shalf and Myoungsoo Jung,

International Conference on parallel Architecture and Compilation Techniques (PACT) –

ACM SRC 2nd Runner Award, 2015

FAST-WiP

Shared Non-Volatile Memory Cache for Energy-Efficient High Throughput GPU Computing

Jie Zhang and Myoungsoo Jung,

USENIX Conference on File and Storage Technologies Working in Progress (FAST WiP), 2015

2014

HotStorage

Power, Energy, and Thermal Considerations in SSD-Based I/O Acceleration

Jie Zhang, Myoungsoo Jung,

6th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage 14), 2014

专利发表情况

- “Memory controlling device and computing device including the same”, Myoungsoo Jung, Donghyun Gouk, Miryeong Kwon, Sungjoon Koh, Jie Zhang, America (US20190171566A1)
- “Flash-based accelerator and computing device including the same”, Myoungsoo Jung, Jie Zhang, America (US10824341B2, US20180321859, US20170285968)
- “基于闪存的加速器和包含其的计算设备”, Myoungsoo Jung, Jie Zhang, China (CN107291424)
- “基于闪存的加速器及包括该加速器的计算设备”, Myoungsoo Jung, Jie Zhang, China (CN109460369)
- “Resistance switching memory-based accelerator”, Myoungsoo Jung, Gyuyoung PARK, Jie Zhang, America (US20180321880A1)
- “PARALLEL PROCESSING UNIT, COMPUTING DEVICE INCLUDING THE SAME, AND THREAD SCHEDULING METHOD”, Jie Zhang, Myoungsoo Jung, America (WO2018021620)
- “MEMORY CONTROL APPARATUS AND COMPUTING DEVICE INCLUDING SAME”, JUNG MYOUNGSOO, GOUK DONGHYUN, KWON MIRYEONG, KOH SUNGJOON, 정명수, JIE ZHANG, 국동현, 권미령, 고성준 장지에, Korea (KR1020180126267)
- “COMPUTING DEVICE, METHOD OF PROCESSING INPUT/OUTPUT REQUEST, AND RECORDING MEDIUM”, Jie Zhang, Myoungsoo Jung, Donghyun Gouk, Miryeong Kwon, Sungjoon Koh, America (pending)
- “FLASH-BASED COPROCESSOR”, Jie Zhang, Myoungsoo Jung, America (pending)
- “FLASH STORAGE DEVICE AND METHOD OF SCHEDULING PAGE VICTIMIZATION”, Jie Zhang, Myoungsoo Jung, America (pending)

研究经历

Research Assistant, Computer Architecture and Memory System Lab

2013 年 9 月 – 2021 年 5 月

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- Cache and memory system optimization in GPGPU and multi-core system.
 - Non-volatile memory (including Spin-transfer torque magnetic random-access memory and Phase Change Random Access Memory) characterization and optimization.
 - Performance, power and thermal optimizations of Solid State Disk (SSD).
-

学术活动情况

Journal Paper Review/Sub-review

- IEEE Transactions on Computer
- ACM Transactions on Storage
- ACM Transactions on Architecture and Code Optimization
- ACM Transactions on Computer Systems
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Computer Architecture Letters
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems

Conference Paper Review/Sub-review

- MICRO'24'18 '16
 - ISCA'24
 - HPCA'25'24'18 '16
 - USENIX ATC'23
 - ChinaSys'24'22
 - SAC'22
 - HotStorage'20
 - DAC'20 '19
 - NVMSA'17 '16
 - ICCD'19 '18 '17 '15
 - IPDPS'18 '16
 - DATE'19
 - ASPLOS'19 '18 '17
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演讲情况

- Invited talk, "ZnG: Architecting GPU Multi-Processors with New Flash for Scalable Data Analysis", Intel Computational Storage Lab, 2020
- Presentation, "ZnG: Architecting GPU Multi-Processors with New Flash for Scalable Data Analysis", ISCA, online, 2020
- Presentation, "DRAM-less: Hardware Acceleration of Data Processing with New Memory", HPCA, San Diego, CA, 2020
- Presentation, "Scalable Parallel Flash Firmware for Many-core Architectures", FAST, Santa Clara, CA, 2020
- Presentation, "FUSE: Fusing STT-MRAM into GPUs to Alleviate Off-Chip Memory Access Overheads", HPCA, Washington DC, 2019
- Presentation, "FlashGPU: Placing New Flash Next to GPU Cores", DAC, Las Vegas, NV, 2019
- Presentation, "Maximizing GPU Cache Utilization with Adjustable Cache Line Management", Jeju, South Korea, 2019
- Presentation, "FlashShare: Punching Through Server Storage Stack from Kernel to Firmware for Ultra-Low Latency SSDs", OSDI, Carlsbad, CA, 2018

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- Presentation, "FlashAbacus: A Self-governing Flash-based Accelerator for Low-power Systems", Eurosys, Porto, Portugal, 2018
 - Presentation, "CIAO: Cache Interference-Aware Throughput-Oriented Architecture and Scheduling for GPUs", IPDPS, Vancouver, Canada, 2018
 - Presentation, "An In-depth Performance Analysis of Many-Integrated Core for Communication Efficient Heterogeneous Computing", NPC, Anhui, China, 2017
 - Presentation, "ROSS: A Design of Read-Oriented STT-MRAM Storage for Energy-Efficient Non-Uniform Cache Architecture", Inflow, Savannah, GA, 2016
 - Presentation, "Couture: Tailoring STT-MRAM for Persistent Main Memory", Inflow, Savannah, GA, 2016
 - Presentation, "CoDEN: A Hardware/Software CoDesign Emulation Platform for SSD-Accelerated Near Data Processing", ASBD, Portland, OR, 2015
 - Presentation, "NVMMU: Direct Solid State Disk Access for GPU-Accelerated Data Processing", PACT, San Francisco, CA, 2015
 - Presentation, "Integrating 3D Resistive Memory Cache into GPGPU for Energy-Efficient Data Processing", PACT SRC, San Francisco, CA, 2015
 - Presentation, "OpenNVM: An Open-Sourced FPGA-based NVM Controller for Low Level Memory Characterization", ICCD, New York city, NY, 2015
 - Presentation, "Shared Non-Volatile Memory Cache for Energy-Efficient High Throughput GPU Computing", FAST WiP, Santa Clara, CA, 2015
 - Presentation, "Power, Energy, and Thermal Considerations in SSD-Based I/O Acceleration", HotStorage, Philadelphia, PA, 2014

教学经历

- Computer Architecture (Fall'22)
- Introduction of Computer System (Fall'22)
- IIT 3002 Operating Systems (Fall'15, Fall'16)
- IIT 6036 Computer Organization and Design (Fall'15, Fall'16)
- IIT 7024 Advanced System Architecture (Spring'16)

获奖情况

- 2023: 英特尔学术英才计划荣誉学者
- 2022: ACM SIGCSE 新星奖
- 2021: Our storage-class memory research is selected as KAIST breakthrough 50 years
- 2020-2021: Korean BK21+ Scholarship
- 2020: HPCA travel grant
- 2019: Annual Non-Volatile Memories Workshop (NVMW) -- Nominated as Memorable Paper Award
- 2019: Korea Computer Congress (KCC) -- Best Presentation Paper Award
- 2018: OSDI travel grant
- 2015: ACM Student Research Competition 2nd Runner Award