YICHEN JIA

Architect Across HW/SW Boundaries

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INDUSTRY EXPERIENCE

Senior Performance Engineer
ARM, INC. | June 2020 – Present | Austin, TX

- Future Arm-based cloud server design and performance modeling
- Investigating and optimizing NVMe over RoCEv2/TCP and SPDK
- Enabling and optimizing memory tiering patch for persistent memory
- Understanding performance behaviors of computational storage
- Automating performance analysis process over various workloads
- Comparing Arm and x86 CPUs with storage applications

Engineering Intern
ARM, INC. | May 2019 - Aug 2019 | May 2018 - Aug 2018 | Austin, TX

- Implementing an UEFI firmware driver to emulate PMEM on Arm-based servers, enabling DAX for EXT4, benchmarking popular key-value stores on the emulated PMEM
- Investigating NVMe and NVMe over RoCEv2 on ARM-based multi-core hardware, identifying bottlenecks of the system, and proposing solutions to them

Software Engineer
APPSOFT, LTD. | July 2013 - June 2014 | Beijing

- Implementing and integrating dozens of operators (statistic models) in the algorithm library in the software. This tool is designed with distributed, real-time and web support

RESEARCH EXPERIENCE

Tuning and Optimizing Apps for Emerging Hardware
Louisiana State University | Sep 2017 – May 2020 | Baton Rouge, LA

- Performance benchmarking for Intel DC flash SSD and Optane SSD
- Understanding and optimizing RocksDB on 3D XPoint based SSD
- Auto-tuning RocksDB for high bandwidth and low latency
- Applying machine learning methods to improve system performance

Optimizing Key-value Caching System for Flash SSDs
Louisiana State University | Aug 2014 – May 2017 | Baton Rouge, LA

- Optimizing internal flash management inside flash SSDs
- Applying compression onto flash-based key-value caching system
- Customizing key-value caching system on open-channel SSDs
- Exploring the effect of deduplication on the flash caching system

PROFESSIONAL SERVICES

Peer Review and Referee for
IEEE Transactions on Computers (TC) (1), IEEE Transactions on Big Data(TBD)(1), IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems(TCAD)(2), IEEE Access (1), Design, Automation and Test in Europe Conference (DATE'21)

EDUCATION

Ph.D. in Computer Science
Louisiana State University

📅 Aug 2014 – May 2020

Dissertation: Understanding and Optimizing Flash-based Key-value Systems in Data Centers

B.S. in Mathematics
Jilin University

📅 Aug 2009 – June 2013

Thesis: Seamless Instant Image Cloning Based on Derivative and Intensity Interpolation

SKILLS

Programming Languages: C/C++
Python   Shell   Makefile
x86 Assembly   Arm Assembly
Source Control: Git   Gerrit
Development Kits: SPDK   PMDK
Operating Systems: Linux

AWARDS

Graduate Student Travel Award
(HotStorage'16, MASCOTS'18, MSST'19, and ISPASS'20)
Outstanding Software Engineer in Appsoft
Outstanding Student in Jilin University

PUBLICATIONS

ICDCS'20 Jia *et al. Kill Two Birds with One Stone: Auto-tuning RocksDB for High Bandwidth and Low Latency*

ISPASS'20 Jia *et al. From Flash to 3D XPoint: Performance Bottlenecks and Potentials in RocksDB with Storage Evolution*

MSST'19 Jia *et al. When NVMe over Fabrics Meets Arm: Performance and Implications*

MASCOTS'18 Jia *et al. SlimCache: Exploiting Data Compression Opportunities in Key-Value Caching Systems*

FAST'17 Shen *et al. DIDACache: A Deep Integration of Device and Application for Flash Based Key-Value Caching*

HotStorage'16 Shen *et al. Optimizing Flash-based Key-value Cache Systems*