

# YICHEN JIA

## Architect Across HW/SW Boundaries

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📍 Austin, Texas

🔗 csyjia.github.io

## 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 Computational 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