Congming Gao

gaocm92@gmail.com • +1 (412) 708-5239 / +86 153-2032-4331 • http://gaocm.github.io

EDUCATION

University of Pittsburgh, Pittsburgh, USA

- Joint Ph.D. Student of Electrical and Computer Engineering — Oct 2018 – Oct 2019
  - Adviser: Prof. Jun Yang

Chongqing University, Chongqing, China

- Ph.D. Student in Computer Science — Sep 2014 – Dec 2019
  - Adviser: Prof. Liang Shi
  - Cumulative GPA: 3.89 / 4.00

City University of Hong Kong, Hong Kong, China

- Research Assistant in Computer Science — Jul 2015 – Sep 2015
  - Adviser: Prof. Chun Jason Xue

Chongqing University, Chongqing, China

- Bachelor in Computer Science — Sep 2010 – Jun 2014
  - Cumulative GPA: 3.69 / 4.00

PUBLICATIONS

CONFERENCES

[13] Congming Gao, Min Ye, Qiao Li, Chun Jason Xue, Youtao Zhang, Liang Shi and Jun Yang "Constructing Large, Durable and Fast SSD System via Reprogramming 3D TLC Flash Memory" in *Proceeding of the 52nd IEEE/ACM International Symposium on Microarchitecture, MICRO*, Oct 2019.

[12] Cheng Ji, Lun Wang, Qiao Li, Congming Gao, Liang Shi, Chia-Lin Yang and Chun Jason Xue "Fair Down to the Device: A GC-Aware Fair Scheduler for SSD" in *Proceeding of the 8th IEEE Non-Volatile Memory Systems and Applications Symposium, NVMSA*, Aug 2019.

[11] Yina Lv, Liang Shi, Qiao Li, Congming Gao, Chun Jason Xue and Edwin Sha "Optimizing Tail Latency of LDPC based Flash Memory Storage Systems Via Smart Refresh" in *Proceeding of the 14th International Conference on Networking, Architecture, and Storage, NAS*, Aug 2019.

[10] Congming Gao, Liang Shi, Chun Jason Xue, Jun Yang and Youtao Zhang "Parallel all the time: Plane Level Parallelism Exploration for High Performance SSDs" in *Proceeding of the 35th International Conference on Massive Storage Systems and Technology, MSST*, May 2019.

[9] Qi Li, Aosong Deng, Congming Gao, Yu Liang, Liang Shi and Edwin Sha "Optimizing Fragmentation and Segment Cleaning for CPS based Storage Devices" in *Proceeding of the 34th ACM/SIGAPP Symposium On Applied Computing, SAC*, Apr 2019.

[8] Congming Gao, Yejia Di, Aosong Deng, Duo Liu, Cheng Ji, Chun Jason Xue and Liang Shi "Flash Friendly File System Aware Mapping Cache Design on Solid State Drives" in *Proceeding of the 7th IEEE Non-Volatile Memory Systems and Applications Symposium, NVMSA*, Oct 2018.

[7] Yejia Di, Liang Shi, Congming Gao, Qiao Li and Chun Jason Xue "Revisiting Wear Leveling Design on Compression Applied 3D NAND Flash Memory" in *Proceeding of the International Conference on Hardware/Software Codesign and System Synthesis, CODES+ISSS*, Aug 2018.

[6] Congming Gao, Liang Shi, Yejia Di, Qiao Li, Chun Jason Xue and Edwin H.-M. Sha "An Efficient Cache Management Scheme for Capacitor Equipped Solid State Drives" in *Proceeding of the Great Lakes Symposium on VLSI, GLSVLSI*, May 2018.

[5] Yejia Di, Liang Shi, Congming Gao, Qiao Li, Kaijie Wu and Chun Jason Xue "Loss is Gain: Shortening Data for Lifetime Improvement on Low-Cost ECC Enabled Consumer-Level Flash Memory" in *Proceeding of the Great Lakes Symposium on VLSI, GLSVLSI*, May 2018.

[4] Yejia Di, Liang Shi, Congming Gao, Kaijie Wu, Chun Jason Xue and Edwin H.-M. Sha "Minimizing cell-to-cell interference by exploiting differential bit impact characteristics of scaled MLC NAND flash memories" in *Proceeding of the 5th IEEE Non-Volatile Memory Systems and Applications Symposium, NVMSA*, Jun 2016.

[3] Qiao Li, Liang Shi, Congming Gao, Kaijie Wu, Jason Chun Xue, Qingfeng Zhuge and H.-M. Edwin Sha "Maximizing IO Performance via Conflict Reduction for Flash Memory Storage Systems" in *Proceeding of the Design, Automation & Test in Europe Conference, DATE,* Mar 2015.

[2] Congming Gao, Liang Shi, Kaijie Wu, Chun Jason Xue, and Edwin H.-M. Sha "Exploit Asymmetric Error Rates of Cell States to Improve the Performance of Flash Memory Storage Systems" in *Proceeding of the 32nd IEEE International Conference on Computer Design, ICCD,* Oct 2014.

[1] Congming Gao, Liang Shi, Mengying Zhao, Chun Jason Xue, Kaijie Wu, and Edwin Sha "Exploiting Parallelism in IO Scheduling for Access Conflict Minimization in Flash-based Solid State Drives" in *Proceeding of the 30th International Conference on Massive Storage Systems and Technology, MSST,* Jun 2014.

JOURNALS

[8] Chao Wu, Cheng Ji, Qiao Li, Congming Gao, Riwei Pan, Chenchen Fu, Liang Shi and Chun Jason Xue "Maximizing I/O Throughput and Minimizing Performance Variation via Reinforcement Learning based I/O Merging for SSDs" *IEEE Transactions on Computers, TC,* Aug 2019.

[7] Qiao Li, Liang Shi, Yejia Di, Congming Gao, Cheng Ji, Yu Liang and Chun Jason Xue "Process Variation Aware Read Performance Improvement for LDPC-Based nand Flash Memory" *IEEE Transactions on Reliability, TR,* Feb 2019.

[6] Yejia Di, Liang Shi, Congming Gao, Qiao Li, Chun Jason Xue and Kaijie Wu "Minimizing Retention Induced Refresh Through Exploiting Process Variation of Flash Memory" *IEEE Transactions on Computers, TC,* Jul 2018.

[5] Qiao Li, Liang Shi, Congming Gao, Yejia Di, Chun Jason Xue "Access Characteristic Guided Read and Write Regulation on Flash based Storage Systems" *IEEE Transactions on Computers, TC,* May 2018.

[4] Cheng Ji, Li-Pin Chang, Liang Shi, Congming Gao, Chao Wu, YuanGang Wang, Chun Jason Xue "Lightweight Data Compression for Mobile Flash Storage" *ACM Transactions on Embedded Computing Systems, TECS,* Oct 2017.

[3] Congming Gao, Liang Shi, Yejia Di, Qiao Li, Chun Jason Xue, Kaijie Wu and Edwin H.-M. Sha "Exploiting Chip Idleness for Minimizing Garbage Collection Induced Chip Access Conflict on SSDs" *ACM Transactions on Design Automation of Electronic Systems, TODAES,* Aug 2017.

[2] Congming Gao, Liang Shi, Cheng Ji, Yejia Di, Kaijie Wu, Chun Jason Xue and Edwin H.-M. Sha "Exploiting Parallelism for Access Conflict Minimization in Flash-based Solid State Drives" *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, TCAD,* Apr 2017.

[1] Congming Gao, Edwin H.-M. Sha, Liang Shi, Kaijie Wu, Mengying Zhao and Chun Jason Xue "Asymmetric Error Rates of Cell States Exploration for Performance Improvement on Flash Memory based Storage Systems" *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, TCAD,* Oct 2016.

AWARDS & SCHOLARSHIPS		
■ "AlibabaCloud-CCF Storage Committee" Outstanding Paper Award		Aug 2019
"Parallel all the time: Plane Level Parallelism Exploration for High Performance SSDs"		
■ Student Grant from DAC		Jun 2019
■ National Scholarship for Ph.D. Graduate Students		Dec 2014
■ National Scholarship for Ph.D. Graduate Students		Dec 2015

SERVICE & ACTIVITIES

As a reviewer for:

■ IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems

■ IEEE Transactions on Parallel and Distributed Systems