Yixin Luo

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EDUCATION

CARNEGIE MELLON UNIVERSITY
PhD in Computer Science
Dec 2017 | Pittsburgh, PA
PhD Thesis: "Architectural Techniques for Improving NAND Flash Memory Reliability"

UNIVERSITY OF MICHIGAN
BS in Computer Science
May 2012 | Ann Arbor, MI
Dean's List 2010, 2011, EECS Scholar 2010
GPA: 3.9/4.0

SHANGHAI JIAO TONG UNIVERSITY
BS in Electrical Engineering
May 2012 | Shanghai, China
Dean's List 2009
GPA: 3.8/4.0

LINKS

Github:// **camellyx**
LinkedIn:// **luoyixin**

COURSEWORK

GRADUATE
Advanced Database Systems
Operating Systems and Distributed Systems
Advanced Cloud Computing
Computer Networks
Optimizing Compilers
Computer Architecture
Graduate Algorithms
Machine Learning
Deep Learning
Deep Reinforcement Learning

TEACHING ASSISTANT
Parallel Computer Arch. and Programming
Parallel Computer Architecture

UNDERGRADUATE
Computer Architecture + Major Design Proj.
VLSI Design + Major Design Proj.
Operating Systems
Honors Mathematics

SKILLS

PROGRAMMING
Over 10,000 lines:
C++ • Python • Matlab • Shell • Verilog • LaTeX
Familiar:
Perl • HTML • Windows Batch • TensorFlow
Simulator & Tools:
Intel Pin • HSPICE • Cadence tools • gem5 • Multi2Sim • MySQL/PostgreSQL

EXPERIENCE

SEAGATE TECHNOLOGY | Engineering Intern
May 2015 – Aug 2015; May 2016 – Oct 2016 | Lakeview, CA
- Developed 10 new techniques & 4 new models to improve SSD lifetime by 12.9×
- Developed new tools to automatically test and analyze seven types of SSD errors
- Collected and analyzed 700 GB of real SSD error data using machine learning and statistical modeling techniques

MICROSOFT RESEARCH | Research Intern
May 2013 – Aug 2013 | Redmond, WA
- Developed a new server architecture to reduce data center TCO by 2.7%
- Characterized memory error vulnerability of 3 important production data-intensive applications running in Microsoft data centers

RESEARCH

CARNEGIE MELLON UNIVERSITY | Graduate Research Assistant
Sep. 2012 – Present | Pittsburgh, PA
Worked with Prof. **Onur Mutlu** on improving storage and memory reliability, published 10 academic papers in top conferences and journals.

UNIVERSITY OF MICHIGAN | Research Assistant
May 2011 – May 2012 | Ann Arbor, MI
Worked with Prof. **Marios C. Papaefthymiou** and Prof. **Thomas F. Wenisch** on **Computational Sprinting** of manycore processors on mobile devices that improves the responsiveness of interactive applications by 10×. Worked with Prof. **Todd M. Austin** and Dr. **Joseph L. Greathouse** on architecture support for **Unlimited Watchpoints** that accelerates dynamic software analysis by 9×.

AWARDS

2017 DFRWS EU Best Paper Award
2015 HPCA Best Paper Runner Up
2012 HPCA Best Paper Award

SELECTED PUBLICATIONS

(Full publication list is available on my website.)

[1] Yixin Luo, Saugata Ghose, Yu Cai, Erich F. Haratsch, and Onur Mutlu. HeatWatch: Improving 3D NAND Flash Memory Device Reliability by Exploiting Self-Recovery and Temperature-Awareness. In *HPCA*, 2018.
[2] Y. Cai, S. Ghose, E. F. Haratsch, Y. Luo, and O. Mutlu. Error Characterization, Mitigation, and Recovery in Flash-Memory-Based Solid-State Drives. *Proc. IEEE*, Sep. 2017.
[3] Y. Luo, S. Ghose, Y. Cai, E. F. Haratsch, and O. Mutlu. Enabling Accurate and Practical Online Flash Channel Modeling for Modern MLC NAND Flash Memory. *IEEE JSAC*, Sep. 2016.
[4] Y. Cai, Y. Luo, E. F. Haratsch, K. Mai, and O. Mutlu. Data Retention in MLC NAND Flash Memory: Characterization, Optimization, and Recovery. In *HPCA*, 2015.
[5] Y. Luo, Y. Cai, S. Ghose, J. Choi, and O. Mutlu. WARM: Improving NAND Flash Memory Lifetime With Write-Hotness Aware Retention Management. In *MSST*, 2015.
[6] Y. Luo, S. Govindan, B. Sharma, M. Santaniello, J. Meza, A. Kansal, J. Liu, B. Khessib, K. Vaid, and O. Mutlu. Characterizing Application Memory Error Vulnerability to Optimize Datacenter Cost via Heterogeneous-Reliability Memory. In *DSN*, 2014.
[7] A. Raghavan, Y. Luo, A. Chandawalla, M. Papaefthymiou, K. P. Pipe, T. F. Wenisch, and M. MK. Martin. Computational sprinting. In *HPCA*, 2012.