

Yixin Luo

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EDUCATION

CARNEGIE MELLON UNIVERSITY

PHD IN COMPUTER SCIENCE

Feb 2018 | 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.