

# Yixin Luo

yixinluo.com | 734.546.7629 | yixinluo@cmu.edu

## 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

Deep Learning

Advanced Database Systems

Deep Reinforcement Learning

Machine Learning

Optimizing Compilers

Operating Systems and Distributed Systems

Advanced Cloud Computing

Graduate Algorithms

Computer Architecture

Computer Networks

### 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 – Oct. 2015; May 2016 – Aug 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] 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.
- [2] 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.
- [3] 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.
- [4] 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.
- [5] 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.
- [6] A. Raghavan, Y. Luo, A. Chandawalla, M. Papaefthymiou, K. P. Pipe, T. F. Wenisch, and M. MK. Martin. Computational sprinting. In *HPCA*, 2012.