

YAKUN SOPHIA SHAO

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EDUCATION

- | | |
|---|-------------------|
| Harvard University , Cambridge, MA
Ph.D. in Computer Science. Advisor: Professor David Brooks
Dissertation: Design and Modeling of Specialized Architectures [PDF] | 09/2009 - 05/2016 |
| Harvard University , Cambridge, MA
Master of Science in Computer Science. Advisor: Professor David Brooks | 09/2009 - 03/2014 |
| Zhejiang University , Hangzhou, Zhejiang, China
Bachelor in Electrical Engineering | 09/2005 - 06/2009 |

AWARDS AND HONORS

- Harvard Nominee of the **ACM Doctoral Dissertation Award**, 2016
- **IBM Ph.D. Fellowship**, 2015-2016
- Paper selected as one of the **IEEE Micro's Top Picks in Computer Architecture** in 2014
- **Siebel Scholar, Class of 2015** - awarded annually for academic excellence and demonstrated leadership to 85 top students from the world's leading graduate schools
- **Best in Session Award**, SRC TECHCON 2014
- Invited Participant at the **Rising Stars in EECS Workshop**, 2014

BOOK

- Research Infrastructures for Hardware Accelerators** [\[Link\]](#)
Yakun Sophia Shao and David Brooks
Synthesis Lectures on Computer Architecture, Morgan & Claypool Publishers, Nov 2015.

PUBLICATIONS

[\[Google Scholar\]](#)

- Co-Designing Accelerators and SoC Interfaces using gem5-Aladdin** [\[PDF\]](#)
Yakun Sophia Shao, Sam Likun Xi, Vijayalakshmi Srinivasan, Gu-Yeon Wei and David Brooks
In *International Symposium on Microarchitecture (MICRO)*, October 2016.
- The Aladdin Approach to Accelerator Design and Modeling** [\[PDF\]](#)
Yakun Sophia Shao, Brandon Reagen, Gu-Yeon Wei and David Brooks
In *IEEE Micro*, May-June 2015.
- Toward Cache-Friendly Hardware Accelerators** [\[PDF\]](#)
Yakun Sophia Shao, Sam Xi, Viji Srinivasan, Gu-Yeon Wei and David Brooks
In *HPCA Sensors and Cloud Architectures Workshop (SCAW)*, Feb 2015.
- MachSuite: Benchmarks for Accelerator Design and Customized Architectures** [\[PDF\]](#)
Brandon Reagen, Bob Adolf, **Yakun Sophia Shao**, Gu-Yeon Wei and David Brooks
In *International Symposium on Workload Characterization (IISWC)*, Sept 2014.
- Aladdin: A Pre-RTL, Power-Performance Accelerator Simulator Enabling Large Design Space Exploration of Customized Architectures** [\[PDF\]](#)
Yakun Sophia Shao, Brandon Reagen, Gu-Yeon Wei and David Brooks
In *International Symposium on Computer Architecture (ISCA)*, June 2014.
Selected as one of the Top Picks in Computer Architecture in 2014

Energy Characterization and Instruction-Level Energy Model of Intel's Xeon Phi Processor [\[PDF\]](#)

Yakun Sophia Shao and David Brooks

In *International Symposium on Low Power Electronics and Design (ISLPED)*, Sept 2013.

Quantifying Acceleration: Power/Performance Trade-offs of Application Kernels in Hardware [\[PDF\]](#)

Brandon Reagen, Yakun Sophia Shao, Gu-Yeon Wei and David Brooks

In *International Symposium on Low Power Electronics and Design (ISLPED)*, Sept 2013.

ISA-Independent Workload Characterization and its Implications for Specialized Architectures [\[PDF\]](#)

Yakun Sophia Shao and David Brooks

In *International Symposium on Performance Analysis of Systems and Software (ISPASS)*, April 2013.

Power, Performance and Portability: System Design Considerations for Micro Air Vehicle Applications [\[PDF\]](#)

Yakun Sophia Shao, Judson Porter, Michael J. Lyons, Gu-Yeon Wei and David Brooks

In *Advanced Computer Architecture and Compilation for Embedded Systems (ACACES)*, July 2010

SOFTWARE

- **Aladdin**: A pre-RTL, power-performance-area simulator for fixed-function accelerators. [\[GitHub\]](#)
- **gem5-Aladdin**: An SoC Simulator. [\[GitHub\]](#)
- **LLVM-Tracer**: An LLVM optimization pass to print a dynamic LLVM IR trace. [\[GitHub\]](#)
- **MachSuite**: A benchmark suite for accelerators. [\[GitHub\]](#)
- **WIICA**: An ISA-independent workload characterization to for accelerators. [\[GitHub\]](#)

TUTORIALS

Rapid Exploration of Accelerator-Rich Architectures: Automation from Concept to Prototyping [\[Link\]](#),

Yakun Sophia Shao with David Brooks, Jason Cong, Zhenman Fang, Gu-Yeon Wei, and Sam Xi

In *International Symposium on Microarchitecture (MICRO)*, October 2016.

Aladdin and gem5-Aladdin: Research Infrastructures for Specialized Architectures [\[Link\]](#),

Yakun Sophia Shao with David Brooks, Gu-Yeon Wei, and Sam Xi

In *International Symposium on Workload Characterization (IISWC)*, September 2016.

Rapid Exploration of Accelerator-Rich Architectures: Automation from Concept to Prototyping [\[Link\]](#),

Yakun Sophia Shao with David Brooks, Yu-Ting Chen, Jason Cong, Zhenman Fang, Brandon Reagen, Glenn Reinman, Gu-Yeon Wei, and Sam Xi

In *International Symposium on Computer Architecture (ISCA)*, June 2015.

Research Infrastructures for Accelerator-centric Architectures [\[Link\]](#),

Yakun Sophia Shao with David Brooks, Mark Hempstead, Brandon Reagen, and Gu-Yeon Wei

In *International Symposium on High Performance Computer Architecture (HPCA)*, Feb 2015.

Research Infrastructures for Accelerator-centric Architectures [\[Link\]](#),

Yakun Sophia Shao with David Brooks, Brandon Reagen, Kevin Skadron, Liang Wang, and Gu-Yeon Wei

In *International Symposium on Computer Architecture (ISCA)*, June 2014.

PROFESSIONAL EXPERIENCE

Research Intern, IBM Research, Yorktown Heights, NY

July 2015 - Sept. 2015

Research Intern, IBM Research, Yorktown Heights, NY

July 2014 - Sept. 2014

Research Intern, Intel Corporation, Santa Clara, CA

June 2012 - Sept. 2012

TEACHING EXPERIENCE

CS247r Advanced Topics in Computer Architecture, Fall 2013, Teaching Fellow

CS246 Advanced Computer Architecture, Spring 2013, Teaching Fellow

CS141 Computing Hardware, Fall 2011, Teaching Fellow