

Kristin M. Barber

Curriculum Vitae

395N Dreese Laboratories
2015 Neil Avenue
Columbus, OH, 43210
☎ +1 (513) 253 2585
✉ barber.m.kristin@gmail.com

Education

- 2013–2021 **Doctor of Philosophy, Computer Science and Engineering**
The Ohio State University, Columbus, OH
Advisor: Prof. Radu Teodorescu
Coursework: Systems Security, Hardware Security, System-Level Energy-Efficient Design, Parallel Computing, Network-Based Computing for HPC, Computer Architecture, Foundations of Programming Languages, Advanced Algorithms, Foundations of Speech and Language Processing, Artificial Intelligence
- 2010–2013 **Master of Science, Electrical and Computer Engineering**
University of Cincinnati, Cincinnati, OH
Advisor: Prof. Ranga Vemuri & Prof. Carla Purdy
Coursework: Physical VLSI Design, Low-Power VLSI Design, Topics in VLSI, Embedded Systems, Operating Systems, Computer Networks, Network Security, Data Models and Query Optimization
- 2007–2010 **Bachelor of Science, Computer Engineering Technology**
Shawnee State University, Portsmouth, OH
Coursework: Compiler Design and Implementation, Automata and Formal Languages, Microprocessor Systems, Digital Controls, Advanced Circuit Analysis

Publications

- [1] Saikat Majumdar, Mohammad Hossein Samavatian, **Kristin Barber**, Radu Teodorescu. Using Undervolting as an On-Device Defense Against Adversarial Machine Learning Attacks. *IEEE International Symposium on Hardware Oriented Security and Trust (HOST)*, December 2021.
- [2] Moein Ghaniyoun, **Kristin Barber**, Yinqian Zhang, Radu Teodorescu. “INTROSPECTRE: A Pre-Silicon Framework for Discovery and Analysis of Transient Execution Vulnerabilities”. *48th International Symposium on Computer Architecture (ISCA)*, June 2021.
- [3] Mohammad Hossein Samavatian, Saikat Majumdar, **Kristin Barber**, Radu Teodorescu. “HASI: Hardware-Accelerated Stochastic Inference, A Defense Against Adversarial Machine Learning Attacks”. *Workshop on Secure and Private Systems for Machine Learning (held with ISCA)*, June 2021.
- [4] **IEEE MICRO Top Picks Honorable Mention**
Kristin Barber, Anys Bacha, Li Zhou, Yinqian Zhang, Radu Teodorescu. “SpecShield: Shielding Speculative Data from Microarchitectural Covert Channels”. *28th International Conference on Parallel Architectures and Compilation Techniques (PACT)*, September 2019.

- [5] **Best Paper Award**
Kristin Barber, Anys Bacha, Li Zhou, Yinqian Zhang, Radu Teodorescu.
“Isolating Speculative Data to Prevent Transient Execution Attacks”. *IEEE Computer Architecture Letters (CAL)*, May 2019.
- [6] **Best Paper Nomination**
Renji Thomas, **Kristin Barber**, Naser Sedaghati, Li Zhou, Radu Teodorescu.
“Core Tunneling: Variation-Aware Voltage Noise Mitigation in GPUs”. 22nd *International Symposium on High Performance Computer Architecture (HPCA)*, March 2016.

Professional Experience

- 2020.8–2021.5 **Research Intern**
CENATE/HPC; Systems Security
Pacific Northwest National Laboratory
Richland, WA
Supervisor: Andres Marquez
- 2014.6–2021.8 **Graduate Research Assistant**
Computer Architecture Research Lab
The Ohio State University
Columbus, OH
Advisor: Prof. Radu Teodorescu
- 2020.5–2020.8 **Research Intern**
Microsoft Research
Confidential Computing
Redmond, WA
Supervisor: Muntaquim Chowdhury
- 2019.5–2019.8 **Hardware Security Intern**
Air Force Research Laboratory
Trusted and Assured Microelectronics
Wright-Patterson AFB, OH
Supervisor: Brian Dupaix
- 2017.2–2017.6 **Computer Architecture Research Intern**
Intel Labs
Microarchitecture Research Lab
Santa Clara, CA
Supervisor: Hong Wang
- 2013.3–2013.8 **System-On-Chip Verification Intern**
NVIDIA Corporation
Austin, TX
Supervisor: Kiran Sama
- 2011.3–2011.8 **Graphics Hardware Validation Intern**
Intel Corporation
Folsom, CA
Supervisor: Alan Curtis

Teaching and Advising

- 2020 **Research Advising**
Moein Ghaniyoun, Ph.D Student
The Ohio State University

- 2016 **Teaching Assistant**
Computer Architecture (CSE/6421)
The Ohio State University
- 2013 **Lecturer**
Computer-Assisted Problem Solving (CSE/1112)
The Ohio State University
- 2010 **Teaching Assistant**
C++ Programming (CET/2100)
Shawnee State University

Presentations

- Talk "SpecShield: Shielding Speculative Data from Microarchitectural Covert Channels". 28th International Conference on Parallel Architectures and Compilation Techniques (PACT). September, 2019.
- Talk "Isolating Speculative Data to Prevent Transient Execution Attacks". 26th International Symposium on High-Performance Computer Architecture (HPCA). February, 2020.
- Talk "WiP: Isolating Speculative Data to Prevent Transient Execution Attacks". Hardware and Architectural Support for Security and Privacy (HASP). June, 2019.
- Poster "Policing Speculative Data to Prevent Leakage". 4th Career Workshop for Women and Minorities in Computer Architecture. Fukuoka, Japan. October, 2018.

Technical Skills

- Languages** Python, C/C++, Java, Perl, Scala, R, x86, RISC-V
- HPC** CUDA, MPI, OpenMP
- HDL** Verilog, Chisel, SystemC
- IDE** Git, Make, CMake, Eclipse, IntelliJ
- Web** Javascript, HTML, MySQL, PHP, CSS
- EDA** VCS, ModelSim, Vivado, Design Compiler, Nanosim, PrimeTime, PSpice, Quartus