Kristin M. Barber

Curriculum Vitae

395N Dreese Laboratories
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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