

# KEVIN ROBERT LOUGHLIN

*Ph.D. Candidate*

Computer Science and Engineering  
University of Michigan

2260 Hayward Street  
Ann Arbor, MI 48109, USA

kevlough@umich.edu  
<https://www.kevinloughlin.org>

## RESEARCH INTERESTS

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My research is at the intersection of hardware-software co-design, reliability, and security. I am interested in creating novel hardware interfaces for software systems, in order to afford the programmer maximal control of the security, speed, and resource utilization of their code. My recent work largely focuses on creating efficient mitigations for microarchitectural exploits such as Spectre and Rowhammer.

## EDUCATION

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### University of Michigan

*Ph.D. in Computer Science and Engineering (CSE)*

GPA: 4.0/4.0

Thesis: Mitigating Microarchitectural Vulnerabilities to Improve Cloud Security and Reliability

Advisor: Prof. Baris Kasikci

*Ann Arbor, MI, USA*

Sep 2018–Aug 2023

### Harvard University

*B.A. in Computer Science, magna cum laude*

GPA: 3.85/4.0

Thesis: TEE-BONE: Securing Smartphone Apps Using Hardware-Only Isolation Primitives

Advisor: Prof. James Mickens

*Cambridge, MA, USA*

Sep 2014–May 2018

## AWARDS AND HONORS

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1st-Place Presentation in Graduate Student Honors Competition; Univ. of Michigan CSE	2022
Google Ph.D. Fellowship Recipient, Privacy and Security	2021
NSF Graduate Research Fellowship Recipient	2020
Service Award for Excellence in Climate, Diversity, Equity, and Inclusion; Univ. of Michigan CSE	2020
College of Engineering Dean's Fellowship; Univ. of Michigan	2018
Certificate of Distinction in Teaching (5.0/5.0 evaluation score); Harvard Univ.	2017
Program for Research in Science and Engineering (PRISE) Fellowship; Harvard Univ.	2017
Paul F. Gilligan III Fellowship; Harvard Univ.	2017
Ruhr Fellowship and Ambassador Scholarship	2016

## EMPLOYMENT

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### Google Chip Implementation and Infrastructure (CI2)

*Research Intern*

Mentors: Dr. Shobha Vasudevan and Dr. Joe Wenjie Jiang

*Sunnyvale, CA, USA*

May 2022–Aug 2022

### Microsoft Azure for Operators, Office of the CTO (AFO OCTO)

*Research Intern*

Mentor: Dr. Alec Wolman

*Redmond, WA, USA*

Jun 2021–Aug 2021

## CONFERENCE PUBLICATIONS

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1. **Kevin Loughlin**, Jonah Rosenblum, Stefan Saroiu, Alec Wolman, Dimitrios Skarlatos, and Baris Kasikci. “Siloz: Leveraging DRAM Isolation Domains to Prevent Inter-VM Rowhammer.” In *Symposium on Operating Systems Principles (SOSP)*. 2023. Conditionally-accepted.
2. **Kevin Loughlin**, Stefan Saroiu, Alec Wolman, Yatin A. Manerkar, and Baris Kasikci. “MOESI-prime: Preventing Coherence-Induced Hammering in Commodity Workloads.” In *International Symposium on Computer Architecture (ISCA)*. 2022.
3. Jiacheng Ma, Gefei Zuo, **Kevin Loughlin**, Haoyang Zhang, Andrew Quinn, and Baris Kasikci. “Debugging in the Brave New World of Reconfigurable Hardware.” In *International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*. 2022.
4. **Kevin Loughlin**, Ian Neal, Jiacheng Ma, Elisa Tsai, Ofir Weisse, Satish Narayanasamy, and Baris Kasikci. “DOLMA: Securing Speculation with the Principle of Transient Non-Observability.” In *USENIX Security Symposium*. 2021.
5. Jiacheng Ma, Gefei Zuo, **Kevin Loughlin**, Xiaohe Cheng, Yanqiang Liu, Abel Mulugeta Eneyew, Zhengwei Qi, and Baris Kasikci. “A Hypervisor for Shared-Memory FPGA Platforms.” In *International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*. 2020.
6. Ofir Weisse, Ian Neal, **Kevin Loughlin**, Thomas Wenisch, and Baris Kasikci. “NDA: Preventing Speculative Execution Attacks at Their Source.” In *International Symposium on Microarchitecture (MICRO)*. 2019. **IEEE Micro Top Picks 2020 Honorable Mention**.

## WORKSHOP PUBLICATIONS

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1. **Kevin Loughlin**, Stefan Saroiu, Alec Wolman, and Baris Kasikci. “Software-Defined Memory Controllers: An Idea Whose Time Has Come.” In *Wild and Crazy Ideas (WACI) Session at ASPLOS*. 2022.
2. **Kevin Loughlin**, Stefan Saroiu, Alec Wolman, and Baris Kasikci. “Stop! Hammer Time: Rethinking Our Approach to Rowhammer Mitigations.” In *Workshop on Hot Topics in Operating Systems (HotOS)*. 2021.

## TECHNICAL REPORTS

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1. Lucian Cojocar, **Kevin Loughlin**, Stefan Saroiu, Baris Kasikci, and Alec Wolman. “mFIT: A Bump-in-the-Wire Tool for Plug-and-Play Analysis of Rowhammer Susceptibility Factors.” In *MSR-TR-2021-25 (Microsoft Research Technical Report)*. 2021.

## TEACHING

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### Advanced Operating Systems (EECS 582)

GSI for Prof. Baris Kasikci in graduate course at the University of Michigan

Ann Arbor, MI, USA

Jan 2020–May 2020

### Systems Programming and Machine Organization (CS 61)

TA for Prof. Eddie Kohler in undergraduate course at Harvard University

Cambridge, MA, USA

Aug 2017–Dec 2017

## PROFESSIONAL ACTIVITIES

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<b>CSEG Wellness Vice-President</b> Organized wellness events for UMich CSE graduate student organization (CSEG)	<i>Ann Arbor, MI, USA</i> Jun 2020–Oct 2022
<b>CSEG Social Chair</b> Held social events for CSEG	<i>Ann Arbor, MI, USA</i> May 2019–May 2020
<b>Explore Graduate Studies Volunteer</b> Advised prospective students about graduate studies in computer science	<i>Ann Arbor, MI, USA</i> Oct 2019
<b>Lunch and Lab with a Grad Mentor Program Volunteer</b> Mentored a student on how to prepare for graduate school in computer science	<i>Ann Arbor, MI, USA</i> Sep 2019–Oct 2019
<b>Graduate Admissions Recruit@Home Speaker</b> Gave a recruitment talk at Harvard University of behalf of UMich CSE	<i>Cambridge, MA, USA</i> Sep 2019
<b>Xplore Engineering Volunteer</b> Helped run a workshop introducing elementary school students to computer science	<i>Ann Arbor, MI, USA</i> Jun 2019
<b>CSEG Systems Reading Group Co-Chair</b> Ran weekly systems research paper group meetings	<i>Ann Arbor, MI, USA</i> Sep 2018–May 2019
<b>CSEG Security Reading Group Co-Chair</b> Ran weekly security research paper group meetings	<i>Ann Arbor, MI, USA</i> Sep 2018–May 2019
<b>CSEG Vice-President and Treasurer</b> Managed CSEG finances	<i>Ann Arbor, MI, USA</i> Jan 2019–May 2019

## TECHNICAL SKILLS

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Programming Languages: Fluent in C, C++, Java, and Python  
Architectural Simulators: gem5, QEMU  
System Software: Linux/KVM

## LANGUAGES

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English: native  
French: advanced proficiency  
Spanish: advanced proficiency  
German: beginner

## REFERENCES

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Available upon request