

Ian Glen Neal

Education

The University of Michigan	Sept. 2018–June 2023
Ph.D. in Computer Science and Engineering	GPA: 3.961
Dissertation: Automating the Detection and Correction of Failures in Modern Persistent Memory Systems	
The University of Michigan	Sept. 2018–Jan. 2021
M.Sc.E. in Computer Science and Engineering	GPA: 3.961
The University of Texas at Austin	Aug. 2013–May 2018
B.Sc. in Computer Science	
Special Honors: Turing Scholars Honors Program	
Thesis: The Advantages of a Transactional Interface: Porting Applications to TxFS	
B.Sc. in Electrical Engineering	
Minor in Biblical Hebrew	

Recent Employment

Veridise	Remote in USA
R&D Engineer	June 2023–Present
• Building analyses for Vanguard, a static analyzer for finding common vulnerabilities in smart contracts and zero-knowledge circuits.	
• Performing security audits for web3 technologies.	
Microsoft Research	Remote in USA
Research Intern in Microsoft Systems Research Group and Microsoft Azure	May 2022–Aug. 2022
• Prototyped automated incident reproduction techniques for services running on Microsoft Azure.	
• Developed an unsupervised, time-series clustering analysis to find correlations between metric anomalies and production incidents.	
• Implemented a reproduction system that faithfully reproduces incident symptoms by manipulating the service environment (e.g., adding workload, resource contention).	
IBM Research	Remote in USA
Research Intern in Hybrid Cloud	May 2021–Aug. 2021
• Developed new testing infrastructure to verify network functions across hardware and software.	
• Created extensions to the KLEE symbolic execution framework to support testing network applications.	
• Wrote and filed a patent collaboratively on research contributions.	
University of Michigan	Ann Arbor, Michigan, USA
Graduate Research Assistant	Sept. 2018–June 2023
• Created novel techniques for accurately and efficiently finding, fixing, and reproducing bugs.	
• Created novel techniques for improving the reliability of persistent main memory (PM) systems.	
• Automated incident reproduction in active collaboration with Microsoft Azure Systems Research.	
Microsoft	Redmond, Washington, USA
Software Engineering Intern	May 2018–Aug. 2018
• Created real-time video processing module to automatically adjust brightness for low-vision users.	
• Led invention of novel techniques for smooth brightness adjustment.	
• Filed 3 US patents based on my intellectual contributions.	

Peer-Reviewed Publications

- [1] Kevin Loughlin, **Ian Neal**, Jiacheng Ma, Elisa Tsai, Ofir Weisse, Satish Narayanasamy, Baris Kasikci. DOLMA: Securing Speculation with the Principle of Transient Non-Observability. In Proceedings of the 30th USENIX Security Symposium (USENIX Security '21). August 2021. [\[link\]](#)
- [2] Tanvir Ahmed Khan, **Ian Neal**, Gilles Pokam, Barzan Mozafari, Baris Kasikci. DMon: Efficient Detection and Correction of Data Locality Problems Using Selective Profiling. In Proceedings of the 15th USENIX Symposium on Operating Systems Design and Implementation (OSDI '21). July 2021. [\[link\]](#)
- [3] **Ian Neal**, Andrew Quinn, Baris Kasikci. HIPPOCRATES: Healing Persistent Memory Bugs Without Doing Any Harm. In Proceedings of the 26th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '21). April 2021. [\[link\]](#)
- [4] **Ian Neal**, Gefei Zuo, Eric Shiple, Tanvir Ahmed Khan, Youngjin Kwon, Simon Peter, Baris Kasikci. Rethinking File Mapping for Persistent Memory. In Proceedings of the 19th USENIX Conference on File and Storage Technologies (FAST '21). February 2021. [\[link\]](#)
- [5] **Ian Neal**, Ben Reeves, Ben Stoler, Andrew Quinn, Youngjin Kwon, Simon Peter, Baris Kasikci. AGAMOTTO: How Persistent is your Persistent Memory Application?. In Proceedings of the 14th USENIX Symposium on Operating Systems Design and Implementation (OSDI '20). November 2020. **IEEE Micro 2021 Top Picks Honorable Mention.** [\[link\]](#)
- [6] Ofir Weisse, **Ian Neal**, Kevin Loughlin, Thomas F. Wenisch, and Baris Kasikci. NDA: Preventing Speculative Execution Attacks at Their Source. In Proceedings of the 52nd Annual IEEE/ACM International Symposium on Microarchitecture (MICRO '19). October 2019. **IEEE Micro 2019 Top Picks Honorable Mention.** [\[link\]](#)
- [7] Yige Hu, Zhiting Zhu, **Ian Neal**, Youngjin Kwon, Tianyu Cheng, Vijay Chidambaram, and Emmett Witchel. TxFS: Leveraging File-System Crash Consistency to Provide ACID Transactions. In 2018 USENIX Annual Technical Conference (USENIX ATC '18). July 2018. **Awarded Best Paper.** [\[link\]](#)

Workshop Presentations

- [9] **Ian Neal**, Andrew Quinn, Baris Kasikci. Towards Bug-free Persistent Memory Applications. In the 12th Annual Non-Volatile Memories Workshop (NVMW '21). March 2021. [\[link\]](#)

Patents

Method to Verify Functionality of Hardware Network Pipelines via Symbolic Execution (IBM)	Pending
Video Frame Brightness Filter (Microsoft)	US Patent 10,909,403 [link]
User-Specific Video Frame Brightness Filter (Microsoft)	US Patent 10,778,932 [link]
Color-Specific Video Frame Brightness Filter (Microsoft)	US Patent App. 16/210,667 [link]

Recent Honors and Awards

Richard F. and Eleanor A. Towner Prize for Distinguished Academic Achievement	2022
Facebook Fellowship Finalist	2021
IEEE Micro 2021 IEEE Top Picks Honorable Mention	2021
IEEE Micro 2019 IEEE Top Picks Honorable Mention	2019
USENIX Annual Technical Conference Best Paper Award	2018
Richard H. Orenstein Graduate Fellowship in Memory of Murray Orenstein	2018–2019
National Science Foundation (NSF) Research Experiences for Undergraduates (REU) Grant	2018
CRA Outstanding Undergraduate Researcher Award (Honorable Mention)	2017