

SAMUEL THOMAS

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EDUCATION

Brown University 2020 - 2025

Ph.D. in Computer Science

Dissertation: [Proposal: A Study of Performance and Trust in Secure Memory](#)

Advisor: R. Iris Bahar

Davidson College 2016-2020

B.S. in Computer Science, B.A. in Political Science

Dissertation: [Using Layering and Partitioning Techniques to Increase NUMA-Locality and Performance in Concurrent Data Structures](#)

Advisor: Hammurabi Mendes

Distinction: High Honors in Computer Science, Cum Laude

RESEARCH

INTERESTS

Security, architecture, emerging technologies, hardware-software co-design, and operating systems.

PUBLICATIONS

Refereed Conference Papers

- (1) **Samuel Thomas**, Kidus Workneh, Jac McCarty, Joseph Izraelevitz, Tamara Lehman, R. Iris Bahar
[A Midsummer Night's Tree: Efficient and High Performance Secure SCM](#)
ASPLOS 2024 *Acceptance Rate:* **39 papers accepted out of 340 submitted (fall)**.
- (2) **Samuel Thomas**, Hammurabi Mendes
[Brief Announcement: Layering Data Structures Over Skip Graphs for Increased NUMA Locality](#)
PODC '19

Refereed Workshop Papers

- (3) **Samuel Thomas**, Hammad Izhar, Elliott Dinfotan, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
[Rethinking Metadata Caches in Secure NVMs](#)
NVMW 2024
- (4) **Samuel Thomas**, Kidus Workneh, Jac McCarty, Joseph Izraelevitz, Tamara Lehman, R. Iris Bahar
[Using a Fast Subtree for Efficient Secure NVMs](#)
NVMW 2024
- (5) **Samuel Thomas**, Jiwon Choe, Ofir Gordon, Erez Petrank, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
[CRAP: Collecting Resources Across different Processing levels](#)
NOPE 2022

Journal Papers

- (6) **Samuel Thomas**, Kidus Workneh, Ange-Thierry Ishimwe, Zack McKeivitt, Phaedra Curlin, R. Iris Bahar, Joseph Izraelevitz, Tamara Lehman
[Baobab Merkle Tree for Efficient Secure Memory](#)
IEEE Computer Architecture Letters (2024) *Acceptance Rate: Approximately 20%*.
- (7) **Samuel Thomas**, Roxana Hayne, Jonad Pulaj, Hammurabi Mendes
[Using Skip Graphs for Increased NUMA Locality](#)
2020 IEEE SBAC-PAD

Other Papers

- (8) **Samuel Thomas**, Jiwon Choe, Ofir Gordon, Erez Petrank, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
[Towards Hardware Accelerated Garbage Collection with Near-Memory Processing](#)
IEEE HPEC 2022

Under Submission

- (9) **Samuel Thomas**, Elliott Dinfotan, Hammad Izhar, Gal Sela, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
redacted for anonymity
MICRO 2024

PRESENTATIONS AND POSTERS

- (10) **Samuel Thomas**, Kidus Workneh, Jac McCarty, Joseph Izraelevitz, Tamara Lehman, R. Iris Bahar
[Poster/Presentation: A Midsummer Night's Tree: Efficient and High Performance Secure SCM](#)
ASPLOS 2024
- (11) Chia Jen Cheng, **Samuel Thomas**, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
[Analyzing Secure Non-volatile Main Memory](#)
YArch 2023
- (12) **Samuel Thomas**, Jiwon Choe, Ofir Gordon, Erez Petrank, Tali Moreshet, Maurice Herlihy, R. Iris Bahar
[A Performance Study of Near-Memory Processing Under Garbage Collection](#)
Boston Area Architecture Workshop (BARC) 2022
- (13) **Samuel Thomas**, Tamara Lehman, R. Iris Bahar, Joseph Izraelevitz
["Instant On" Secure Recovery of Non-Volatile Main Memory Systems](#)
New England Hardware Security Day 2021
- (14) **Samuel Thomas**, Tamara Lehman, R. Iris Bahar, Joseph Izraelevitz
[Partial Recovery of Secure Non-Volatile Main Memories](#)
Boston Area Architecture Workshop (BARC) 2021

TEACHING

CERTIFICATE

Harriet W. Sheridan Center for Teaching and Learning
[Sheridan Teaching Seminar](#)

2023

ADJUNCT APPOINTMENT

Computer Organization, CSCI341A, Colorado School of Mines.

July-August 2023

- Newly developed summer architecture course (10 students).
- Teaching evaluation (out of 5.0): mean 4.86 ($\sigma = .7$); median 5.0.

GRADUATE TEACHING ASSISTANT

Mathematical Models to Predict, Prepare, and Prevent, ICERM *June-August 2024*

- Shared supervising of the collaborative research of 18-22 undergraduate student participants.
- Assisting students in preparation of final presentations.

Computer Architecture, CSCI1952y, Brown University. *January-May 2024*

- Assisted in design of newly developed course (16 students).
- Developed simulator based programming assignments covering caches, ISA extensions, and secure processors.

Multiprocessor Synchronization, CSCI1760, Brown University. *September-December 2023*

Theory of Computation, CSCI1010, Brown University. *September-December 2021*

UNDERGRADUATE RESEARCH MENTORSHIP

1. **Jac McCarty, Bryn Mawr College** (*mentored from January 2022-August 2022*): Mentored through the Google exploreCSR program, and continued working on hot-region tracking integrity trees as REU student. Won best exploreCSR presentation at Brown in April of 2022. Graduated from Bryn Mawr in 2024.
2. **Chia Jen (John) Cheng, Boston University** (*mentored from June 2022-May 2023*): Mentored when working as a research assistant and through independent study. Presented work on adaptable integrity trees at YArch 2023, co-located with ASPLOS. Graduated from Boston University in 2023 to pursue his Ph.D. at Carnegie Mellon.
3. **Adam Richling, University of Colorado, Boulder** (*mentored from August 2023-current*): Mentored while working as SPUR research fellow in summer of 2023 and during independent study for 23-24 school year. Presented work on metadata cache replacement policies at SPUR workshop in August 2023. Graduated from CU Boulder in 2024.
4. **Neil Ramaswamy, Brown University** (*mentored from December 2022-May 2023*): Mentored while working on independent study on adaptable integrity trees and non-tree integrity. Graduated from Brown in 2023.
5. **Aidan Nowakowski, Boston University** (*mentored from June 2023-August 2023*): Mentored while working as research assistant on extending adaptable Huffman algorithms.
6. **Elliott Dinfotan, Boston University** (*mentored from June 2023-current*): Mentored while working as research assistant and during independent study on extending adaptable Huffman algorithms and adaptable integrity trees. Contributed to workshop paper at NVMW 2024.
7. **Hammad Izhar, Brown University** (*mentored from June 2023-May 2024*): Mentored while working on adaptive Huffman algorithms and correctness of persistent data structures. Graduated from Brown in 2024 to pursue his Ph.D. at Harvard.
8. **Suhana Zeutzius, University of Colorado, Boulder** (*mentored from September 2023-May 2024*): Mentored during independent study while working on learned placement and replacement in metadata caches. Graduated from CU Boulder in 2024.

PROFESSIONAL SERVICE

ACADEMIC COMMUNITY

Reviewer for Artifact Evaluation, ISCA
Reviewer for Aritfact Evaluation, IISWC

2023

2024

UNIVERSITY

TGIF *organizing head*
Visit Weekend
Graduate Student Orientation *organizing head*

2022-2024

2023, 2024

2022

REFERENCES

Available upon request.