Madeline Burbage

 Maddie Burbage | maddieburbage.github.io | madeline.g.burbage@gmail.com

EDUCATION

Williams College B.A.   2018-2022
- Highest Honors in Computer Science
- Magna Cum Laude (GPA 3.94)

RESEARCH EXPERIENCE

A Private, Associative Memory Alternative for RISC Systems – Thesis   Sep 2021 - May 2022
Designed, implemented, and tested a scratchpad memory system for RISC-V machines that provides fine-grained control over data storage and movement. Software can harness this system for specialized security and performance concerns. Completed under the supervision of Prof. Duane Bailey, and available at:
https://unbound.williams.edu/islandora/object/studenttheses%3A1994

Research Assistant for Professor Duane Bailey   June 2020 - May 2021
Developed hardware accelerators in Chisel (Scala) for the Rocket Chip, an open-source RISC-V processor from UC Berkeley. Designed configurable circuitry for FPGAs, creating hardware debuggers which explain the operation of accelerators as they run. Modified processor designs and wrote C and Bash benchmarks to measure hardware performance across speed and energy use.

Sequences Accelerator – Winter Research Project   Jan 2020
Designed a hardware accelerator for the generation of combinatoric sequences. It can speed up six sequence-generating functions by 2-15x, helping the performance of exhaustive search algorithms. Presented this work at the 2020 Grace Hopper ACM SRC:
    Burbage, M. (2020, September 29-30). A Hardware Engine for Generating Number-Theoretic Sequences [Conference presentation]. Grace Hopper Celebration 2020.

PROFESSIONAL EXPERIENCE

Software Engineer – Coinbase, New York, NY   Sep 2022 - present
- As part of the Infrastructure Security team, secure company machines and code during each stage of the development lifecycle.
- Develop a package gatekeeping service to block risky dependencies from being used in company code.

Software Engineer Intern – Coinbase, New York, NY   June - August 2021
- Researched and securely integrated a dependency monitoring platform for our CI/CD pipeline, enabling immediate and thorough fixes of third-party package security incidents across company code.

Coding Instructor – Coding With Kids, Seattle, WA   June 2018 - Sep 2018
- Taught the fundamentals of coding through Java, Scratch, and robotics to camps of 4-8 students each.

RELEVANT COURSES

- Computer Science: Data Structures, Algorithms, Programming Languages, Computer Organization, Theory of Computation, Machine Learning, Human-AI Interaction, Parallel Processing, Applied Algorithms, Introduction to Computer Security
- Math: Multivariable Calculus, Discrete Mathematics, Linear Algebra, Real Analysis, Abstract Algebra, Probability

HONORS AND AWARDS

Sigma Xi 2022
Phi Beta Kappa
Sam Goldberg Colloquium Prize in Computer Science
    Awarded for the best thesis presentation in Computer Science at Williams College.
CRA Outstanding Undergraduate Researcher, Honorable Mention
ACM Student Research Competition, First Place Winner at Grace Hopper 2020
    Awarded for my presentation on "A Hardware Engine for Generating Number-Theoretic Sequences."
Ward Prize for Best Student Project in Computer Science
    Awarded by the Williams College Computer Science Department for my research on "Implementing a Sequence Generator in Hardware."
Williams Computer Science Class of 1960's Scholar (2019, 2021) 2019

SERVICE AND CLUBS AT WILLIAMS

Williams Ski Patrol 2019 - present
Volunteer at Jiminy Peak to support mountain safety and provide emergency care and transport. Help instruct new patrollers during their Outdoor Emergency Care class and sled trainings.
Underrepresented Identities in CS 2020-2022
Mentored undergraduates new to CS, advising them on classes, research, internships, and opportunities.
Ceramics Studio 2019-2022
Made ceramics, maintained the student-run studio, and taught beginners how to throw and handbuild.
Williams Outing Club 2018-2022
Worked as a skiing and climbing instructor. Set routes and managed the campus climbing wall. Volunteered to lead hiking and skiing trips for students of all experience levels.
Women in Computer Science 2018-2022