

Education

Georgia Institute of Technology <i>Doctorate of Philosophy in Computer Science (GPA: 4.00 / 4.00)</i>	Expected May 2026 Atlanta, GA
<ul style="list-style-type: none">• Relevant Coursework: Advanced Operating Systems (C++), Information Security (C++), Advanced Software Engineering (React, Java), Graduate Algorithms, Programming Languages, Software Analysis and Testing, Applied Cryptography	
Georgia Institute of Technology <i>Bachelor of Science in Computer Science (GPA: 3.80 / 4.00)</i>	May 2021 Atlanta, GA
<ul style="list-style-type: none">• Relevant Coursework: Computer Organization and Programming (C, Assembly), Computer Systems and Networking (C++), Operating Systems (Rust), Advanced Computer Architecture (C++), Processor Design (VHDL), Compilers (Java), Honors Algorithms, Advanced Algorithms, Automata and Complexity	

Work Experience

IBM <i>Research Intern</i>	May 2021 – Aug 2021
<ul style="list-style-type: none">• Developed C- and assembly-level optimizations for the Kyber post-quantum cryptography protocol on POWER PC using perf measurements and the POWER PC hardware pipeline simulation.	
IBM <i>Research Intern</i>	May 2020 – Aug 2020
<ul style="list-style-type: none">• Developed assembly optimizations for the SIKE (supersingular isogeny key encapsulation) post-quantum cryptography protocol for the IBM POWER PC architecture.	
Annapolis Microsystems <i>Software Intern</i>	May 2019 – Aug 2019
<ul style="list-style-type: none">• Developed C++ software expanding a proprietary API which allowed users to interact with the ADCs and DACs on the companies' in-house manufactured mezzanine cards for FPGAs.	

Teaching Experience

Object Oriented Programming, Computer Organization and Programming <i>Undergraduate teaching assistant</i>	2018, 2019, 2020
<ul style="list-style-type: none">• Taught recitation and mandatory lab weekly object oriented programming concepts, low level circuits, and computer architecture. Taught coding in Java, Assembly and C. Held weekly office hours, created and graded course materials (written exams, lab assignments, and homework).	
Compilers and Interpreters, Software Analysis and Testing <i>Graduate teaching assistant</i>	2022, 2023
<ul style="list-style-type: none">• Held weekly office hours, created and graded of course materials (written exams, lab assignments, and homework).	

Research Projects

Automated Vectorization of Cryptography Code <i>React.js, Angular, Vue.js, Django, Flask, Ruby on Rails</i>
<ul style="list-style-type: none">• Improving automatic vectorization of mathematical code, namely cryptographic primitives, through source-code transformations using e-graphs, equality saturation, and LLVM compiler feedback. Presented this work at a programming languages seminar, SERPL, at Augusta University in 2023.
Scalability of Cryptography Code for HLS <i>React.js, Angular, Vue.js, Django, Flask, Ruby on Rails</i>
<ul style="list-style-type: none">• Improving scalability of high-level synthesized cryptographic primitives for programmable hardware (FPGAs) using automated loop re-rolling and code re-structuring through equality saturation and informed by HLS feedback.
Static Code Analysis Techniques Optimization <i>Python, Flask, Jinja2, Firebase, Bootstrap</i>
<ul style="list-style-type: none">• Optimized algorithms for static program analysis (namely CFL-reachability). In particular, optimized program-graph (CFG) traversal through input grammar analysis and transformation, and optimized traversal ordering for improved data locality and better cache performance.

Technical Skills

Languages: C, C++, Rust, Java, Python
Concepts: Compilers, Operating Systems, Virtual Memory, Cache Memory, Encryption, Decryption, Security, Optimization, HLS, Assembly Optimization