

Austin Adams

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Education

- August 2022 – Present **Ph.D. in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA
- Advisors: Tom Conte and Jeff Young
 - Research area: quantum programming languages and quantum compilers, with a focus on ion traps
- August 2020 – May 2022 **Master of Science in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA
- Master's thesis: *Enabling a Programming Environment for an Experimental Ion Trap Quantum Testbed*
 - Contributed to the XACC and QCOR open-source quantum compiler projects, including creating an optimizing compiler backend for an ion trap quantum testbed at Georgia Tech Research Institute
- August 2016 – December 2018 **Bachelor of Science in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA
- Graduated with Highest Honor. GPA: 3.90/4.0
 - Threads: Theory, Systems & Architecture

Work Experience

- May 2022 – August 2022 **Research Intern**, *Microsoft*
- Implemented proof-of-concept “notebook mode” in the Q# compiler, which relaxes many fundamental language constraints and ignores Jupyter kernel meta-commands
 - Presented and wrote a report about the path forward for canonizing “notebook mode” as an official part of the Q# specification and its impact on the overall Q# notebook architecture
- January 2022 – May 2022 **Head Teaching Assistant, CS 6290 (High-Performance Computer Architecture)**, *Georgia Institute of Technology*, Atlanta, GA
- Co-authored and graded course homeworks, projects, and exams on topics including multi-level caching, branch prediction, superscalar CPUs, and cache coherence
 - Held TA meetings and handled regrades
- March 2019 – November 2020 **Software Development Engineer**, *Amazon*, Seattle, WA
- Unblocked the launch of new countries and product categories by writing Apache Spark jobs to process huge raw database dumps, reducing the storage needed on service hosts by 100x
 - Designed and implemented automated resolution of validation errors for changes to product financial classifications, allowing non-engineers to help handle the high volume of validation override requests
 - Wrote design documents and held design review meetings
 - Mentored and helped onboard new hires to the team
- August 2018 – December 2018 **Head Teaching Assistant, CS 2110 (Intro to Computer Architecture)**, *College of Computing, Georgia Institute of Technology*, Atlanta, GA
- Hired and managed a team of 18 teaching assistants to teach recitations and create course material (homeworks, quizzes, and timed labs) for over 350 students
 - Made local autograders compatible with the Gradescope online autograding service by writing a connector
 - Autograded Gameboy Advance Direct Memory Access calls on x86 using virtual memory tricks with `mmap()`
 - Wrote autograder framework for verifying combinational and sequential digital logic circuits created in a GUI circuit simulator

Personal Projects

- **nsdo**, a C program for GNU/Linux allowing nonprivileged users to execute applications in Linux network namespaces. Useful for isolating particular applications in VPNs
- **novice**, a TypeScript library and React frontend which aims to unify the assembly debugging/autograding infrastructure across undergraduate systems classes. Can parse (using an LR(1) parser), assemble, and simulate different syntaxes and toy ISAs
- **astro**, an x86_64 simulator with a gdb server intended for running student code in intro to C classes. Helps prevent students from breaking the autograder by corrupting the heap, jumping past assertions, etc.

Publications

- November 2021 Austin Adams, Elton Pinto, Jeff Young, Creston Herold, Alex McCaskey, Eugene Dumitrescu, and Thomas M. Conte. *Enabling a Programming Environment for an Experimental Ion Trap Quantum Testbed*. IEEE International Conference on Rebooting Computing (ICRC 2021).
- June 2021 Austin Adams, Pulkit Gupta, Blaise Tine, and Hyesoon Kim. *Cryptography Acceleration in a RISC-V GPGPU*. Fifth Workshop on Computer Architecture Research with RISC-V (Co-located with ISCA 2021).