Austin Adams

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Research Interests

Compilers and programming languages for quantum computers

Education

August 2022 – Present
Ph.D. in Computer Science, *Georgia Institute of Technology*, Atlanta, GA
○ Advisors: Tom Conte and Jeff Young

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: 3.90/4.00
○ 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

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

Teaching Experience

Fall 2023
Instructor, *CS 2110 (Computer Organization & Programming)*, Georgia Tech
○ 277 students, 37 TAs, 3.44 course GPA, 1,617 Piazza contributions

Spring 2022
Head Teaching Assistant, *CS 4290/6290 (High-Performance Computer Architecture)*, Georgia Tech
○ 103 students, managed 5 TAs, 496 Piazza contributions
○ Rewrote projects for cache and superscalar CPU simulation from scratch

Fall 2018
Head Teaching Assistant, *CS 2110 (Computer Organization & Programming)*, Georgia Tech
○ 360 students, managed 18 TAs, 1,060 Piazza contributions
○ Overhauled autograding infrastructure for class, making class fully autograded for the first time

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Publications

May 2023
Akihiro Hayashi, Austin Adams, Jeffrey Young, Alexander McCaskey, Eugene Dumitrescu, Vivek Sarkar, and Thomas M. Conte. *Enabling Multi-threading in Heterogeneous Quantum-Classical Programming Models*. 2023 Workshop on Quantum Computing Algorithms, Systems, and Applications (Q-CASA) (Co-located with IPDPS 2023).

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 (CARRV 2021) (Co-located with ISCA 2021).