

Elton Pinto

epinto6@gatech.edu

<https://eltonpinto.me>

Education

M.S. in Computer Science

August 2022 - May 2023

Georgia Institute of Technology, Atlanta, GA

Concentration: Computing Systems

B.S. in Computer Science

August 2018 - May 2022

Georgia Institute of Technology, Atlanta, GA

Concentration: Systems/Architecture and Theory

GPA: 4.0

Research Experience

Graduate Research Assistant, Habanero Lab

August 2022 - present

advised by Vivek Sarkar

- Extending AutoMPHC, a compiler that automatically parallelizes Python programs for distributed heterogeneous computing using the Ray runtime, to support intra-node parallelism using OpenMP

Collaborator, Microsoft Research

July 2022 - present

with Daan Leijen

- Replacing OCaml's garbage collector with the Perceus reference counting system

Undergraduate Research Assistant, TINKER Lab

August 2020 - May 2022

advised by Tom Conte and Jeff Young

- Wrote a space-efficient implementation of the Quantum Verification of Matrix Products algorithm and benchmarked its resource usage, simulation time, and transpilation time
- Programmed a Grover-search based Sudoku solver in QCOR which was used to test and evaluate our compiler backend for the GTRI ion-trap quantum computer

Work Experience

Software Engineering Intern, Meta

May 2022 - August 2022

Privacy Language Experience (PLeX) team

- Built a pipeline for incrementally ingesting over 100M records of dynamic Hack callgraph data into stacked Glean databases

- Developed a distributed callgraph artifact generation system that feeds into a Hack typed-AST static analyzer for detecting data leaks through global variables
- Optimized Glean query using derived predicates, resulted in 280x speedup
- Incrementally ported system from Python to Rust employing data-level parallelism, resulted in 4.5x speedup

Software Engineering Intern, Meta

May 2021 - August 2021

PyTorch Dev Infra team

- Setup infrastructure to build, test, and deploy a fork of clang-tidy in PyTorch CI using Docker and GitHub Actions
- Added support for the `max-tokens` pragma in clang-tidy which alerts users when the number of clang tokens exceeds a specified amount
- Authored a clang-tidy check that detects infinite loops caused by integer/floating-point overflow

Software Engineering Intern, NCR

May 2020 - August 2020

Innovation Lab

- Developed a subscription recommendation model using backtesting
- Expanded the consumer profile API to manage and isolate profiles across merchants

Software Engineering Intern, NCR

May 2019 - August 2019

Emerald POS Testing team

- Worked with a global team to certify the Emerald POS product release for Northgate
- Sped up the test suite by 75% using profile-guided optimization

Teaching Experience

CS 3210: Design of Operating Systems

Spring 2021, Fall 2021, Spring 2022

Head TA (Spring 2022)

CS 2110: Computer Architecture and Organization

Spring 2020, Fall 2020

CS 1301: Intro to Computing

Fall 2019

Professional Service

- Student volunteer (virtual) at ICFP'22
- Student volunteer (virtual) at PLDI'22
- Mentor at Catalyst 2019, a CS outreach program catered towards serving high-school students in Atlanta

Involvements

dependently-typed, Founder

August 2021 - present

Programming languages and compilers club at Georgia Tech

HexLabs, Co-director, event lead, software developer

December 2018 - November 2021

Student-led non-profit that focusses on STEM outreach by organizing large-scale hackathons and mentorship programs

Miscellaneous

- Student at the Oregon Programming Languages Summer School (OPLSS) 2022

Publications

- [1] Elton Pinto, Jeffrey Young, Thomas Conte, Austin Adams, and Eugene Dumitrescu. “An Implementation of the Quantum Verification of Matrix Products Algorithm”. In: *4th International Workshop on Quantum Resource Estimation, QRE 2022. Proceedings of the 49th Annual International Symposium on Computer Architecture. ISCA '22*. 2022.
- [2] Elton Pinto. “An Implementation of the Quantum Verification of Matrix Products Algorithm”. B.S. Thesis. Georgia Institute of Technology, 2022. URL: <https://arxiv.org/abs/2208.09914>.
- [3] Austin Adams, Elton Pinto, Jeffrey Young, Creston Herold, Alex McCaskey, Eugene Dumitrescu, and Thomas M. Conte. “Enabling a Programming Environment for an Experimental Ion Trap Quantum Testbed”. In: *2021 International Conference on Rebooting Computing (ICRC)*. 2021, pp. 14–23. DOI: 10.1109/ICRC53822.2021.00014.