

Chris Porter

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cporterbox@gmail.com

Objective

R&D position working on compilers, heterogeneous systems, machine learning, or their interplay.

Education

Georgia Institute of Technology Atlanta, GA 2017.08 - 2023.05

PhD candidate in Computer Science

Presidential Fellowship

- On-the-fly call set prediction and software debloating
- Multi-GPU and many-core scheduling via compiler assistance
- ML-based techniques for inlining and pointer analysis

Georgia Institute of Technology Atlanta, GA 2010.05 - 2014.05

BS and MS in Computer Science

- Master's project: Compiler-assisted prediction for VM scheduling
- Systems, architecture, and networking
- Highest honors

Full-time Experience

Pindrop Atlanta, GA 2017.01 - 2021.02

Voice-based fraud detection, VC-funded start-up

Senior software engineer

- Adopted and righted underperforming in-memory service that collates call details and predicted features from numerous sources
- Designed, led development, and delivered a messaging layer in C for the company's flagship product
- Guided requirements and design for product-wide logging and team-wide CI system
- Wrote a new identity access management system to support single sign-on and replace the original, insecure version for the cloud product
- Mentored summer intern's development of much-needed, rudimentary in-house libraries
- Contributed to a larger team effort for constructing a new platform for our product: ripping out vagrant; unifying a build system hodgepodge; repackaging deps as rpms; moving all development, build, and product environments onto Red Hat; decoupling services; etc.

Qualcomm San Diego, CA 2014.07 - 2016.12

Research and development

Senior software engineer

- Collaborated to shrink the modem image in first 3 months by 60% more than the prior MB/month reduction average
- Co-pioneered Qualcomm's first profile-guided optimization implementation on the modem, improving L2I\$ miss rate by 33%, branch target prediction by 36%, memory bandwidth by 25%, and cycles per instruction packet by 5%
- Co-led investigations into clock boost latency, identifying 25% speedup for critical timeline scenarios
- Optimized the modem's runtime compression algorithms for speed and size, implementing techniques such as partial hashing and zero run-length encoding; prototyped in C and hand-crafted in assembly; team contributions led to 5% size improvement, 1.9x compression speedup, and 8x decompression speedup
- Boosted modem throughput by contributing to an asynchronous compression library
- Contributed to the machine learning group's tooling, including CMake infrastructure and their continuous integration system

- Co-authored the 4th-place (top 10%) software paper in Qualcomm's internal "2016 QTech Paper Series"
- Earned 3 employee recognition awards in first 3 review periods; promoted in under 30 months
- New-hire mentor
- 1 patent (#10061698) and 2 pending (applications #20180225224 and #20180173623)

Other Work Experience

- **IBM R&D Intern, Software engineer** Yorktown Heights, NY 2021.05 - 2021.08
- **Georgia Institute of Technology Teaching assistant** Atlanta, GA, 2011.01 - 2019.12
- **Qualcomm Intern, Software engineer** San Diego, CA, 2013.05 - 2013.08
- **Doubleshot Technologies Software engineer** Atlanta, GA, 2013.01 - 2013.05
- **Georgia Tech Compute for Good Lab Software engineer** Atlanta, GA, 2012.05 - 2012.09
- **Georgia Tech Research Institute Research assistant** Atlanta, GA, 2012.01 - 2012.08

Publications

- **BlankIt library debloating: getting what you want instead of cutting what you don't**
Chris Porter*, Girish Mururu*, Prithayan Barua, Santosh Pande. *PLDI 2020*.
- **CASE: A Compiler-Assisted SchEduling Framework for Multi-GPU Systems**
Chao Chen*, Chris Porter*, Santosh Pande. *PPoPP 2022*.
- **Beacons: A Framework for Predicting and Utilizing Dynamic Loop Characteristics**
G. Mururu, S. Khan, B. Chatterjee, C. Chen, C. Porter, A. Gavrilovska, S. Pande. *Under review*.
- **Decker: Attack Surface Reduction via On-demand Code Mapping**
Chris Porter, Sharjeel Khan, Santosh Pande. *Under review*.
- **Compiler-Assisted Scheduling for Multi-Instance GPUs**
Chris Porter, Chao Chen, Santosh Pande. *Under review*.

Toolset

- **Languages:** C, Python, Bash (daily), Rust, Go, Q6 Assembly, JavaScript, PHP, SQL (1 professional project), Java (best effort)
- **Platforms, frameworks, libs:** Unix, LLVM, Make, git, pthreads, valgrind, pintool, gdb, CMake, OpenCL, CUDA, AWS, OpenMP, OpenACC, MPI, KVM, node.js, Yii, Android, Apache, Flask

Coursework

Algorithms, Compilers, Distributed computing, High performance computer architecture, High performance parallel computing, Theory of computation, Data structures, Databases, Operating systems, Embedded systems, Processor design, Networking, Combinatorics, Enterprise computing, Programming languages, Mobile development, Alternative computing technologies, Object oriented programming