

EXPERIENCE

Square — Software Engineer, Orders API Team

Atlanta, GA. Aug. 2018–Dec. 2020

- » Backend engineer on the Orders API team, which operates both a public REST API, as well as internal systems that serve Square Point-of-Sale mobile apps
- » Responsible for designing, reviewing, and implementing features that integrate with many other microservices including for payments, catalog, customers, and fulfillments
- » Work emphasizes designs that are maintainable, scalable, strongly consistent, and highly available
- » **Technologies:**
 - > **Java** – for API server implementation
 - > **Protocol Buffers** – for RPCs, modeling the API schema, and database serialization
 - > **TypeScript & JavaScript** – for building internal web interfaces
 - > **MySQL** – for durable, distributed storage enabling a strongly consistent API experience
- » Redesigned complex request validation logic to significantly improve test coverage and code quality
- » Created library functions to support old API versions with minimal ongoing maintenance burden
- » Drafted new documentation & a "mini-lecture" presentation to document complex cart-calculation logic

Qualtrics — Software Engineer Intern, Data Platform Team

Seattle, WA. Summer 2017

- » **Technologies:**
 - > **Scala** – for backend implementation
 - > **Elasticsearch** – for aggregating metrics to produce custom reports, and for log analysis
- » Redesigned a data aggregation feature to get correct weighting across different displays

Qumulo — Software Engineer Intern, Filesystem Performance Team

Seattle, WA. Summer 2016

- » **Technologies:**
 - > **C** – for filesystem server implementation
 - > **Python** – for integration-test automation and code generation
- » Developed sharding of deleted file space reclamation to double free-space reclamation rate
- » Eliminated lock contention in a multithreaded cache to reduce file operation latency
- » Implemented disk block allocation changes to ensure significantly faster metadata operations

Square — Software Engineer Intern, Public API Team

San Francisco, CA. Summer 2015

- » Wrote Go and JavaScript (Node.JS) as member of public API team
- » **Technologies:**
 - > **Node.JS** – for implementation of microservice serving public API
 - > **Go** – for implementation of a new microservice to eventually replace the Node.JS server
- » Optimized and refactored public API server to halve average query time
- » Ported a significant amount of the Node.JS implementation to Go in anticipation of Square's V2 APIs

EDUCATION

University of Michigan: Computer Science B.S.E, 4.0 GPA

Ann Arbor, MI. 2014 – 2018

- » **Selected Coursework:** Distributed Systems (W2017), Grad. Programming Languages (F2017)
- » Teaching assistant for Distributed Systems (F2017)
- » World Finalist in 2017 ACM International Collegiate Programming Contest (ICPC)

SELECTED PROJECTS

WebWork Proof Checker (University of Michigan)

<https://curtisfenner.com/prove>

- » Project under guidance of Dr. Martin Strauss, in collaboration with Elizabeth Viera
- » Designed and built a web-homework interface for writing and checking simple natural-deduction based proofs
 - > a logical formula parser
 - > a tree-based symbolic pattern matcher
 - > built-in logical deduction rules
 - > a wrapping library to enable professors with limited programming experience to set up problems
 - > a simple table-based user interface that could be rendered in WebWork

Smol Programming Language & Compiler

<https://github.com/CurtisFenner/smol-builder>

- » Project largely completed for U. of M. EECS 590 with Dr. Wesley Weimer
- » Designed and implemented a toy programming language, compiler, and assertion verifier, including
 - > a PEG parser library
 - > a type-checker (including generic functions/types)
 - > a code-generator that produces C99 code
 - > a rudimentary CDCL based SMT solver