

# James Larisch

james@jameslarisch.com | jameslarisch.com | github.com/semaj | Cambridge, MA

## EXPERIENCE

### Cloudflare

Systems Engineer

Remote

February 2024 – Present

- Designed and deployed new DNS edge microservice in Go that handles over 1M requests per second globally.
- Invented new Lisp-based programming language that reduces deployment time of DNS changes by over 100x.
- Formally verified all DNS changes using Racket, which prevents 1-3 network incidents a month.

### Cloudflare

Systems Engineer Intern

Remote

June 2021 – August 2022

### Harvard University

Systems Researcher

Cambridge, MA

September 2017 – January 2024

- Designed new serverless architecture in Go and C that persists state 10x faster than Azure Functions.
- Added new UDP socket primitive to the JavaScript DOM in the Chromium browser using C++.
- Invented way to distribute all TLS certificate revocations to browsers with Bloom Filters, now deployed in Firefox.

### Sonian (Barracuda Networks)

Software Engineer Co-op

Waltham, MA

January 2016 – June 2016

- Reduced incident debugging time from hours to minutes by creating the company's first request-tracing system.

### Gem.co (Blockdaemon)

Software Engineer Co-op

Los Angeles, CA

January 2015 – June 2015

- Deployed webhook API product, which sent HTTP requests to customer endpoints upon Bitcoin blockchain events.
- Reduced blockchain data retrieval times by 2x by forking and running a modified Bitcoin node instance in Ruby.

### HubSpot

Software Engineer Co-op

Cambridge, MA

January 2014 – July 2014

- Reduced analytics event processing time from 60-90m to 5-15s by converting bloated Hadoop pipeline to Kafka.
- Designed traffic simulation tool using Java that prevented a major analytics incident months before it happened.

## TECHNICAL SKILLS

**Languages:** Go, Rust, Ruby, C, C++, Java, SQL, Clojure, Haskell, Lua, Racket, R, Prolog

**Technologies:** Kubernetes, Docker, Salt, git, Linux, Prometheus, Grafana, Postgres, Kafka, Hadoop, CI/CD, Spark, AWS

## EDUCATION

### Harvard University

PhD + MS, Computer Science

Cambridge, MA

September 2017 – January 2024

### Northeastern University

BS, Computer Science

Boston, MA

September 2012 – May 2017

## SELECTED PROJECTS

### Hestia Programming Language | [hestia-lang.org](https://hestia-lang.org)

Present

- Dynamically-typed and functional programming language written in Rust.

### Juice: A New Serverless Architecture | [Code & paper available upon request](#)

2018 – 2024

- A complete, Lambda-like serverless architecture that snapshots/restores function memory between requests.
- Includes modified Lua language runtime and custom Linux kernel patch for fast state persistence.

### CRLite: Certificate Revocation via Bloom Filters | [Deployed in Mozilla Firefox](#)

2015 – 2017

- Created the first *complete* TLS revocation system by compressing all revocations into a Bloom Filter cascade.
- Stores the revocation status of 10M certificates in only 10MB.
- An implementation of our design is currently deployed in the Mozilla Firefox browser.

### Raft implementation | [github.com/semaj/hask-raft](https://github.com/semaj/hask-raft)

2015

- Haskell implementation of Raft consensus protocol.