

Nathan Cohen

He/Him

Email : ncohen4299@gmail.com

Mobile : (502) 415 - 2491

EDUCATION

Purdue University

Bachelor of Science in Computer Science

Certificate of Entrepreneurship

West Lafayette, IN

August 2017 – May 2021

GPA: 3.77/4.00

EXPERIENCE

Apple Inc.

Software Engineer

Cupertino, CA

September 2022 – Present

- Led an investigation to resolve lock contention issues in asynchronous runtime, boosting CPU utilization by 10% across a fleet of over 240,000 hosts.
- Redesigned a distributed cache system to use a pull-through cache mechanism for handling Kubernetes VIP responses to DNS queries, replacing a synchronization cache mechanism. Reduced DNS response failure rate by 32× under high traffic loads, significantly improving system performance and scalability.
- Developed an integration testing framework for distributed systems, enabling efficient creation of integration tests through SSH communication across multiple VMs. Established as the team standard for testing, ensuring consistency and reliability in test coverage.
- Led the implementation of dual-stack (IPv4/IPv6) support in our DNS cache service, enhancing network compatibility and enabling seamless IPv6 access for Kubernetes services.

Cisco Systems

Software Engineer

San Jose, CA

June 2021 – September 2022

- Performed three successful line card bring ups, powered by Cisco's next gen Silicon One ASIC, on distributed systems running SONiC. Validated with iBGP traffic tests testing speeds up to 400G.
- Designed distributed platform infra solutions for SONiC, originally only having support for fixed systems. Including mechanisms for topological discovery and dynamic generation SerDes settings for NIF and front facing interfaces.
- Re-implemented caching mechanism for YAML files up to 2MB, yielding performance improvement by reduction of utilization by up to 94%.
- Designed and implemented a root cause analysis library, which was used for detecting failures in routers. Strategies include parsing and evaluating custom expressions across various hierarchical forms of data.

Purdue University

Teaching Assistant & Volunteer Work

West Lafayette, IN

May 2018 – December 2019

- **CS 18000: Problem Solving and Object-Oriented Programming:** Authored bi-weekly labs for Purdue's introduction to computer science course in Java. Mentored students in completing their work.
- **CS 25100: Data Structures and Algorithms:** Worked as senior undergraduate teaching assistant under Professor Gustavo. Prepared and graded homework and exams, and wrote automated grading bash scripts.

PROJECTS

QUIC/UDP Video Stream: Designed 2 client/server video streaming applications to deconstruct, send, and reassemble H.264 frames over QUIC and UDP.

pyparcel: Released python meta-class library to generate struct packing functions at run time for python objects.

LST Scheduler: Developed and implemented a new process scheduler for the XINU operating system which used slack time as means for deciding priority.

RELEVANT COURSEWORK

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|--------------------------------|-----------------------|---------------------|
| • Data Structures & Algorithms | • Computer Networks | • Compilers |
| • Operating Systems | • Information Systems | • Cryptography |
| • Analysis of Algorithms | • Systems Programming | • Computer Security |

PROGRAMMING SKILLS

Languages: Rust, C, C++, Python, Java, Scala, ARM, SQL, PL/SQL, JavaScript, TypeScript

Technologies: Git, GCC, LLVM, LLDB, Node, React, Spring Boot, JDBC, JUnit, Jenkins, LaTeX, ANTLR