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# Summary

# A forward-thinking engineering leader, with an approach rooted in data-driven development, rigorous testing methodologies, and designing seamless user experience. Professional experience includes working on low-level cryptographic networking libraries, Backend and Infrastructure engineering, to mobile engineering. Especially passionate about cryptography, network engineering, Rust, and BPF.

# Work Experience

**AWS** *Seattle, WA*

Software Engineer – Cryptography *Feb. 2021 ‑ Present*

* Maintained AWS’s opensource IETF implementation of QUIC ([s2n-quic](https://github.com/aws/s2n-quic)) and TLS ([s2n-tls](https://github.com/aws/s2n-tls)) cryptographic network protocols.
* Facilitated Cloudfront migrating to s2n-quic for H3 support, resulting in ~20% better performance while using ~30% less CPU resources.
* Implemented [asynchronous certificate loading](https://github.com/aws/s2n-quic/issues/1137), bridging FFI boundaries from Rust to C; working closely across teams to integrate and reduce memory footprint required across their fleet.
* Secured team consensus and implemented large-scale library features which influenced public APIs; highlights include: [Ack-frequency](https://github.com/aws/s2n-quic/issues/1276) analysis, implementing a zero-cost [event framework](https://github.com/aws/s2n-quic/issues/439), QUIC Connection Migration support, [Client support](https://github.com/aws/s2n-quic/issues/1009) to s2n-quic, [mitigating Optimistic Ack Attack](https://github.com/aws/s2n-quic/issues/1962), [pedantic memory checks with Valgrind](https://github.com/aws/s2n-tls/issues/3758), [OpenSSL 3.0 support](https://github.com/aws/s2n-tls/issues/3442).
* Created [Netbench Orchestrator](https://github.com/toidiu/netbench_orchestrator) which enabled production-like, reproducible, and automated testing of network protocols on EC2 hosts, and informed data-driven decisions in library development.

Software Engineer – EC2 *Nov. 2019 ‑ Feb. 2021*

* Deployed a production critical service for fingerprinting similar EC2 hosts; at launch the service handled ~10,000+ API calls across 15+ AWS regions without errors and downtime.
* Implemented granular fail-safe switch across 15+ AWS regions, which helped reduce oncall pages, increased availability of services, and resulted in cost savings of ~$100,000/year.
* Simplified codebase and deployments by replacing 2 unmaintained metrics libraries with ~100 lines of code.
* Led multiple incident investigations to identify root-causes, track impact, remediate impacted customers, and finally implement long-term fixes.

**iHeartRadio** *New York, NY*

Infrastructure/Backed Software Engineer *Feb. 2017 ‑ Mar. 2019*

* Led the launch of Music Recommendation service, aligning stakeholders across Data Science/iOS/Design teams. Responsibilities included designing APIs, architecting a resilient storage with rollback capabilities and implementing service logic.
* Migrated Scala micro-service backend from Akka Cluster to Kubernetes over 6+ months.
* Worked as part of small team to launch a highly-available Kubernetes deployment/rollback process for the Backend services team (deployed on AWS using [*kops*](https://github.com/kubernetes/kops)). Worked with SRE team to setup additional Kubernetes clusters and standardize the process for all teams across the company, while balancing cost, reliability and maintenance overhead.
* Mitigated outage risks during MongoDb upgrades and mutations by implementing [embed MongoDb](https://github.com/flapdoodle-oss/de.flapdoodle.embed.mongo) testing for all services.

**Consulting** *Remote*

Independent Consultant *Mar. 2016 ‑ Feb. 2017*

* Worked closely with [Shatterproof](https://www.shatterproof.org/) non-profit leadership team as technical advisor. Translated business requirements into technical-specification documents, interviewed candidates, and helped assess software systems proposed by outside contractors
* Delivered project management app for a construction firm, featuring Google Drive-backed storage, distributed synchronization across multiple devices, text/PDF/image editing, and full offline support.

**TouchLab** *New York, NY*

Android Engineer *Sept. 2014 ‑ Jan. 2016*

* Delivered a solution to assist Forest rangers with deforestation reporting; featuring offline support, custom map rendering, and 3rd party data collection. Here is some supplemental information: [project mission](https://www.youtube.com/watch?v=kXJ7BiDmNss) and [meetup presentation slides](https://speakerdeck.com/toidiu/offline-maps).
* Collaborated with clients to develop Android based solutions, from system-architecture, and backend to testing, and releases.

# Education

**The Cooper Union for the Advancement of Science and Art** *New York, NY*

Bachelor of Engineering | Full-tuition Academic Scholarship Graduation 2012