

EDUCATION

- **Massachusetts Institute of Technology**

Cambridge, MA

Bachelor of Science in Electrical Engineering and Computer Science

June 2015

EXPERIENCE

- **Google, Software Engineer**

Google Pub/Sub

New York, NY, May 2022 – Present

Googles scalable and reliable publish-subscribe-messaging service that enables asynchronous communication between applications with a guarantee of no message loss. Google Pub/Sub is the internal messaging service that serves as the backend for Cloud Pub/Sub.

- Led critical infrastructure improvements for exactly-once delivery, eliminating message duplication for subscriptions with previous seek requests.
- Designed and implemented auto-sharding integration for subscriber statistics requests, achieving 80% improved request affinity and 60% memory reduction. Led and proposed multiple improvements to backlog stats staleness detection and resolution.
- Led data residency compliance initiative to ensure that customer data is stored and processed within the allowed regions, enabling Google Cloud Pub/Sub services for customers with highly regulated workloads (EU, KSA). Landed Regional Endpoints for Cloud Pub/Sub European data residency compliance, while serving as the technical lead for cross-team and cross-functional partners. Implemented end-to-end and supervised the public rollout of in-transit data residency guarantees.
- Launched multiple services supporting various new features, including: Kinesis Ingestion to Cloud Pub/Sub, a separate forwarder service for Cloud Pub/Sub Cross Region Replication to enhance its resilience against regional outage and improve the global reliability. Designed a standardized deployment framework for Regional Endpoints for Cloud Pub/Sub European data residency compliance that reduced future engineering effort by 75%
- Extended Checksum to Pub/Sub Storage, eliminating permanent data corruption. Resolved critical customer issues and improved data integrity.
- Mentored STEP interns and guided technical implementations for Cloud Pub/Sub to BigQuery integration with BigQuery table schema and Avro logical types schema support.

Marconi SPGW

New York, NY, Jan 2019 – May 2022

SPGW serves as the control plane functionality supporting data connections and Voice (VoLTE, VoWifi, Vo4G), programming the dataplane with instructions for processing user plane packets.

- Led architecture and implementation of voice charging data records *CDR* export pipeline for single and multi-bear scenarios, achieving 50% storage optimization while maintaining regulatory compliance.
- Designed and implemented weighted load-balancing system for SBC servers, percentage-based IMSI-block IMS traffic redirection, and Vo4G Agent using Peregrine, which handles Vo4G call signaling to support Vo4G when mobile devices do not have VoLTE stack.
- Designed real-time voice quality metrics system (loss, discard, MOS) with dataplane sampling, enabling early issue detection and performance evaluation.
- Designed and implemented asynchronous to synchronous framework migration for Icmpv6 service, eliminating deprecated queue-based communication dependencies and improving observability, resulting in 20% reduction in customer issues.
- Implemented critical VoLTE, VoWifi, and Vo4G functionality, including handover flows, GTP interfaces,
- Led PGW operational improvements initiative, implementing enhanced anomaly detection and experiment configuration management enabling rack-specific rollouts.

Google Health Pathology (20% Project)

Palo Alto, CA, Jun – Aug 2020

Path team relies on multiple Slim-base ML models to diagnose cancer, and rate its severity based on the tissue image data.

- Integrated slim ResNet ML models into cancer diagnosis pipeline using Tensorflow, implementing end-to-end testing and performance benchmarking with ResNet implemented with Keras.

- **Groupon, Software Development Engineer, Fraud Detection**

Palo Alto, CA, Aug 2016 – Jan 2019

- Developed real-time fraud detection platform, reducing latency by 60% through request parallelization. Onboarded three additional fraud detection signals and implemented automated prediction system in Ruby on Rails.

- Led rearchitecture of order pending review caching system from polling to push-based strategy, minimizing cache staleness and improving system performance.
- Developed a full-stack web application to allow the operation team to review orders manually and interact with Orders service systems in Ruby on Rails and JavaScript.
- **MIT EAPS Signals and Systems Group**, Research Assistant, SLOOP *Cambridge, MA, June 2015 – Aug 2016*
 - Developed relevance feedback algorithms, and automatic image recognition architecture for SLOOP, a crowd-sourced animal image retrieval engine for animal biometrics in Matlab and Python (advised by Dr. Srinivas Ravela).
- **MIT CSAIL**, Undergraduate researcher, Assistive Devices for Healthcare *Cambridge, MA, Sep 2014 – June 2015*
 - Analyzed the data that had been collected from the non-invasive monitoring sensors (FSR/Emfit/Accelerometers) deployed on patients wheelchairs using wavelet analysis and developed algorithms for heart rate and respiration rate estimations, and breathing suspension detection.
- **Oracle America, Inc.**, Software Engineering Intern, Oracle Linux *Redwood Shores, CA, June – Aug 2014*
 - Implemented automated version control presubmit verification for kernel developers to improve commit consistency and correctness in Python.
 - Worked on Oracle linux infrastructure in C++
- **Akamai Technology, Inc.**, Engineering Intern, Platform Operation *Cambridge, MA, June – Aug 2012*
 - Built an analytic visualization web application to process and display log messages using HTML,CSS,JS with Python,PostgreSQL backend.

AWARDS

- Analog Devices Undergraduate Research and Innovation Scholar Sep 2014 - June 2015

SKILLS

- **Languages:** C++, Python, Ruby on Rails, Java, JavaScript, SQL, HTML/CSS, Linux/Unix command lines
- **Expertise:** 9 years of experience in software development
 - Distributed systems, real-time data processing, and networking infrastructure. Strong focus on reliability, scalability, and performance optimization.
 - 2 years of industry and research experience in ML/AI algorithms

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ACTIVITIES

- **Google Technical Interviewer**, Jul 2019 – present
- **Microsoft TEALS Program Instructor**, Millennium High School, New York, NY, Sep 2024 – present: Teaching Introduction to Computer Science to a class of 23 high school students.
- **Technical Mentor for Google CorpEng High School Tech Apprentice Program**Mountain View, CA, Jan 2019: Mentoring students with their projects in DialogFlow and JavaScript.
- **FIRST Tech Challenge Robotics Team Mentor**Waldorf School of the Peninsula, Mountain View, CA, Oct 2017 – Feb 2018: Mentored high school students in Waldorf School Robotic club to build a robot controller to compete in FIRST Tech Challenge robot competition in Java.