Andrea Corredor | Backend Software Engineer

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Skills

Languages: *Proficient:* Ruby, Go, Python, SQL. *Working:* Java, JavaScript, R, C, C++, MATLAB

Frameworks: Rails, Django, flask, sinatra, gqlgen

Databases: DynamoDB, MySQL, BigQuery, CouchDB, ArangoDB

Protocols: HTTP, TCP, UDP, IP, DNS

Libraries: Sidekiq, Rspec, jQuery, Bootstrap, D3.js, pandas, NumPy, SciPy, scikit-learn

Software Platforms: AWS (Lambda, Fargate, ECS, Cloudwatch, Step Functions, DynamoDB, SQS, API Gateway, IAM, Secrets Manager), GCP (App Engine)

API Technologies: REST, GraphQL, RPC

Tools: vim, git, Docker, terraform, Wireshark, make, awk, gdb, valgrind

Markup Languages: LaTeX, HTML

Education

University of California, Santa Cruz — **Santa Cruz, CA**
M.S Biomolecular Engineering and Bioinformatics — *2012–2014*

The Johns Hopkins University — **Baltimore, MD**
B.S Biomedical Engineering & Applied Mathematics (Double Major), Mathematics (Minor) — *2008–2012*
Concentration in Computational Biology

Experience

Square Inc — **New York, NY**
Senior Software Engineer, Tech Lead — *March 2020 – Oct 2022*
Square Financial Services Engineering: Second engineer in a team that built and launched Square Financial Services, Square's de novo bank. Worked in both the Bank Infrastructure team and Square Savings product team.

- Led integration with the Federal Reserve to reliably and idempotently deliver ACH files for Square Savings and Square Loans, moving millions of dollars daily (AWS Fargate, AWS EFS, Docker, Terraform, Fedline Command)
  - Partnered closely with Cloud Infrastructure, Network Engineering and InfoSec teams
- Worked on tooling and web UI for bank operations and accounting teams (Elm, Golang, AWS lambda, AWS API Gateway)
- Implemented and co-designed end-to-end processing, storage, and delivery of ACH files between partners and the Federal Reserve, with exactly-once semantics (AWS Transfer Family, EventBridge, DynamoDB, AWS Step Functions, AWS Lambda, S3, Cloudwatch, Golang, terraform)
- Worked on business and systems alerting to ensure timely ACH file delivery. Successfully prevented several incidents (Cloudwatch)
  - Implemented matching ACK files to original ACH file to enable better alerting
- Contributed to Golang CLI for ACH file submission state debugging, log viewing, lock clearing, listing ACH files in EFS
- Worked on backend for onboarding flow for Square Savings (Ruby on Rails microservice)
  - RPC calls and state management for identity verification, external bank account linking, first transfer
  - Developed importing of external bank accounts, integrating internal microservices with banking core vendor to simplify bank account linking
- First at company to develop a GraphQL subgraph backed by AWS API Gateway and a Golang AWS Lambda, integrated with existing federated gateway
- Designed and implemented data ingestion pipeline to hydrate financial transaction events and publish them to a Kafka feed (Golang, AWS DynamoDB Streams, AWS Lambda, terraform)
- Contributed to design of Automated Savings, a complex, distributed systems feature to reserve funds from merchant charges and place them into savings accounts
- Generally responsible for contributing to team API standards, guiding junior engineers, testing strategy, scoping/planning, working directly with vendors and cross-team stakeholders, and researching cloud solutions in highly constrained/regulated domains

Square Inc **San Francisco, CA**
Software Engineer *Jan 2019 – March 2020*
Operations Engineering – Payroll Team: Development of Payroll Software for small businesses. Worked on automated tax filing and payment systems. Developed internal tooling and UIs for operations team members.

- Close collaboration with operations, tax, customer success, and product stakeholders to drive features and develop tooling aimed at automation of tax payments and filings
- Drove large refactor of money movement code to modify assumptions about the mapping of payment type to destination of funds for tax agencies. Enabled remittance of funds to different agency than that of liability computation
  - Safely deployed changes incrementally without incident
- Advocated and worked on improving alerting by replacing exceptions-based alerting with emitted business metrics (e.g. tasks completed, payment submitted, etc).

Square Inc **San Francisco, CA**
Software Engineer *Oct 2017 – Jan 2019*
Underwriting Platform – Payments Team: Payments and customer onboarding, identity verification.

- Implemented large portions of the legal entity verification pipeline (a step toward payment activation)
- Contributed to migration from onboarding monolith to microservices architecture to unlock versioned, append-only storage and enable faster development
- Collaborated with compliance, risk, and legal teams to flesh out requirements
- Development of Ruby on Rails and Java microservices

Vectra Networks **San Jose, CA**
Software Engineer *Aug 2015 – Sept 2017*
Application Team (Backend): Responsible for ingesting, heavily transforming, and serving attack and network activity data for our web UI

- Designed and developed data ingestion and transformation pipelines
  - Developed multi-threaded Python dæmons that use a continuous CouchDB change feed to propagate data to downstream databases (MariaDB, ArangoDB), reconciling differing data models, recomputing state for affected data, and ensuring data consistency in an idempotent fashion
  - Built Python framework to facilitate detected attack insertion into MariaDB as new attack types are added to product
  - Designed MariaDB data model for attack campaigns, developed multi-threaded service to ingest data in batches from CouchDB, periodically augment it with related data, and guarantee eventual consistency given asynchronous arrival of data pieces
- Contributed to web application backend: Django application to query, manipulate, and serve data to frontend
- Built external facing REST APIs using Django REST Framework
- Worked on database design and maintenance: MariaDB triggers, stored procedures, schema updates, collation fixes, data expiration
- Wrote small object-oriented Python ArangoDB client
- Implemented audit logging of user actions: Python module, syslog-ng configuration
- Worked on ArangoDB Foxx functions (microservices) to serve host context data (JavaScript)
- Provided frontend help where needed: Django template work, minor JavaScript development

Striiv **Redwood City, CA**
Software Engineer *Sept 2014 – July 2015*
Services Team

- Developed internal RESTful API for mobile app clients using Google App Engine (Python 2.7 runtime, webapp2 framework)
  - Migrated mobile backend from an AWS/Groovy on Grails/MySQL backend to a Google App Engine/NoSQL backend which led to significant improvements in maintainability, stability, and scalability
- Implemented OAuth 1.0 provider
- Implemented external facing RESTful API to share user metrics with partners
- Wrote technical documentation and provided support for external API which led to the successful integration of multiple partners
- Implemented internal web tools using JavaScript, jQuery, HTML, CSS, and Bootstrap to automate previously manual tasks
  - Firmware update system (upload of binaries, creation of update links, automated constraint checks)
  - Mobile app alert message creation (granularity in specifying recipients based on app and user features) led to significant improvements in maintainability, stability, and scalability
- Contributed to creation of coding style guide, use of linters, and code review process
- Reported and troubleshot data integrity issues across firmware, mobile, and server layers