BRIAN ESPINOZA

brianespinoza espinozabrian.main@gmail.com Sacramento, CA

Experience

Lead & Senior Software Engineer -- Infrastructure November 2016 – Present

Quandis Inc., a data-services PaaS company

- Spearheaded the design and execution of high-availability, scalable **gRPC** services written in **C#**. Wrote the **Protobufs**, bi-directional streaming endpoints, and implemented automated code generation. Deployed as distributed microservices using **AWS CloudFormation**, **ECS**, and **EC2**.
- Wrote a **Redis Message Bus** provider that resolved immediate backend reliability challenges and orchestration of work throughout several distributed services. This used **RESP** protocol, fault-tolerant dequeue methods, safe thread handling with semaphore limiters on **IHostedServices**, and required writing custom **Lua** scripts for immediate queue recovery operations.
- Used **EntityFramework** with **IRepository** patterns and **DbContext** to optimize customer data retrieval by implementing eager loading for associated entities, reducing unnecessary database round-trips. This targeted optimization cut data access latency by 25%, enhancing the responsiveness of customer profile loading times.
- Engineered a scalable **Amazon DynamoDB** solution to manage and query extensive military search data, optimizing data modeling and indexing strategies to support efficient retrieval of complex queries. Implemented best practices in partition key selection and global secondary indexes, ensuring the system's ability to handle thousands of concurrent searches without compromising performance.
- Created a suite of RESTful Military search APIs for the Department of Defense, written with **.NET Core**. Ensured idempotency with **Redis** as the **IDistributedCache** provider, used **Dependency Injection (DI)**, rate-limiting, and implemented secure authorization using **OAuth** and user authentication with **OpenID Connect (OIDC)**. The product grossed $300K in the first year, servicing up to 200,000 searches/day across several banking and loan management institutions.
- Implemented an **ETL** logging layer using **OpenTelemetry** with **Prometheus**. This solution allowed us to rotate unavailable service providers in real-time, significantly reducing support response times.
- Orchestrated database migrations to Production for core services across several **RDS** instances including **MSSQL** and **MySQL**. This required handling of publish scripts as well as reviewing and signing off on ongoing DB updates.
- Increased throughput on a central feature by up to 40% for processing multi-million record collections. Achieved by adopting **async** processing on all read/write operations, eliminating any blocking processes.
- Led the migration of key services from Microsoft-based environments to **Linux**. Led knowledge transfer sessions on debugging Linux containers using CLI tools like **Docker**, **journalctl**, **top**, **session manager**, and **vim/nano**, empowering the team with skills to efficiently troubleshoot and optimize Linux-based applications. This initiative cut costs and enhanced team autonomy in managing Linux environments.
- Engineered a high-performance redaction plugin for asynchronous sanitization of large PDF data streams (up to 500MB), utilizing chunking patterns to efficiently redact sensitive information (SSNs and DOBs). This drastically reduced the risk of data exposure while maintaining optimal processing speed for massive document workflows.

Research Assistant Oct 2015 – Oct 2016

Networks, Computation, and Social Dynamics Lab *UC Irvine*

- Studied social network time-series data during hazard events. This required interfacing with several social network API's to query data imported to a MySql database. Used R and presented at INSNA Sunbelt Conference.

Technical Skills

Languages: C#, C++, Python, Java, JavaScript/TypeScript, Bash, Lua, Powershell, Sql, R
Runtimes & Libraries: .NET Core, Node.js, Express, Flask
Databases & NoSQL: MS SQL, PostgreSQL, MySQL, Sqlite, DynamoDB, Redis
Cloud Services : AWS CDK, ECS, EC2, Lambda, CloudFormation, S3, SQS, SNS, DynamoDB
Protocols: REST, OpenAPI/Swagger, JSON, XML, HTTP2, gRPC, RESP
Servers & OS: Linux, Windows, Nginx, IIS
CLI Tools: Git, Docker, Vi/Vim, Unix Core Utils, AWS CLI, AWS CDK
Front-End: React, React Native, Expo, Tailwind, HTMX

Education

University of California, Irvine Irvine, CA

B.Sc. in Sociology, Minor in Statistics, National Honors Society *Sept 2016*