

# Michael Barrientos

Software architect with 20 years proven expertise in scaling backend technical designs and engineering teams in the life sciences and medical fields.

## **The Public Health Company, Palo Alto, CA — Founding Principal Software Engineer** July 2021 - July 2022

Determined platform technology of a startup focused on a data platform for machine learning based infectious disease predictions.

- Created archetype for Python services for use throughout the company, with standard libraries, testing, artifacts, logging, monitoring, and CI/CD.
- Automated processing of COVID samples in the lab, integrating Benchling LIMS with Illumina Basespace, and Terra.
- Established infrastructure-as-code tooling, APIs, and languages using Terraform, gRPC, and Python/Java on Kubernetes on Google Cloud (GCP).

## **Chan Zuckerberg Initiative, Redwood City, CA — Staff Software Engineer** June 2018 - July 2021

Designed platform engineering tools deploying EC2/ECS/EKS/Lambda based infrastructure in the organization's charitable science & education initiatives.

- Architectural consultation to 8+ teams of wide levels of maturity, scaling apps to larger audiences, development teams, and complex data pipelines.
- Taught classes, implemented, and promoted infrastructure-as-code and GitOps solutions managing secure applications via Terraform.
- Implemented Airflow on Kubernetes for data science & engineering teams.

## **Syapse, San Francisco, CA — Staff Software Engineer and Software Architect** February 2013 - May 2018

Built HIPAA infrastructure for precision medicine in cancer genomics and next generation sequencing (NGS), scaling company from <10 employees to 125+.

- Implemented a system to match 100k+ patients to appropriate treatments based on molecular variants using complex clinical trial criteria.
- Initiated efforts to convert monolithic application into decoupled services in Docker with independent databases via Kinesis stream processing.
- Guided multiple rearchitectures of data store from in-house database, to Blazegraph/Amazon Neptune semantic graph store, to Postgres.
- Designed query language SyQL to translate ontology queries to semantic SPARQL query, which powered Syapse's entire internal and external APIs.

## **Jetlore, Sunnyvale, CA — Senior Software Engineer** Sep 2011 - June 2012

Founding team for startup applying ML classifiers on social network posts.

- Designed and implemented APIs and sharding infrastructure for backend NoSQL databases using Scala Lift, Akka, MongoDB, and Elasticsearch.

## **Google, Mountain View, CA — Software Engineer** Feb 2007 - April 2009

Developed cluster management and systems infrastructure tools.

- Analyzed resource utilization within Google's machine clusters, and implemented a system to manage job scheduling risk based on user requests.

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## LIBRARIES AND FRAMEWORKS

SQL (Postgres), SQLAlchemy, Python (Django, Flask), gRPC, Redis, Airflow, Apache Avro

## LANGUAGES

Python, C++, Golang, Java, C, Scala, Rust, bash, JavaScript, Groovy, Perl, Lua

## INFRASTRUCTURE TOOLS

Kubernetes, Terraform, AWS (EC2, EKS, S3, IAM, RDS, VPC, Kinesis), GCP, ArgoCD, Docker, Helm, Nginx, Datadog, RabbitMQ, Sentry

## EDUCATION

### **Stanford University — M.S. Computer Science (GPA 3.87)**

December 2011

### **University of California, Berkeley — B.S. Electrical Engineering and Computer Sciences**

December 2002

## ACADEMIC COURSEWORK

Computational Tour of the Human Genome

Algorithms for Computational Molecular Biology

Intro to Biomed Informatics Research Methodology

## HOBBIES

Swing Dance, Bouldering, A Cappella Singing, Running