Michael Barrientos

Engineer with 20 years proven expertise in scaling backend technical designs and engineering teams, and designing and implementing programming languages.

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EXPERIENCE HIGHLIGHTS

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.
- 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 development maturity to scale apps to wider audiences and larger development teams.
- 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.
- Designed query language SyQL to translate ontology queries to semantic SPARQL query, which powered Syapse's entire internal and external APIs.
- Guided multiple rearchitectures of data store from in-house database, to Blazegraph/Amazon Neptune semantic graph store, to Postgres.

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.

ACADEMIC RESEARCH

Stanford University, Stanford, CA — *Graduate Student*

Research on Liszt domain specific language (DSL) for parallelized mesh based computations for aerospace engineering applications.

- Implemented program analysis and compiler for the DSL in C++ and Scala.
- Characterized performance of backend targeting OpenMP and MPI.
- Published in "Liszt: a domain specific language for building portable mesh-based PDE solvers" in Supercomputing 2011 (SC11).

LANGUAGES

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

LIBRARIES AND FRAMEWORKS

SQL (Postgres), SQLAlchemy, Python (Django, Flask), gRPC, REST, Redis, Airflow, Apache Avro, uwsgi, Nginx, CORBA

INFRASTRUCTURE TOOLS

Kubernetes, Terraform, AWS (EC2, EKS, S3, SQS, IAM, KMS, RDS, VPC, Kinesis), GCP, Ansible, SaltStack, ArgoCD, Auth0, Docker, Helm, statsd, Datadog, RabbitMQ, Sentry, Jenkins, GitHub Actions

EDUCATION

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

Emphasis: Software Theory
December 2011

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

December 2002

SECURITY CLEARANCE

Top Secret with SSBI and polygraph

March 2010 last current

HOBBIES

Swing Dance, Bouldering, A Cappella Singing, Running