

Abraham Miller

Software Engineer II – Life Sciences

📞 +1 509 995 9071 • ✉ me@abemill.com • 🌐 abemill.com

"The only thing that will redeem mankind is cooperation"
– Bertrand Russell

Overview

Six years experience in synthetic biology lab software development, in both academic and corporate contexts. Some experience with machine learning, large language models, and mobile app development. Seattle Resident; open to remote and local opportunities.

Education

University of Washington, Seattle
BS/BA, Computer Science & Philosophy
Dual Degree – 3.7 GPA

September 2015 – March 2020

Work Experience

Ginkgo Bioworks, Inc.

September 2020 – Present (3 years 9 months)

Software Engineer I → II

- **Project Leadership and Engineering:** Directed the development of critical functionalities, while coordinating closely with cross-functional groups of biologists, data scientists, and other engineers as collaborators and stakeholders. Examples:
 - Strain lineage tracking system applied across thousands of cell-lines
 - LIMS data model representation for Genotypes of Strains
 - Integration between LIMS and the NCBI taxonomy library
 - Mass migration of apps to use Okta authentication
 - Large-scale database schema and data migrations (100mil+ rows), ensuring integrity with minimal disruption
- **Technical Mentorship and Team Development:** Led sprint planning, grooming, and retrospectives, known for being tactful and asking good questions in a warm way. Actively mentored new team members and an intern, significantly enhancing their integration and development within the team. My intern transitioned into a highly productive full-time employee.
- **Documentation and Communication:** Created comprehensive software usage guides and conducted live software demos. Authored design plans, white paper proposals, and critical retrospective documents analyzing outages and project failures. Initiated an internal AI experimentation blog to foster a culture of innovation, reacting to advances in AI language models.
- **Support and Troubleshooting:** Provided consistent on-call support, resolving hundreds of user issues and leading efforts to address major software problems, demonstrating exceptional problem-solving in high-stakes environments.
- **Diverse Technological Expertise:** Created, merged, and deployed hundreds of Merge Requests across >20 coding projects, legacy and greenfield, employing test-driven development and a variety of languages and technologies, including: *AWS, Kubernetes, Docker, Rancher, Python, Django, Celery, React, Typescript, Cypress, Ruby on Rails, Sidekiq, Elasticsearch, GraphQL, SQL, Bash.*

Giving Tech Labs

September 2019 – March 2020 (7 months)

Machine Learning Research Fellow

- Created software tools and machine learning models to analyze suprasegmental speech sounds using *Python, Tensorflow*, and *C*.

Lutz Lab, University of Washington

March 2020 – June 2020 (4 months)

Software Engineer Contractor

- Aided in the creation of software-enabled clinical diagnostics for COVID and HIV in resource constrained environments.

Ginkgo Bioworks

June 2019 – September 2019 (4 months)

Software Engineer Intern

- Added set of features to laboratory automation and data management system using *React, Python, Ruby on Rails*; did a presentation.

Klavins Lab, University of Washington

July 2017 – December 2018 (1 year 6 months)

Software Engineer Research Assistant

- Core contributor for *Aquarium*, an open source laboratory management system intended for synthetic biologists, made with *Ruby on Rails* and *Angular*. Programmatically encoded >50 unique laboratory procedures within a *Ruby DSL* to help researchers across >5 biology labs execute automatable, high-throughput experiments, and aided with extracting and processing data from these experiments.

Individual Projects

Polymerase Chain Reaction Batching Optimizer, Ruby Gem:

A bottom-up clustering algorithm in Ruby for grouping together PCRs with similar reaction conditions so that they can be run in the same thermocycler. Exploits gradient PCR, normally used for testing, to maximize reactions per thermocycler, for up to 96x efficiency gain over conventional annealing workflows with known parameters. In use at the UW Biofab.

Jot Notes, Mobile App:

A mobile notepad concept app written in React Native which provides only one page of notes and a handful of bespoke features for a unique user experience. Provided continuing maintenance over 6 years.

Published Research

Simpler and faster Covid-19 testing: Strategies to streamline SARS-CoV-2 molecular assays

N Panpradist, Q Wang, PS Ruth, JH Kotnik, AK Oreskovic, A Miller, ...
EBioMedicine 64, 2021

Aquarium: open-source laboratory software for design, execution and data management

J Vrana, O de Lange, Y Yang, G Newman, A Saleem, A Miller, C Cordray, ...
Synthetic Biology 6 (1), ysab006, 2021

Aquarium: the laboratory operating system (Version v2.5.0)

B Keller, J Vrana, A Miller, G Newman, E Klavins
Zenodo, 2019

Acoustic measures for real-time voice coaching

Y Li, A Miller, A Liu, K Coburn, LJ Salazar
Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2020