Abraham Miller

Software Engineer II - Life Sciences

+1 509 995 9071

abraham.r.m@gmail.com

www.abemill.com

Full-stack software developer with 6 years of experience in bioinformatic-related fields, both academic and corporate settings, with an emphasis on automation and large-scale lab data management. Developed and managed >20 applications, handling datasets of >100 million rows. An evangelist for cutting-edge LLM-based AI tools, passionate about implementing practical day-to-day tooling to streamline workflows and boost productivity.

Experience

Software Engineer II, Ginkgo Bioworks, Inc.
September 2022-Present (1 year 9 months)

- Led the development of dozens of essential software functionalities in collaboration with cross-functional teams. For example:
  - Engineered a Strain lineage browser tracking >10k cell lines and hundreds of thousands of genetic engineering operations, allowing scientists to access the history of designed strains in the Ginkgo codebase >20X more efficiently than before.
  - Designed data models and APIs for the Laboratory Information Management System (LIMS) to represent the biologically relevant metadata of millions of lab samples, improving the comprehension of core lab data for the nearly 1000 daily users of the system.
  - Executed large-scale database schema and data migrations (>100M rows) on system-critical databases, to with minimal service disruption.

- Facilitated team scrum meetings on teams of 5-10 engineers, and participated in working groups of >30. Mentored 3 new team members, and an intern (who successfully transitioned into a productive full-time role). Known for being tactful and asking good questions in a warm way.

- Authored detailed software usage guides, design plans, white paper proposals, and retrospective documents. One crucial guide I authored resulted in a direct cost savings of >$110k in the following month.

- Initiated an internal AI experimentation blog which brought >50 employees into a community centered around AI productivity. Engaged employees could expect an 3-10% productivity gain in their roles.

Software Engineer I, Ginkgo Bioworks, Inc.
September 2020 – September 2022 (2 years)

- Created, merged, and deployed hundreds of Merge Requests across 21 coding projects using a diverse array of technologies including AWS, Kubernetes, Docker, Rancher, Python, Jupyter, Django, Celery, React, Typescript, Cypress, Ruby on Rails, Sidekiq, ElasticSearch, GraphQL, SQL, and Bash.

- Provided reliable on-call support, resolving >800 user issues at all hours, and leading major software problem resolutions, saving >$200k in total through averted downtime.

Software Engineer, Lutz Lab, University of Washington
March 2020 – September 2020 (6 months)

- Single-handedly produced the software-guided workflows and a footpedal-operated low-cost lab kiosk for a portable low-cost COVID-19 and HIV diagnostic system. Achieved a result where low-skilled lab-workers can batch and process diagnostic samples safely with a 12X efficiency gain over standard workflow operation.

Machine Learning Research Fellow, Giving Tech Labs
September 2019 – March 2020 (6 months)

- Implemented novel machine learning models and software tools for analyzing suprasegmental speech sounds, published a research paper and demoed a consumer-facing "voice coach" mobile app based on the technology.

Software Engineer Intern, Ginkgo Bioworks
June 2019 – September 2019 (4 months)

- Completed a project to accelerate lab automation at Ginkgo. Achieved a generous and immediate full-time offer for after graduation.

Software Engineer Research Assistant, Klavins Lab, University of Washington
July 2017 – December 2018 (1 year 6 months)

- Core contributor to Aquarium, an open-source laboratory management system for synthetic biologists.

- Encoded >50 laboratory procedures in Aquarium to support high-throughput experiments across 5 labs.

Education

University of Washington, Seattle
BS/BA Double Degree, Computer Science & Philosophy
September 2015 – March 2020

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

Independent Projects

Polymerase Chain Reaction Batching Optimizer, Ruby Gem
Developed a clustering algorithm in Ruby for grouping PCRs with similar reaction conditions, achieving an efficiency gain of up to 96X over standard protocol.

Jot Notes, Mobile App
Created a mobile notepad app featuring a unique user experience in React Native. Maintained for 6 years with hundreds of regular users.