Abraham Miller

Software Engineer II - Life Sciences
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Overview

Driven and accomplished full-stack software developer with six years of experience in bioinformatic related fields, both academic and corporate settings. Adept at collaborating within cross-functional teams to design, implement, and refine innovative software solutions. Demonstrated ability to manage complex projects with precision and attention to detail. Consistently meets tight deadlines. Proactive team player committed to organizational success.

Work Experience

Software Engineer I → II, Ginkgo Bioworks, Inc.
September 2020 – Present (3 years 9 months)

- **Project Leadership and Engineering:**
  - Led the development of essential software functionalities, working closely with biologists, data scientists, product managers, UX designers, and engineers.
  - Developed and implemented a Strain lineage system tracking thousands of cell lines and millions of genetic engineering events.
  - Designed Laboratory Information Management System (LIMS) data models to represent a variety of complicated biologically relevant entities and concepts.
  - Migrated internal applications to Okta authentication and authorization, enhancing security and access control.
  - Executed large-scale database schema and data migrations (100M+ rows) with minimal service disruption.
- **Technical Mentorship and Team Development:**
  - Led sprint planning, backlog grooming, and retrospectives; known for being tactful and asking good questions in a warm way.
  - Mentored new team members and an intern who successfully transitioned into a full-time role.
- **Documentation and Communication:**
  - Authored detailed software usage guides and conducted live demonstrations.
  - Wrote design plans, white paper proposals, and retrospective documents.
  - Started an internal AI experimentation blog to promote innovation.
- **Support and Troubleshooting:**
  - Provided on-call support, resolving numerous user issues and leading major software problem resolutions.
- **Diverse Technological Expertise:**
  - Created, merged, and deployed hundreds of Merge Requests across 20+ coding projects using technologies such as AWS, Kubernetes, Docker, Rancher, Python, Django, Celery, React, Typescript, Cypress, Ruby on Rails, Sidekiq, ElasticSearch, GraphQL, SQL, and Bash.

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

- Led the hardware and software integration of fast paced project creating a portable clinical diagnostic system for COVID-19 and HIV in resource constrained environments. Temporary Contract.
- Created a novel and low-cost footpedal-operated hardware system with low contamination potential.
- Developed software-guided workflows allowing low-skilled lab-workers to batch and process diagnostic samples safely and efficiently.
- Assisted in deploying an experimental diagnostic clinic in Nairobi, Kenya.
- Co-authored two research papers, one published and one pending.

Machine Learning Research Fellow, Giving Tech Labs
September 2019 – March 2020 (7 months)

- Developed machine learning models and software tools for analyzing suprasegmental speech sounds using Python, TensorFlow, and C.
- Released a consumer-facing mobile app based on voice analysis technology.
- Co-authored a research paper detailing the technology.

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

- Added features to a laboratory automation and data management system using React, Python, and Ruby on Rails.

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 biology labs.
- Encoded over 50 laboratory procedures using a Ruby DSL to support high-throughput experiments.

Education

BS/BA Dual Degree, University of Washington, Seattle
September 2015 – March 2020
Computer Science & Philosophy – 3.7 GPA

Individual Projects

Polymerase Chain Reaction Batching Optimizer, Ruby Gem
Developed a clustering algorithm in Ruby for grouping PCRs with similar reaction conditions, maximizing thermocycler usage. Utilized at the UW Biofab for increased efficiency.

Jot Notes, Mobile App
Created and maintained a mobile notepad app in React Native, featuring a unique user experience, and maintained over six 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