CHARLIE BUSHMAN

Software Engineer

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Charlie Bushman

PROFESSIONAL SUMMARY

Wide range of Software and DevOps Engineering experience across academia and industry, solo and team projects, and startup to enterprise scale. Background in physics combined with professional experience makes for quick and effective problem solving. Thrives in fast paced, cross functional environments with responsibility for systems operations and integrations and moving projects towards business value.

CERTS & SKILLS

AWS DevOps Engineer - Professional
AWS Developer - Associate
AWS AI Practitioner
IBM Data Engineering Professional

Python   AWS   CI/CD   Flask
bioinformatics   HPC   git   Docker
Kubernetes   PostgreSQL   DevOps

KEY ACHIEVEMENTS

Preprocessing Automation

Architected, developed, and maintain a preprocessing automation platform capable of handling over 10 terabytes of sequencing data per day and saving bioinformatic scientists at least 5 hours per run

Upgraded core analysis pipeline

Upgraded Sunbeam, a core analysis pipeline for reproducible research, through 2 major version releases and have doubled the size of the Sunbeam extension repository

Improved Published Code Quality

Created program-wide software standards and implemented testing, refactoring, and CI/CD across dozens of open source projects to increase coverage 50%, reduce code quality issues 90%, and drive tool citations

Created Long Standing Inventory Mangement System

Used MS Access and custom VBA scripts to create a simple inventory management system for chem-tech startup that is still in use almost 10 years later

PROFESSIONAL EXPERIENCE

Developer in Statistical Metagenomics
University of Pennsylvania

Jan 2022 - Present   *Remote*

- Working cross-functionally with Principal Investigators, Bioinformaticians, Students, and SysAdmins across many groups to deliver on their Software, Deployment, and Automation needs
- Manage and develop Sunbeam, an extensible metagenomic pipeline, through multiple major version upgrades so far
- Manage the Sunbeam extension repository, including numerous I made for virus discovery, bacterial dynamics, isolate analysis, etc
- Create, implement, and deploy systems and APIs for data preprocessing automation, metadata management, and reproducible batch analyses
- Provide guidance on transitioning local workflows to AWS and low-complexity implementations of cloud native solutions
- Create, upgrade, and maintain a large variety of other open source bioinformatics tools centered around microbiome

Software Engineering Internships
Hewlett Packard Enterprise (HPE)

- Contributed as a member of the Scrum team to expand pipeline DSLs, fix AWS credentials and SDK versioning bugs, define Spark combinators, and build schema DSL interpreters

Owl Labs

- Researched and implemented a testing framework for embedded code base and used AWS EC2 to deploy an internal sales utility

HepatoChem

- Created MS Access inventory management system with custom VBA scripts and participated in some wet lab work

EDUCATION

B.A. in Physics, 2021, GPA: 3.66
Carleton College
- Important Classes: Thesis (time series machine learning implemented on physical neural reservoirs), Data Structures, Computability & Complexity, Nonlinear Optoelectronic Dynamics, Numerical Analysis, Quantum Mechanics
- Finalist in Carleton startup competition for party planning app built with React Native and AWS Amplify
- 4 month study abroad at Harbin Institute of Tech (Harbin, China) with full time language pledge and independent study in network security