Charlie Bushman

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SUMMARY

Driven full stack engineer with a strong background in data pipelining, automation, and bioinformatics. Skilled with Python, JavaScript, and Codex/Copilot. Proven problem-solving, research, and collaboration abilities. Seeking a challenging role to develop impactful solutions using cutting-edge tools.

TECHNICAL SKILLS

Programming Languages: Python, JS, SQL

Frameworks & Tools: Codex, Copilot, Git, GitHub Actions, Docker, Kubernetes, Prefect, Snakemake

Certifications: AWS DevOps Engineer - Professional, AWS AI Practitioner (Early Adopter), IBM Data Engineering Professional

PROJECTS

microbial ARchive and Cryo-collection (mARC) — Jan 2025 – Present
Full Stack Big Data Application — *Python, Kubernetes, SQL*
- Developed an end-to-end system for delivering hospital-wide bacteria sequencing data and analysis
- Built honest broker system for HIPAA compliance
- Designed and deployed reactive website for data access and analysis
- Managed graduate intern through multiple contributions to the production analysis pipeline

AutoBfx — Jun 2024 – Present
Preprocessing Automation — *Python, Prefect, SLURM*
- Created terabyte-scale data processing automation handling complex metadata mapping
- Integrates with existing SmartSheet, SampleRegistry, and other systems

Personal Website — Mar 2021 – Present
Serverless Microservice Grid — *Terraform, Vue, CloudFront, Lambda*
- Experimentation with IaC, serverless decoupling, UI/UX, CI/CD

EXPERIENCE

Developer in Statistical Metagenomics — Jan 2022 – Present
University of Pennsylvania — *Philadelphia, PA*
- Working cross-functionally across groups and institutions to determine, plan, and execute on development needs
- Driving open source software standards with adoption of cutting edge AI and software tooling
- Routinely present my work to the heads of the Penn-CHOP Microbiome Program

Software Engineering Internships — Jul 2016 – Sep 2020

- **HPE**: Contributed with Agile team to expand pipeline DSLs and AWS integration
- **Owl Labs**: Built internal sales utility using AWS EC2
- **HepatoChem**: Created MS Access inventory management system with custom VBA interface (still in use almost a decade later!)

EDUCATION

Carleton College — Northfield, MN
B.A. in Physics — *2021*
- Studied chaotic systems and fundamentals of neural networks (Nonlinear Optoelectronic Dynamics and Physical Reservoir Computing)
- Finalist in Carleton Startup Competition