Hayden Fuss

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Software Developer and Site Reliability Engineer with experience in delivering and maintaining cloud-based web / telecommunication services using modern DevOps practices and tooling. Former Research Assistant applying High Performance Computing (HPC) and Machine Learning (ML) for simulations / analytics.

Interpersonal, innovative, and strategic. Enjoys providing the prototypes, technical glue, and planned work for teams to succeed. Passionate in using Kubernetes and open-source technologies to efficiently build and intelligently operate software applications.

SKILLS

- **Programming**: Golang, Java, Typescript
- **Frameworks**: Operator SDK, Spring Boot
- **Scripting**: Bash, Python
- **Provisioning**: Helm, Ansible, Terraform, AWS CloudFormation
- **Packaging**: Docker, Maven, make, Packer
- **CI/CD**: GitHub Actions, ArgoCD, Jenkins on OpenShift
- **Cloud**: OpenShift / Kubernetes, AWS EC2, oVirt
- **Observability**: DataDog, Elastic Stack, Prometheus
- **Datastores**: OpenLDAP, MariaDB, Kafka, Redis, Elasticsearch, etcd
- **Operating Systems**: CentOS, Ubuntu
- **Agile**: Kanban, Scrum

EXPERIENCE

Software Developer / SRE, Bandwidth **Jan 2017 – Present**

Global cloud provider of Communications-Platform-as-a-Service (CPaaS) for calling, 911, SMS/MMS powered by internal VoIP networks.

- Developed an internal PaaS for cloud-native software deployments using OpenShift, ArgoCD, and open-source controllers
- Modernized the operations of a neglected OpenLDAP server pair, eventually deploying a replicated cluster of 20+ servers in multiple datacenters across the US
- Built, maintained, and tuned a highly-available, lightweight OAuth webserver backed by LDAP
- Implemented cheap health checking and load-balancing for multi-region applications using multi-value Route53 DNS records
- Monitored applications requiring 99.99% uptime using DataDog, Elastic Stack, ZenOSS, and SumoLogic
- Contributed to Ansible / CloudFormation automation that used EC2 and Route53 to blue/green stateful SIP/media servers
- Integrated various OAuth applications with Okta OIDC
- Containerized numerous applications using Docker
- Deployed various webservices and workers in AWS which required RDS Postgres, ElasticCache, and SQS
- Prototyped and contributed to a shared Jenkins library for building and deploying Java Spring Boot applications on OpenShift which is currently used company-wide
- Wrote CI/CD workflows using Jenkins and now GitHub Actions
- Attended conferences including AWS re:Invent and RedHat Summit

Software Engineering Intern, RedHat **May – Aug 2016**

International software company which primarily sells support for their enterprise offerings of open-source technologies.

- Worked as a full stack developer on an internal application used by Red Hat's Support Delivery team
- Developed a job runner for executing background and scheduled tasks using Python's multiprocessing library
- Created a user and admin UI for utilizing and managing the job runner with AngularJS and Bootstrap
- Assisted with configuring application containers using DockerPy

Research Assistant, NCSU - Yingling Research Group **Nov 2013 – May 2016**

A simulations and informatics research group specializing in soft materials, led by Dr. Yaroslava Yingling.

- Wrote a C++ shared library for initializing and post-processing coarse-grained simulations

- Wrote a Python binding for the C++ library to ease the adoption for other researchers
- Implemented a cell-list algorithm for determining clusters of objects in 3D space with Periodic Boundary Conditions
- Submitted simulations and other programming scripts on HPC and GPU clusters using IBM LSF and Linux.
- Served as co-author for two articles in Macromolecular Theory and Simulations (08/14/2014) and Soft Matter (08/18/2015).

REU Intern, Harvard - Institue for Applied Computation Science **June – Aug 2015**

Provides a rigorous academic experience, research opportunities and access to the latest data science and computational science methodologies and tools.

- Conducted data analysis of geo-coded Tweets, 911, and 311 datasets from the time of the Boston Marathon Bombings
- Developed a Python module for plotting geo-coded data over maps of the greater Boston area
- Experimented with Twitter sentiment analysis using a variety of classifiers from Python's scikit-learn

PROJECTS

Ethernetes **Fall 2020 - Present**

- A homemade GPU cluster for Ethereum mining, deep learning, and simulations managed via Kubernetes

Proxy (video game) **Spring 2015 - Fall 2016**

- A 2D puzzle platformer designed and programmed using Unity and C# scripting
- Features moving platforms, lasers, parallax scrolling, particle effects, time trial mode and online leaderboards

Implementing the Multiple Hypothesis Tracking (MHT) Algorithm **Spring 2016**

- Senior Design Project for the Laboratory of Analytical Sciences (LAS), mentored by Dr. James Keiser
- Worked on a team of four students, developing a generalized MHT implementation in Java that could be easily extended for experimenting with different optimizations

Open Source Contributions

- Contributor to the summerwind/actions-runner-controller and have often provided patched container images when GitHub
  has released auto-updates that have broken the controller
- Various Helm chart contributions to third-party controllers including ArgoCD and DataDog

EDUCATION

North Carolina State University, BS Computer Science **Aug 2013 – Dec 2016**

- **GPA**: 4.0
- **Minor**: Materials Science

Florida Southern College **Aug 2012 – July 2013**

- **GPA**: 4.0
- Pursued BS in Math and Chemistry
- Researched optimizing the seam curvature of baseballs using Fourier Analysis implemented in MATLAB