Hayden Fuss

haydenfuss@gmail.com • (910) 262-7752 • github.com/hfuss • Durham, NC

Site Reliability Engineer (SRE) with experience in delivering and maintaining cloud-native webservices on-premise and in AWS. Former Research Assistant applying High Performance Computing (HPC) and Machine Learning (ML) for simulations / analytics.

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 across clouds.

Experience

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

- **Platform Engineering** (July 2020 - Present)
  - Architected an internal PaaS for cloud-native software deployments using OpenShift, ArgoCD, AWS, and open-source controllers
  - Deployed the internal platform in the US and EU across multiple existing clusters
  - Monitored the Kubernetes control plane and ingress requiring 99.99% uptime using DataDog and Elastic Stack
  - Contributed various fixes to open-source controllers' deployment manifests and source, usually in Helm and Golang
  - Implemented CI/CD workflows using Jenkins and now GitHub Actions
  - Developed a CLI tool in Golang for encrypting git-managed secrets using AWS KMS, and syncing to AWS Secrets Manager in multiple regions
- **Keystone Authentication Services** (Aug 2018 - July 2020)
  - Rolled out replicated OpenLDAP clusters of 40+ servers in multiple datacenters across the US
  - Developed custom tooling in Golang, Java, and Ansible to provide structured logs, OpenMetrics, and chaos scripts for our LDAP clusters
  - Built a cloud-native Java webserver backed by LDAP in order to provide a single OAuth client credentials flow to secure our APIs
  - Implemented cost-effective health checking and load-balancing for multi-region applications using multi-value Route53 DNS records
  - Integrated various OAuth applications with Okta SSO and attended the Oktane 2019 conference
  - Wrote and upheld SLO of 99.995% login requests would be less than 500ms and successful (or not result in server error)
- **DevOps Engineering** (Oct 2017 - Aug 2018)
  - Prototyped a shared Jenkins library for building and deploying Java Spring Boot applications on OpenShift. Currently being used company-wide
  - Attended AWS re:Invent 2017, and wrote demo Express websocket application using Bandwidth Messaging APIs and OpenShift Online for RedHat Summit 2018
  - Containerized numerous applications using Docker
  - Assisted teams on delivering applications on OpenShift which interacted with MariaDB, Kafka, and Session Border Controllers (SBCs)
- **Catapult Voice and Messaging Platform** (Jan 2017 - Oct 2017)
  - Contributed to Ansible / CloudFormation automation that used EC2 and Route53 to orchestrate blue / green deployments of stateful SIP servers and MM4 / SMTP gateways
  - Deployed various webservices and workers in AWS which required RDS Postgres, ElastiCache, and SQS
  - Modified our call engine gateway to have calls use our internal text-to-speech (TTS) API

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

- Worked as a full stack developer on an internal containerized application used by Red Hat's Support Delivery team
- Developed a job runner and UI for executing background and scheduled tasks using Python's multiprocessing library, MongoDB, and AngularJS

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

- Wrote a C++ shared library and Python binding for initializing and post-processing coarse-grained simulations
- 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), and won several poster presentations in the Research Triangle area

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

- 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
- Won "Most Creative" with a team of friends at an HP Hackathon using Flask, OpenCV, and HP ML APIs

Projects

Ethernetes **Fall 2020 - Present**

- A work-in-progress, home-made Kubernetes cluster of GPU servers for exploring mining, staking, dapps, deep learning, operators, and more

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

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

Implementing the Multiple Hypothesis Tracking (MHT) Algorithm for Multi-Target Tracking **Spring 2016**

- Senior Design Project for the Laboratory of Analytical Sciences (LAS)
- Worked on a team of four students, developing a generalized MHT implementation in Java that could be easily extended for experimenting with different optimizations
- Used MHT implementation to identify and visualize probable entities in positional player data collected from MOBA gameplay

Open Source Contributions

Skills

- **Programming**: Golang, Java, Python, Bash, Typescript
- **Frameworks**: Operator SDK, Spring Boot, Flask, OAuth 2.0, OIDC
- **Provisioning**: Helm, Ansible, Terraform, AWS CloudFormation
- **Packaging**: Docker, Maven, make, Packer
- **CI/CD**: GitHub Actions, ArgoCD, Jenkins on OpenShift
- **Virtualization**: OpenShift / Kubernetes, AWS EC2, oVirt
- **Observability**: DataDog, Kibana, Prometheus
- **Data Stores**: OpenLDAP, MariaDB, Redis, Kafka, Elasticsearch, etcd
- **Operating Systems**: CentOS, Ubuntu
- **Load Balancing**: HAProxy, F5, AWS ELBv2

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 sphericity of baseballs using the seam curvature Fourier Analysis implemented in MATLAB