Joseph Voss

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EDUCATION

Bachelors of Science, Mechanical Engineering Aug 2014 - May 2018
The University of Texas at Austin

SKILLS

Python, Puppet, Golang, Kubernetes, Slurm, Bash, Git, eBPF, C++, Performance Tuning, GPFS, Lustre

EXPERIENCE

HPC Systems Engineer, Oak Ridge National Laboratory *Jun 2018 – Present*

- Provisioned Andes, new 700 node HPC cluster. Largest commodity cluster procured by ORNL to date.
- Wrote custom tool to boot HPC machines from container images. Transitioned several large scale systems to use it.
- Developed eBPF wrapper to compile and load Linux kernel profiling programs and output data to Kafka.
- Created Helm charts and automated pipelines to move system services to Kubernetes.
- Developed CI pipeline to stage Puppet changes on bare metal servers
- Reviewed proposals for new HPC Systems. Assisted in their provisioning and deployment.
- Extended Let's Encrypt Golang projects to create in-house certificate issuer for host authentication bootstrapping.
- Used Puppet to configure and manage large scale systems.
- Contributed to open source projects to improve system health and monitoring. Used to create load-balanced and always available data transfer cluster.
- Helped lead a team of student interns in the '19 Student Cluster Competition
- TLDR; Leveraged Puppet, Golang, Python, and Kubernetes to simplify management of HPC systems

DevOps Engineer, MultiMechanics *Jan 2018 – May 2018*

- Created automated build system using Vagrant. Converting software tools from Windows to Redhat and SUSE

Student Intern, Texas Advanced Computing Center *Feb 2016– Aug 2017*

- Developed an automated HPC testing harness using Jenkins, PyTest, and CMake that integrates with Slurm
- Created a heatmap visualization showing historical degradation and improvement in system performance
- Designed, built and managed a cluster of high performance compute nodes for the Student Cluster Competition
- Developed remote power monitoring system using SNMP, Graphite, and Grafana
- Attended Supercomputing Conference 2016 to compete with student teams from around the world, placed 4th overall

Science and Engineering Apprentice, Applied Research Laboratory *May 2014 – Aug 2015*

- Created a suite of cross-compatible unit tests in C++ for open source software
- Redesigned the method of reading/writing out RINEX files to use OOP encapsulation
- Developed an inexpensive COTS GPS data collection platform using Python; decodes binary streams and writes out to a formatted RINEX file

PUBLICATIONS

Voss, J. (2020). "Anchor: Diskless Cluster Provisioning Using Container Tools." Presented at *SC '20: International Conference for High Performance Computing, Networking, Storage and Analysis*. Atlanta, GA, USA. https://sc20.supercomputing.org/proceedings/sotp/sotp$_pages/sotp$107.$html$

Voss, J., Garcia, J. A., Proctor, W. C., & Evans, R. T. (2017). "Automated System Health and Performance Benchmarking Platform." In *Supercomputing Conference '17: Proceedings of the 2nd international HPC System Professionals Workshop at SC'17*. New York, NY, USA: ACM. https://doi.acm.org/10.1145/3155105.3155106

Ababao, R., Garcia, J. A., Voss, J., Proctor, W. C., & Evans, R. T. (2017). "Student Cluster Competition 2016 reproducibility challenge: Genomic partitioning with ParConnect." *Parallel Computing*. https://doi.org/10.1016/j.parco.2017.07.002