Harrison Grant Totty

Senior DevOps Engineer · Software Programmer

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Summary

Current Senior DevOps Engineer within the Production Operations group at Basis Technologies. Highly experienced at implementing custom infrastructure solutions within both cloud and on-premises environments.

Education

Tallahassee Community College — *Tallahassee, FL*

Associate of Science — *Jan 2015 - Jan 2016*

- Graduated honors with 4.0 GPA.

University of West Florida — *Pensacola, FL*

Physics — *Aug 2011 - Jul 2014*

Skills

Amazon Web Services	ALB/ELB, Cloud Formation, EC2, EKS, IAM, Lambda, RDS, Step Functions, Secrets Manager
CI/CD	Harness CI/CD, Jenkins Pipelines (Declarative & Scripted Syntax)
Configuration Management & IaC	Ansible, Puppet, Saltstack, Hashicorp Terraform
Containers & Virtualization	containerd, Docker
Data Languages	INI, JSON, TOML, XML, YAML
Data Science	Jupyter Lab/Notebooks, Mathematica, matplotlib, plotly, sympy
GNU/Linux Distributions	Arch Linux, Debian (Ubuntu), Gentoo, RHEL (CentOS), Void Linux
High Availability	HAProxy, keepalived
Kubernetes	Helm, Kubernetes (managed & unmanaged), CRDs & Custom Operators
Markup Languages	LaTeX, Markdown, Org
Networking Fundamentals	ARP, CIDR, Mikrotik RouterOS, Ubiquity Unify Controller, VLAN
Programming Languages	C/C++, C# .NET, Emacs Lisp, groovy, Perl, Python, Rust, Shell Languages, Wolfram (Mathematica)
Python Development	Poetry, PyTest
Project Management	GitHub Issues/Projects, GitLab Issues, JIRA
Repository Hosting	Bitbucket, GitHub, GitLab
Secrets Management	Hashicorp Vault
Templating Languages	Cheetah, Embedded Ruby, Jinja, Liquid
Text Editors	GitHub Atom, GNU Emacs, nano, vi/vim, Visual Studio Code
Version Control Systems	cvs, git
Web Servers	NGINX, Apache Tomcat

Work Experience

Basis Technologies (Formerly Centro, Inc.) — *Remote*

Senior DevOps Engineer — *Feb 2021 - Present*

- Spearheaded company adoption of Kubernetes (EKS).
- Wrote terraform code for managing infrastructure hosted in AWS.
- Architected networking and external secrets implementation for Kubernetes.
- Authored ISO-style technical standards documents and department blog posts.
- Implemented serverless data pipelines using AWS Lambda & Step Functions.

Wolfram Research, Inc. — *Champaign, IL*

DevOps Engineer — *Apr 2018 - Feb 2021*

- Streamlined disaster recovery of Wolfram Cloud user data with end-to-end encrypted backups via backuputil.
- Provisioned bare-metal Kubernetes environments for Wolfram|Alpha utilizing Kubespray, Helm, Rook-Ceph, and Velero.
- Incorporated Hashicorp Vault for secrets management of Kubernetes CI/CD pipelines.
- Implemented infrastructure as code (IaC) standards for on-premises environments by leveraging Puppet and Cobbler.

Web Systems Administrator — *Dec 2016 - Apr 2018*

- Developed a templating engine for Apache HTTP Server configurations.
- Collaborated custom log data analysis and reports for Wolfram Cloud in Python and Mathematica.
- Designed Salt configurations for managing internal infrastructure.
- Developed backend code for the Wolfram Cloud Platform in Java.

Web Systems Intern — *Sep 2016 - Dec 2016*

- Implemented new Wolfram kernel features in C/C++.
- Developed a containerized RPM build environment hosted in Apache Marathon/Mesos.

Wolfram Research, Inc. — *Boston, MA*

Wolfram Summer School Student — *Jun 2016 - Jul 2016*

- Invited to Bentley University for three weeks to conduct research on various machine learning analogues.
- Participated in Wikipedia article authoring meetup at MIT.
- Completed final project on feed-forward neural networks using Boolean networks.

Tallahassee Community College — *Tallahassee, FL*

Mathematics and Technology Tutor — *May 2016 - Aug 2016*

- Provided tutoring in topics such as Ordinary Differential Equations and introductory programming courses.

Radio Shack — *Pensacola, FL*

Sales Associate — *Jul 2013 - Mar 2015*

- Provided customer service and support for a variety of mobile devices, DIY components, and more.

University of West Florida — *Pensacola, FL*

Student SSE System Administrator — *Jan 2014 - Aug 2014*

- Provided general systems administration for the faculty of the School of Science and Engineering.

ResNet Technician — *Feb 2012 - Aug 2013*

- Supported the technical needs of dorm students.

Projects

Web Systems Infrastructure Rearchitecture — *Wolfram Research, Inc.*

A project to modernize all on-premesis user-facing infrastructure — *Mar 2020 -*

- Leveraged Cobbler for systems provisioning and Puppet for configuration management.
- Targeted CentOS 8.2 (up from CentOS 6.8 and 5.5) for new machines, while still integrating with older environments.
- Implemented infrastructure-as-code standards.
- Developed more than 20 Puppet modules, each with a high degree of parameterization.

prov — *Wolfram Research, Inc.*

A Python script to modify Cobbler item specifications in a Terraform-like declarative way — *Mar 2020 - May 2020*

- Leverages Cobbler's XMLRPC API to synchronize YAML-based item specifications.
- Shows Terraform-like client-server differences prior or during application.
- Supports backwards-compatibility with Cobbler servers older than version 3.
- Synchronizes data items (such as profiles and systems) as well as files (such as snippets).

Personal Finance Analytics Platform — *Personal Project*

A Python library for categorizing and analyzing bank transactions — *Mar 2020 -*

- Categorizes transactions based on a home-made library of regular expressions.
- Leverages sklearn to perform predictive regression on financial trends.
- Provides a wrapper around plotly for graphical analysis within Jupyter Notebooks.

grav — *Personal Project*

A gravitational n-body simulation program written in Rust — *Nov 2019 - Dec 2019*

- Leverages an entity-component-systems (ECS) simulation backend.
- Simulation data post-processed via Jupyter notebook.
- Custom 3D vector and physical laws implementation.

CV & Resume — *Personal Project*

(This Document) — *May 2019 -*

- Built from Jinja2-templated LaTeX documents via "tmpl".
- Raw data present in YAML format.

tmpl

Personal Project

A general-purpose templating system

May 2019 - Jun 2019

- A general-purpose Jinja2/YAML templating system based on "mkconf" and "mkdot".
- Utilized in the generation of this CV/Resume.
- Supports runtime-loaded Python extensions to the templating system.
- Capable of handling raw Jinja2 content piped directly to STDIN.

backuputil

Wolfram Research, Inc.

A Python wrapper script around the Borg Backup Utility.

Jan 2019 - Apr 2020

- Extends and generalizes the functionality of Borg.
- Allows multiple "back-up tasks" to be specified in a single configuration file.
- Used to back-up large volumes of data internally at Wolfram Research.
- Supports sending email reports on script completion or detection of issues.

Remote Execution Framework

Personal Project

An easy remote command execution utility

Nov 2018 - Apr 2019

- Written in Python3 as a lightweight alternative to frameworks such as Fabric and Ansible.
- Automatically formats output depending on whether a TTY is present.
- Capable of running both arbitrary commands and defined tasks.
- Includes interactive console mode.

mkdot

Personal Project

The handy dotfile templating system

Oct 2018 - Dec 2018

- Based on "mkconf" project, but specialized for the generation of dotfiles.

mkconf

Wolfram Research, Inc.

An Apache Web Server configuration templating engine

Aug 2018 - Sep 2018

- Generates Apache Web Server configurations from Jinja2 templates and YAML configuration files.
- Replaced older in-house utility written in Perl.
- Validates directives after generating configuration files.
- Capable of backing-up previous configurations and reverting changes.

Simplex Universe

Personal Project

An abstract n-dimensional n-body simulation program written in C# .NET

Aug 2013 - Dec 2014

- Custom CPU-based 3D rendering engine and graphical library.
- Dynamic C# scripting support
- Abstraction over spacial dimensionality and physical laws.
- Implemented Newtonian gravitational, classical electrostatic, and classical electrodynamic laws.
- Real-time simulation parameter tweaking and simulation object property inspection.
- Support for toroidal, infinite, and perfectly elastic/inelastic boundary conditions.