Harrison Grant Totty

DevOps Engineer · Software Programmer

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Summary

Current lead DevOps Engineer and systems architect for the Web Systems group at Wolfram Research. High experienced at implementing custom infrastructure solutions within bare-metal/on-premises environments. Thrives in seeking solutions within domains not yet encompassed by popular technologies or industry standards.

Education

Tallahassee Community College — *Tallahassee, FL*

Associates of Science — *Jan 2015 - Jan 2016*

- Graduated honors with 4.0 GPA.

University of West Florida — *Pensacola, FL*

Physics — *Aug 2011 - Jul 2014*

Relevant Skills

CD/CD	Jenkins Pipelines (Declarative & Scripted Syntax)
Cluster Orchestration	Helm, Kubernetes (k8s & k3s)
Configuration Management	Ansible, Puppet, Salt
Container Runtimes & 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
Markup Languages	LaTeX, Markdown, Org
Networking Fundamentals	ARP, CIDR, Mikrotik RouterOS, TCP/IP & OSI Model, Ubiquity Unify Controller, VLAN
Programming Languages	C/C++, C#, Emacs Lisp, groovy, Perl, Python, Rust, Shell Languages, Wolfram (Mathematica)
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

Work Experience

Wolfram Research, Inc. — *Champaign, IL*

DevOps Engineer — *Apr 2018 - Present*

- Architected Kubernetes clusters and supporting deployment pipelines.
- Developed/Implemented configuration management and remote execution frameworks.
- Personally architected software platforms, individual servers, machine clusters, and deployment workflows.
- Provided routine performance and security analysis.

Web Systems Administrator — *Dec 2016 - Apr 2018*

- Provided general systems administration for various Wolfram web products and services.
- Designed & built DEV/TEST environments for Wolfram Cloud.
- Developed backend code for the Wolfram Cloud Platform in Java.

Web Systems Intern — *Sep 2016 - Dec 2016*

- Developed systems utilities to aid common operations tasks.
- Implemented new Wolfram kernel features in C.
- Ported many internal components to containerized environments.

Tallahassee Community College
Tallahassee, FL

Mathematics and Technology Tutor
May 2016 - Aug 2016

- Provided tutoring and support to students in various mathematics and technology topics.

Wolfram Research, Inc.
Boston, MA

Wolfram Summer School Student
Jan 2013 - Feb 2013

- Invited to Bentley University for three weeks to conduct research on various machine learning analogues.

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.

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.

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#

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.