

Harrison Grant Totty

DEVOPS ENGINEER · SOFTWARE PROGRAMMER

1307 West University Ave, Champaign IL 61821

☎ (850) 461-8381 | ✉ harringtontotty@gmail.com | 🏠 harrison.totty.dev | 🌐 HarrisonTotty | 📷 harrisont

Summary

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

Education

Tallahassee Community College

ASSOCIATE OF SCIENCE

- Graduated honors with 4.0 GPA.

Tallahassee, FL

Jan 2015 - Jan 2016

University of West Florida

PHYSICS

Pensacola, FL

Aug 2011 - Jul 2014




Skills

CI/CD	Jenkins Pipelines (Declarative & Scripted Syntax)
Cluster Orchestration	Helm, Bare-Metal 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	Ⓔ [Ⓐ] X, Markdown, Org
Networking Fundamentals	ARP, CIDR, Mikrotik RouterOS, Ubiquiti Unify Controller, VLAN
Programming Languages	C/C++, C#, .NET, 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
Web Servers	NGINX, Apache Tomcat

Work Experience

Wolfram Research, Inc.


DEVOPS ENGINEER

- 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.

Champaign, IL

Apr 2018 - Present

WEB SYSTEMS ADMINISTRATOR

- Developed a  templating engine for Apache HTTP Server configurations.
- Provisioned and maintained on-premises environments for Wolfram Cloud.
- 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.

Dec 2016 - Apr 2018

WEB SYSTEMS INTERN

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

Sep 2016 - Dec 2016

Wolfram Research, Inc.

WOLFRAM SUMMER SCHOOL STUDENT

- 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.

Boston, MA

Jun 2016 - Jul 2016

Tallahassee Community College

MATHEMATICS AND TECHNOLOGY TUTOR

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

Tallahassee, FL

May 2016 - Aug 2016

Radio Shack

SALES ASSOCIATE

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

Pensacola, FL

Jul 2013 - Mar 2015

University of West Florida

STUDENT SSE SYSTEM ADMINISTRATOR

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

Pensacola, FL

Jan 2014 - Aug 2014

RESNET TECHNICIAN

- Supported the technical needs of dorm students.

Feb 2012 - Aug 2013

Projects

Web Systems Infrastructure Rearchitecture

A PROJECT TO MODERNIZE ALL ON-PREMESIS USER-FACING INFRASTRUCTURE

- 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.

Wolfram Research, Inc.

Mar 2020 -

prov

A PYTHON SCRIPT TO MODIFY COBBLER ITEM SPECIFICATIONS IN A TERRAFORM-LIKE DECLARATIVE WAY

- 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).

Wolfram Research, Inc.

Mar 2020 - May 2020

Personal Finance Analytics Platform

A PYTHON LIBRARY FOR CATEGORIZING AND ANALYZING BANK TRANSACTIONS

- 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.

Personal Project

Mar 2020 -

grav

A GRAVITATIONAL N-BODY SIMULATION PROGRAM WRITTEN IN RUST

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

Personal Project

Nov 2019 - Dec 2019

CV & Resume

(THIS DOCUMENT)

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

Personal Project

May 2019 -

tmpl

A GENERAL-PURPOSE TEMPLATING SYSTEM

- 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.

Personal Project

May 2019 - Jun 2019

backuputil

A PYTHON WRAPPER SCRIPT AROUND THE BORG BACKUP UTILITY.

- 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.

Wolfram Research, Inc.

Jan 2019 - Apr 2020

Remote Execution Framework

AN EASY REMOTE COMMAND EXECUTION UTILITY

- 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.

Personal Project

Nov 2018 - Apr 2019

mkdot

THE HANDY DOTFILE TEMPLATING SYSTEM

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

Personal Project

Oct 2018 - Dec 2018

mkconf

AN APACHE WEB SERVER CONFIGURATION TEMPLATING ENGINE

- 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.

Wolfram Research, Inc.

Aug 2018 - Sep 2018

Simplex Universe

AN ABSTRACT N-DIMENSIONAL N-BODY SIMULATION PROGRAM WRITTEN IN C# .NET

- 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.

Personal Project

Aug 2013 - Dec 2014