

Harrison Grant Totty

DEVOPS ENGINEER · SOFTWARE PROGRAMMER

1307 West University Ave, Champaign IL 61821

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

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

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	TeX, 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

- 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.

Champaign, IL

Apr 2018 - Present

WEB SYSTEMS ADMINISTRATOR

- 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.

Dec 2016 - Apr 2018

WEB SYSTEMS INTERN

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

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.

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

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 200 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.

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.

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

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