

# Joe McCullough - DevOps / Backend developer

## Contact

Joe McCullough

Email: [joseph@vertstudios.com](mailto:joseph@vertstudios.com)

Website: [joequery.me](http://joequery.me)

Current location: Austin, TX

Github profile: [JoQuery](https://github.com/JoQuery)

## Employment

### [IST Research](#) - Technical Operations / Quality Engineering (January 2016 - Present)

- Docker
  - Took existing applications and created docker images via Dockerfiles
  - Optimized existing dockerized application build times
    - Multistage builds
    - Alpine builds when practical
  - Created docker-compose files to enable developers to quickly provision environments
- Monitoring
  - Used [DataDog](#) as the primary monitoring platform
  - Created system-level monitors for services such as Redis, Kafka, and Elasticsearch
  - Created dashboards and monitors for in-house applications to track application health and report anomalies
  - Integrated monitors with [PagerDuty](#) for on-call paging
  - Created custom DataDog checks in Python for polling Elasticsearch documents over specified intervals
- AWS Management
  - EC2, ELB, RDS, Route53, Elasticache, IAM
  - Participated in the Amazon Neptune preview. Created IAM policies to allow Lambda to communicate with Neptune, S3, and API Gateway.
  - Created VPC peering connections to allow for [Portainer](#) nodes to communicate across AWS organizations

#### Continuous Integration

- Evaluated various CI tools to establish the future of CI at IST. Decided on [CircleCI](#) for its docker support
- Created CI pipelines that run unit tests, build and push docker images, and automatically deploy to the dev environment

#### Deployment automation

- Ansible was used for automated provisioning of infrastructure
- Noteworthy Ansible roles authored include:
  - A custom [nginx ActionModule](#) that enables roles to deploy nginx configs
  - A [Tarsnap role](#) for automatic backups
  - A non-standard [Oozie installation](#) that links to a local hbase installation
- Troubleshooting Documentation
  - Authored troubleshooting documents called "playbooks" that accompanied PagerDuty pages so the on-call engineer could diagnose and resolve issues they may not be familiar with
  - Bridged the knowledge gap between developers and technical operations by creating diagrams that described the network communication specific to an application
- Server management
  - Ubuntu 14.04
- Maintenance and upgrades
  - Performed scheduled downtimes according to customer schedule requirements
  - Created logs of deployment anomalies for stability follow-up procedures
- Python development
  - Improved twitter streaming application by implementing an asynchronous KafkaProducer
  - Implemented a Slackbot that generates a forecast-style gif of DataDog dashboards and places them into Slack channels

### [Austin Coding Academy](#) - Instructor (June 2014 - November 2015)

- Corporate training
  - Introduction to Ruby for AMD engineers
- Tutoring and mentoring for students learning Python/PHP/JavaScript
- Developer community outreach

- [Git crash course lecture](#)
- [Thinking recursively](#) talk at Women Who Code meetup
- Answering programming questions on Reddit [/u/AustinCodingAcademy](#)
- Content creation
  - [What is JSON?](#)

### **[Andrew Harper](#) - Python Developer (Contracting May 2015 - September 2015)**

- Integrated a BackboneJS front end with a Django Rest Framework API
- Doubled the speed of a pre-existing in-house search indexer through Django ORM optimizations
- Created user favorites for arbitrary objects via Generic Foreign Keys
- Implemented a flexible data submission/review cycle between Andrew Harper employees and hotel representatives

### **[Andrew Harper](#) - Python Developer (June 2013 - June 2014)**

- Rest API development via Django Rest Framework
  - Overrode Django Rest Framework internals to allow for more dynamic routing
  - Created authorization scheme which enforced limitations on API clients (with an emphasis on securing user data)
- Custom shopping cart
  - Stripe integration
  - Authorization to various parts of the site based on product selection
  - Created infrastructure for promo-codes, bundled products, US vs International pricing
- Dynamic GeoJSON generation for use with the MapBox API
  - [View the map](#)
- Created custom python APIs to cope with vendors unable to expose json/xml endpoints
  - [Requests](#) was used to facilitate interaction with the vendors' web applications
  - [PyQuery](#) was used to parse the resulting HTML and extract relevant data.

### **[Communications Corporation of America](#) - PHP Developer (Dec 2011 - June 2013)**

- Custom Drupal module development for 25+ TV station websites.
- Created custom PHP libraries for interacting with vendor web applications
- Created in-house utilities to aid collaboration workflow. These tools enabled us to
  - easily transfer databases between developer machines
  - quickly restore from on-site database backups
- AWS management
  - EC2 / ELB
  - RDS
  - S3 / Cloudfront
- Nginx/Apache webserver management and configuration

### **[Vert Studios](#) - Web Developer (Sep 2010 - 2012)**

- Custom jQuery plugin development
- Simple website development via Wordpress, RefineryCMS
- Deployment, hosting, and version control management
- Traffic generation via technical articles

## **Personal Projects**

### **Continuous Integration**

[Stupid-table-plugin](#) via [CircleCI](#)

- QUnit driver + Selenium for unit test verification
- [View CircleCI config.yml](#)

### **Python**

- [JSONSelector](#) - A utility which describes how to traverse to a particular value in a JSON response
- [MiddleMan](#) - Dynamic HTML templating system that directly interacts with JSON APIs responses. ([View on github](#))
- [Python built-in function reference](#) - Explanations and examples of built in Python functions
- [ioequery.me](#) - My personal website, a custom Flask blog engine.

## JavaScript/jQuery

- [Stupid Table Plugin](#) - A stupidly simple jQuery table sorting plugin
- [Challonge Text Alerts](#) - A Chrome extension which modifies the UI of the tournament bracket web application [Challonge](#) to support sending text messages to competitors. ([View demo](#)).

## Ubuntu server configuration

- Installation of JIRA Server, Confluence, Apache Guacamole
- [Rails Template](#) - Rails template with extensive nginx documentation
- [Guide to installing Arduino on Ubuntu Virtualbox Guest under Windows Host](#)

## Ruby

- [mrbc playground](#) - An environment to quickly convert ruby to object code.
- [Stagger](#) - Backup multiple MySQL databases at staggered times to ease server load
- [Route53-To-S3](#) - Backup Route53 DNS Records from AWS to S3

## Technical writing / Tutorial creation

- [Beginner's Introduction to Pointers in C](#)
- [Introduction to Recursion](#)
- [Converting a simple website to Python Flask](#)

## Open source contributions

- Refactored and extended the parser of a Jinja2 syntax highlighting plugin - [PR Link](#)
- Added installation documentation for Habitbot setup - [PR Link](#)
- Altered the client Terminal broadcasting service ScreenxTV to hide user credentials input through the terminal - [PR Link](#)
- Fixed an issue in mruby's mirb REPL where the strings "exit" and "quit" would terminate the REPL when intended to be used as strings - [PR Link](#)

## Education

University of Texas at Tyler  
Major: Computer Science with Math minor (Did not graduate)  
3900 University Boulevard  
Tyler, TX 75701-6699  
(903) 566-7000  
Attended: 2010-2013

## Associates in General Studies

Tyler Junior College  
1327 South Baxter Avenue  
Tyler, Texas 75701  
(903) 510-2200  
Graduation Date: 2010

## References

Available upon request.