Ryan Kemper

Education

2014–2018 **Computer Science**, *UC Santa Barbara - College of Engineering*.
BS

Recent Experience

May 2019 - Feb 2020 **Site Reliability Engineer**, *Invoca*, Santa Barbara.

- Revamped our logging Elasticsearch cluster configuration, taking us from an unstable, over-sharded configuration to a performant and stable daily index model
  - New configuration indexed **1.3 billion** documents per day while reducing total cost on the order of tens of thousands of dollars per year
  - Cluster went from experiencing "red cluster status" (data loss) every hour to **no further production events** in over 7 months
- As part of a 24/7 on-call rotation, performed triage and incident response for our Kubernetes/chef managed infrastructure as well as our **ruby-on-rails** application and associated python microservices.
  - Advocated for our customers, pushing us to proactively notify about impacting events
  - Worked with others to perform **root cause analysis** and blameless post-mortems
- Improved stability and throughput of kubernetes-based **CI/CD** infrastructure, diving into:
  - Advanced pod scheduling (affinity, anti-affinity, node taints, pod tolerations), RBAC
  - Deeper layers of Kubernetes: scheduler, apiserver, kube-controller-manager
  - etcd leader elections / general stability
- Wrote **performant, concurrent Ruby code** using the **reactor design pattern**
- Service discovery and secret management via Hashicorp **Consul** and **Vault** respectively
- Operated production mysql databases, including **database promotions** and troubleshooting **replication** delays/breakage
- Deployed Falco, a container native runtime security and compliance solution

June 2018-March 2019 **Cloud Operations Intern**, *Invoca*, Santa Barbara.

- Plumbed Elasticsearch and Logstash metrics and created detailed Grafana dashboards
- Developed and tuned alerts using Graphite-based monitoring stack; writing one-off scripts as necessary to back-test against historical data
- Wrote consistently **high quality documentation** containing detailed runbooks and high level conceptual explanation of critical infrastructure like Elasticsearch
- Merged a patch (extended functionality) to the open-source static code analysis tool Brakeman, working to optimize **Docker caching layers** and create a new Dockerfile for easy usage in a CI pipeline => https://github.com/presidentbeef/brakeman/pull/1252
- Wrote a module for onboarding laptop script which idempotently guided the user through setting up a password-protected 4096-bit RSA ssh key to enforce security excellence
- Wrote a module for developer bash profile which automatically displays current Kubernetes context and namespace to ease common UX difficulties in using Kubernetes

Primary Languages

Python 3	Advanced	*Preferred language for machine learning, scientific computing*
Ruby	Advanced	*Preferred language for scripting/general computing, metaprogramming*
Java	Intermediate+	*Primarily reading source of Apache Lucene, Apache Kafka, Elasticsearch*
Go	Beginner	*Mainly poking around in Kubernetes / Vault / Terraform source code*

Core Skills

Git	feature branching, atomic commits, stashing, remotes, reflog, rebase	**Scripting**	regexes, safe file handling, multiprocessing, JSON/csv/other common data output formats
Security	SQLI, CSRF, XSS, privilege escalation, buffer overflows / shellcode injection via env vars	**Cryptography**	secure hash functions (like the sha-2 family), salting, asymmetric key encryption (like gnupg)
Linux	Extensive production experience operating linux instances at scale, primarily Debian/Ubuntu/BusyBox	**Concurrency**	Synchronization primitives such as mutexes (locks), semaphores, wait/join, thread vs process

Public Speaking

(Link) Pitching an idea to college students @ Capstone UCSB