

# Ryan Kemper

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## Education

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

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## Experience

- May **Site Reliability Engineer**, *Invoca*, Santa Barbara.
- 2019–Present
- Revamped our logging Elasticsearch cluster configuration, taking us from an unstable, over-sharded configuration to a performant and stable daily index model
    - New configuration processed **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
  - Lead the response to production incidents while maintaining composure
    - 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, identifying and driving improvements to prevent future incidents
  - Used the **reactor design pattern** implemented through EventMachine to write **performant, concurrent Ruby code** for sidekiq job processing.
  - Service discovery and production 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, across all our Kubernetes and Chef-managed nodes
- Jun **Cloud Operations Intern**, *Invoca*, Santa Barbara.
- 2018–March 2019
- Plumbed cloudwatch Elasticsearch and Logstash metrics and constructed information-dense 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 a standard of 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

Fall–Winter 2018 **UCSB CS Capstone team member - 1st place, LogMeIn (sponsor), Goleta.**  
Developed proprietary software that uses machine learning to offer targeted feedback for public speaking:

- Implemented **natural language processing** techniques like TF-IDF to identify keywords
  - Used nltk brown corpus to extract english term frequency and inverse document frequency data
  - Wrote Python scripts to extract thesaurus data and corpus word frequencies;
- Maintained 3 backend modules (text/audio/video):
  - Wrote shell scripts using sed/awk to integrate backend and frontend repositories;
  - Specified and implemented backend API for use in frontend
- Used parallelization to speed up backend, reducing processing time 2-3x:
  - Multithreading to parallelize API calls to Google Cloud Vision and IBM Watson
  - Multiprocessing for cpu-bound tasks like OpenCV haarcascades, ffmpeg mp4 conversion
- Wrote decision tree logic to convert raw analysis results into plain english feedback for user

## Primary Languages

<b>Python 3</b>	Advanced	<i>Preferred language for machine learning, scientific computing</i>
<b>Ruby</b>	Advanced	<i>Preferred language for scripting/general computing, metaprogramming</i>
<b>C</b>	Advanced	<i>Preferred language for low-level systems</i>
<b>Java</b>	Intermediate+	<i>Strong familiarity, but not preferred language. Often read Java source for projects like Apache Lucene, Elasticsearch, etc</i>
<b>Go</b>	Beginner	<i>Mainly poking around in Kubernetes / Vault / Terraform source code</i>

## Core Skills

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

## Public Speaking

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