Karan **Thukral**

SOFTWARE ENGINEER · PRODUCTION ENGINEERING

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Skills

Technologies	Kubernetes, Docker, Terraform, Chef, Ansible, Vagrant
Languages	Ruby, GoLang, Objective C, Swift
Frameworks	Kubernetes Controllers, Ruby on Rails, gRPC, iOS, Cocoa

Experience

Production Engineer, Application Lifecycle

Ottawa, ON

SHOPIFY INC.
May. 2019 - Present

- Reduced deploy time of the core application from **35 minutes to under 17 minutes** by leading a project that built a centralized deploy scheduler.
- Implemented Redis instance migrations across clusters in **under 5 minutes**.
- Built user friendly tooling for **automated application failovers** used during incidents and for infrastructure maintenance.
- Leveraged application metrics and ongoing incidents to make **infrastructure deploys safer** by implementing custom deploy strategies.
- Modernized the application platform infrastructure according to resiliency best practices by championing project to **migrate 400+ services** to newly created Kuberenetes clusters.
- **Led** project to ensure infrastructure readiness leading into the holiday season by taking into account capacity requirements and readiness of the application failover tooling.
- **Mentored** new team members and interns to provide support as they ramped up to the tooling and processes used by the team.

Production Engineer, Cloud Platform

Ottawa, ON

SHOPIFY INC.
May. 2017 - May 2019

- **Migrated** multiple business critical applications to the new internal application platform.
- Reduced the impact of noisy neighbour using a custom Kubernetes controller to manage the creation of **resource quotas**, and **limit ranges** for application namespaces.
- Improved deploy tooling by adding rollout monitoring for daemon sets, stateful sets, resource quotas, and more through upstream contributions to **Krane**.
- Reduced support burden on the team by making it easier to debug deploy failures through **improved error handling** for invalid Procfile entries in **Herokuish**.
- **Reduced container build times** from **5 minutes** to **under a minute** by leveraging the container cache, speeding up deploys and making it faster to scale up applications.
- Built a **user interface** for developers to **monitor application health and status** without requiring knowledge of the inner workings of the platform or Kubernetes.

Production Engineering Intern

Ottawa, ON

SHOPIFY INC.
Sep. 2015 - Aug. 2016

- **Containerized & migrated** multiple production critical services to Kubernetes to validate the platform along with helping to dictate the roadmap of the project.
- **Automated cluster creation** on Google Kubernetes Engine by exposing functionality through a CLI.
- Experimented using a **chat bot** as an interface to provision infrastructure including **cluster creation**, **provisioning container build pipelines**, and **Kubernetes template generation** for a generic application.
- Built an **on-demand staging environment** for developers to boot up **standalone Shopify instances** including **database snapshots** to seed the staging environment.

Other Experience

Mobile and Backend Software Developer Intern

Ottawa, ON

SHOPIFY INC.
May. 2014 - Apr. 2015

- Implemented features for multiple iOS applications while also contributing to the Ruby on Rails backend.

iOS Developer Intern

Toronto, ON

CANADIAN BROADCASTING CORPORATION
Sep. 2013 - Dec. 2013

- Built a **fully native** iOS application for CBC News.

Speaking Opportunities

SRECon18 Americas | Shopify's Path to k8s

- Presented a talk on building a platform as a service on top of Kubernetes and Google Kubernetes Engine. The goal was to share Shopify's best practices and start a discussion in the community to see how others are tackling similar challenges. (Talk Info)

Google Modernizing IT in a Cloud-First World 2018 | How we did it: One customer's journey to modern infrastructure

- Co-presented a session on the experiences of using containers and Kubernetes in production and lessons to keep in mind when undertaking such a migration. (Talk Info)

Ottawa DevOps Meetup 2017 | Building Containers @ Shopify

- Gave a talk on container building at Shopify and the tooling we used and built. The goal was to share our experiences and promote best practices across the local community. (Video)

Projects

FIRST Robotics   *2020*

- Mentored the high school Lisgar Robotics team.

Machine Learning Based Network Intrusion Detection   *2016 - 2017*

- Developed for the undergraduate capstone project which used machine learning to detect network intrusion attempts.
- Achieved **99.1752 (+/- 0.4571) %** accuracy using Random Forests on an academic dataset from the University of New Brunswick. Results were displayed in a custom built UI based on user research.

Hack the North Organizer   *2015 - 2016*

- Member of the organizing team for Hack The North, Canada's largest hackathon in Waterloo.
- Contributed to the 2015 iOS application with event logistics in 2015-2016.

Code for Kids   *2014 - 2015*

- Volunteered for an Ottawa based nonprofit which teaches coding to kids.
- Mentored at events in Ottawa and started a Waterloo chapter.

FIRST Robotics   *2014 - 2015*

- Mentored the high school Team Dave 3683 robotics team.
- Collaborated with other mentors to help high school students design, build, and program robots as per competition requirements.

Education

University of Waterloo   *Waterloo, ON*

BASc. Systems Design Engineering with Distinction & Honors   *Sep. 2012 - May. 2017*