Chakshu **Tandon**

Software Engineer · DevOps Engineer

(914) 334-3273 | chakshutandon@gmail.com | chakshutandon.com | chakshutandon

Work Experience

Sirius XM Radio, Inc.
Manhattan, NY

DevOps Intern — *Jun 2019 - Aug 2019*

- Built full-stack tools to automate enterprise user management and reporting for Atlassian products and internal directories (AD/LDAP).
- Created Rundeck jobs for report generation and user management endpoints to support self-service operations mission.
- Identified and fixed API performance regression due to complex database queries by composing SQLAlchemy ORM models and raw SQL to batch requests. Led to noticeable decrease in page load time.
- Wrote selenium script to automate JIRA project management in Jenkins environment.
- Contributed test code along with production code to keep coverage for shared libraries.
- Decreased environment dependency with Hashicorp Vault to secure secrets and provide consistent APIs across internal tools.
- Led product demos within the DevOps team as well as other teams in the organization while documenting feedback to deliver a better product.

The JCK Foundation, Inc.
Westchester, NY

DevOps Engineer — *Nov 2016 - Sep 2018*

Software Engineer — *Apr 2015 - Nov 2016*

- Increased infrastructure modularity by decoupling from running services while decreasing manual configuration employing Terraform and Ansible. Setup end-to-end pipelines to allow for consistent and auditable deployments.
- Redesigned service architecture to allow for dynamic creation of staging environments for critical services averting nearly all production roll-backs and end-user disruptions.
- Centralized analytics to Elastic (ELK) stack along with cloud logging to provide early visibility into essential KPIs and diagnose issues.
- Broke down organizational silos by training colleagues to interpret data and gave them access to develop new metrics.

Disrupt Tech Labs, LLC.
Piscataway, NJ

Co-founder, Technical Lead — *Jan 2017 - Apr 2018*

- Designed service architecture for micro-services on Kubernetes and deployed using Infrastructure-as-Code (Terraform) and Gitlab CI pipelines. Setup Grafana dashboards for monitoring using Prometheus and cAdvisor.
- Strengthened communication skills by managing two core development teams for 26 weekly sprints.
- Built a single page application (SPA) for pediatric clinical therapy in Vue.js with Vuex Store, Bootstrap, and server-side rendering (SSR).
- Led workshops to audit security protocols and understand compliance regulation (HIPAA) to protect patient data.
- Oversaw administrative goals including incorporation, grant writing, and outreach.

Department of Mathematics, Rutgers University
New Brunswick, NJ

Grader — *Sep 2017 - Current*

- Helping students understand challenging concepts in probability and linear algebra.
- Working with professors and department administration to provide more effective instruction through the use of technology.

Skills

DevOps	GCP, AWS, Docker, Kubernetes, Terraform, Gitlab CI, Consul, Hashicorp Vault, Serverless
Programming	Python, C, Golang, Java, Javascript, Bash
Back-end	Node.js, REST, SQL, RDBMS, GraphQL, MySQL
Front-end	Bootstrap, Vue.js, HTML, CSS, JS, Markdown
Communication	English, Hindi, Basic Spoken Mandarin

Projects

2019 **Page Fault Pre-alloc,** Reduced amortized page fault latency in the Linux kernel by 50% by pre-allocating memory pages.

2019 **RDPv1,** Reliable Data Transport Protocol over python DGRAM sockets.

2018 **Raft,** Distributed consensus algorithm written from scratch.

2018 **GoKV,** Lightning fast in-memory key value store written in Golang and Haskell.

Education

Rutgers University | Honors College Scholar
New Brunswick, NJ

B.Sc. Honors Computer Science

B.A. Statistics

Minor in Mathematics

GPA: 3.88 /4

Sep 2016 - May 2020

- Honors College Scholar and recipient of two merit scholarships pursuing a double major & minor.

Research and Publications

libppkey: In-Process Memory Isolation for Modern Linux Systems
OS, Linux VM, Intel MPK

https://chakshutandon.com/research/libppkey.pdf — *Ongoing*

- Memory protection techniques such as Data Execution Prevention (DEP) and Address Space Layout Randomization (ASLR) are not enough to protect applications from several vulnerabilities. Intel Memory Protection Keys (MPK) show promise but lack sufficient protection for multi-threaded applications. We present a user-facing library, libppkey, along with modifications to a recent version of the Linux kernel to support true memory isolation in process address space. Latency reduction of $\sim$ 14x is observed compared to the traditional mprotect() system call.