

# Dhruv Patel

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2707 Portland Street, Los Angeles, CA 90007

## EDUCATION

### University of Southern California

Los Angeles, CA

Master of Science in Computer Science; GPA: 3.92/4.0

Expected May 2020

**Relevant Coursework:** Analysis of Algorithms, Foundations of Artificial Intelligence, Web Technologies, Information Retrieval & Web Search Engines, Augmented, Virtual & Mixed Reality

### Dharmsinh Desai University

Nadiad, India

Bachelor of Technology in Computer Engineering; GPA: 3.63/4.0

Aug 2014 - May 2018

## TECHNICAL SKILLS

- **Languages:** Python, Go, Java 8, JavaScript, C, C++, Swift, PHP, Bash
- **Systems:** Linux, Weenix, bpf, netconsd
- **Technologies:** Django, Flask, Laravel, Spring MVC, Node.js, Polymer, Angular 7, React, GraphQL, D3.js, REST, Boto3, Redis, RabbitMQ, Elasticsearch, Grafana, Celery, Airflow, Kafka, Storm, MySQL, Postgres SQL, Firebase, LevelDB, Cocoa Pods
- **Cloud & Infra:** AWS (Lambda, Step Functions, S3, IAM, DynamoDB, CloudWatch, API Gateway, SQS, SNS, VPC, EC2, GuardDuty, Kinesis Firehose, EKS, ECS, EMR), GCP (Big Query), Terraform, Jenkins, SaltStack, Vagrant, Docker, Kubernetes, Envoy, **Spinnaker (Contributor)**

## PROFESSIONAL EXPERIENCE

### BlueJeans Network

San Jose, CA

Software Engineer Intern – Cloud Infrastructure

May 2019 - Aug 2019

- **Network Monitoring:** A real-time **on-demand network logging system** with improved cost savings
  - \* Built a system to monitor **VPC Flow logs** on AWS using **Kinesis Firehose** (for batching the log stream data), **S3** (for storing historical data), **Step Functions** (for preprocessing the logs), **Elasticsearch** (for indexing the logs) and **Grafana** (for visualization)
  - \* Engineered a solution to reduce the size of ES Cluster by **50%** to provide massive economics on ES by requesting logs on-demand
- **Alerting Tools:** A set of tools for alerting suspicious behavior on AWS to the DevSecOps team
  - \* Designed and developed an alerting system to notify severe GuardDuty Findings in real-time using Lambda, CloudWatch and SNS
  - \* Implemented an **IAM Policy Checker** to detect highly permissive policy changes by comparing it with previous policy versions using AWS Zelkova (Beta), IAM, Lambda, CloudWatch and SNS
  - \* Alerting the configuration changes in NACLs, Route Tables and Security Groups using Lambda, CloudWatch, SQS and PagerDuty
- **Serverless CI/CD Pipeline:** Automating deployments of Lambda Functions on AWS
  - \* Developed a **deployment pipeline** for deploying Lambda Functions on AWS using **Terraform** for provisioning infrastructure (storing state information on DynamoDB to prevent locking) and **ECS Jenkins** with Auto-healing to update the lambda code from BitBucket using S3
  - \* Designed a new **multi-region deployment architecture** for Lambda Functions which reduced the content duplication in S3 buckets by **85%**

### Information Sciences Institute

Los Angeles, CA

Graduate Research Assistant

Oct 2018 - Apr 2019

- **Knowledge Graphs:** Automating integration of complex geological models to forecast effects of human activities on natural resources by developing REST APIs in Java with **SPARQL** and UI in **Polymer with Apollo Client** (for **GraphQL** queries) and **D3.js** to describe various ontological relations.

### Indian Institute of Technology, Bombay

Mumbai, India

Software Engineer Intern

Dec 2017 - Apr 2018

- **Lexical Simplification:** Built a feature based model using NLU concepts for **simplifying complex sentences** using syllable count, etymology, morphemes and n-Gram. Achieved a baseline kappa score of **0.498** on trial and **0.204** on test sets

## PROJECTS

- **Arancia - Distributed KV Store** 🚀: A cloud based distributed Key-Value Store based on **2PC protocol with consistent hashing**
  - Implemented a **Proxy Server in Go** to serve authenticated requests to KV Store from multiple clients via one ingress and egress port
  - Adopted **data atomicity** for maintaining data consistency and incorporated write-back set assoc cache to **reduce read latency**
  - Scaled out **Celery with RabbitMQ as the message broker** for **scheduling regular snapshots of KV Store**
  - Implemented the REST Client using Flask with Unicorn Server and containerized the application using Vagrant
  - Developed a performance benchmark tool and captured **P99.9 GET to 14ms** and **P99.9 SET to 60ms**
- **Twitter Stream Analysis** 🚀: Real-time data streaming using Twitter4j, Apache Kafka and Apache Storm
  - Using Storm Topology to **generate a list of popular words used in twitter**. Ingested data from a Storm spout and a Kafka spout and processed downstream using Storm Bolts. Developed a real-time word cloud for analysis
- **Recommender System for Movie Ratings:** Built a robust recommendation system using user-item based Collaborative filtering. Using Scala and **Apache Spark** (running on EMR Cluster) to handle 30M ratings of MovieLens dataset and to get the RMSE value of 0.91.
- **P2P File Transfer** 🚀: Designed a **real-time browser-to-browser communication system** for transferring files from one device to multiple devices without uploading files to a remote server using **WebRTC**. (Node.js, Angular 5, Peer.js, SendGrid, Heroku)