Dhruv Patel

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Education

University of Southern California — Los Angeles, CA
Master of Science in Computer Science — *Expected May 2020*
Relevant Coursework: Analysis of Algorithms, Foundations of Artificial Intelligence, Web Technologies, Information Retreival & Web Search Engines, Augmented, Virtual & Mixed Reality

Dharmsinh Desai University — Nadiad, India
Bachelor of Technology in Computer Engineering — *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, 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, Inspector, Kinesis Firehose, EKS, ECS, EMR), GCP (Big Query), Terraform, Jenkins, SaltStack, Vagrant, Docker, Prometheus, PagerDuty, Envoy

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 for querying RDF** and UI in Polymer 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 Gunicorn 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
- **Web Search Engine using Solr**: Created a **web-search engine** which crawled the contents of a news website using **crawler4j**, indexed those pages using **Solr with Pagerank** and performed auto-complete suggestion and snippet generation using a PHP Client
- **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)