

Parin Patel

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OVERVIEW

Senior Site Reliability Engineer at SpaceX , Managing platform for revolutionary Satellite Internet Provider. During my career, I have been involved in multiple medium to large scale projects from designing, leading , developing and managing their life-cycle. Few of existing projects include building infrastructure with Azure / On-Prem large size k8s clusters with multiple host profiles, Multi Region networking, database & observability solutions.

EDUCATION

- **Master in Computer Science (Major: [Computing Systems](#))**
Georgia Tech, Atlanta, GA Aug 2019 - May 2021
- **B.Tech. (Major: Computer Science & Minor: Communication Technology)**
DA-IICT, Gandhianagar, India Aug 2013 - May 2017

TECHNICAL SKILLS

- **Languages:** Python, Bash, C, C++, NodeJS
- **Databases:** Administration, Management and Deployment of Multi Regional NoSQL databases (MongoDB), PostGresql databases (CockroachDB) & Schema-free SQL (Drill & Presto)
- Development of CI/CD pipelines in **NodeJS, Python, Java , C++** with Jenkins, Docker, SonarQube, Spinnaker.
- Building, architecting and managing cloud platform for Starlink Platform using terraform.
- Expertise in managing custom kubernetes cluster in High Availability (HA)-Cluster custom setup including service mesh.
- Managing deployments of HA apps across multiregions.
- Virtual multi-layer file system management using HA alluxio cluster with Multilevel caching solution.
- Monitoring solution with ELK, Cortex + Grafana & Kube Prometheus.
- Creation and Design of AWS based platform for mobile app with RDS , Lambda, EKS, Aurora , API Gateway, Cloudwatch etc.
- CI/CD pipeline: Jenkins, SonarQube, Sentry, Docker registry.
- End to end pipeline setup on AWS using codedeploy , S3 , cloudfront , APIGateway, EC2 , Kubernetes(EKS), Fargate.

INDUSTRIAL EXPERIENCE

- **Sr. Site Reliability Engineer, [Starlink \(SpaceX\)](#)** May, 2020 - Current
Seattle , Washington
 - Managing platform for managing various components (ground stations,satellites,gateways, point of presences etc) of starlink internet platform.
 - Migrated existing platform to Azure Government, with disaster recovery zone and Multi Region afterwards.
 - Designed a infrastructure to run edge packet processing software across the world with on prem K8s with support for Multiple NIC with [GoBGP](#) and SR-IOV. This packet processing platform capable of processing 100Gbps worth of packets per host with HA setup. Project is foundations for removing third party vendors out loop for cost and effectiveness.
 - Lead Team to migrate Satellite Operation platfrom multiple times from Azure to On prem compute due to business needs without any downtimes.
 - Migrated from standalone Prometheus monitoring instance to multi-regional [[Cortex](#)] cluster.
 - Lead security hardening campaign for network software to introduce service mesh and Zero Trust model.
 - Worked with team that supported scaling of platform to serve from couple thousand users to hundreds of thousands of customers.

- Creation of one click hot swappable kubernetes cluster with Auth management, logging, Monitoring and istio using [Tanka](#) and [jsonnet](#) with GOLang service backed with [Rancher RKE](#). Currently working on automatic the deployments and upgrades for the cluster via [argocd](#)
- I also Function as Responsible Engineer (RE) for several mission and life critical services, develop python-based libraries and tooling in-use throughout SpaceX for the provisioning and life-cycle management of compute resources.

• **Lead DevOps Engineer, Aunalytics**

August, 2017 - May, 2020

South Bend, IN

- Managed micro-service written in Node JS communicating with Rancher, NFS and HAProxy.
- Contributed and later owned service for Data Science platform built on Jupyterlab and K8s.
- Migrated and redesigned legacy apps to automated Zero Downtime deployment stack for containerized platform with HA across multiple regions on K8s backed with HA replicated MongoDB with 99.999% up time.
- Manged and integrated Persistent Volume based solution Trident backed with Netapp for Kubernetes cluster.
- Created and Migrated active Hadoop container workload off from Native hardware to Containerized platform.
- Set up Spark/Hadoop backed by Alluxio providing 60 % increase with 40 % reduction in cost.
- Managed Zero downtime deployment pipeline with Jenkins. Pipeline integrates Unit , Functional testing with static scanning for vulnerability using SonarQube
- Storing Artifacts in docker registry (ECR , Harbor , Docker registry).
- Lead team which designed, deployed & managed custom HA Kubernetes cluster with 50s Node with 8000 Pods with 5000 pods/hour frequency.
- Redesigned existing Monitoring & stack with HA Prometheus + Grafana & cluster HA Graylog for log volumes close to 200GB daily.
- Designed Natural Language Processing based model API solution for Call center based client using Flask(Python) , Docker , K8s.
- Automated setup of various host and platform via Ansible.

• **DevOps Engineer, Direct I (media.net)**

August, 2016 - May, 2017

Mumbai, India

- Created logging and Monitoring Pipeline for Nagios and AWS CloudWatch API using Logstash, Redis, Elasticsearch and Kibana (ELK stack) for unresolved abnormalities and problems.
- Manged Elasticsearch cluster on AWS.
- Created content delivery solution using nginx , varnish and EC2.
- Created Alert Management solution on top of nagios to detect false positive alerts which result in 85 % reduction.
- Written Kernel module for Network Sniffing tool for SIEM in C.
- Created Monitoring dashboards showing cost , usage and detailed analysis for different audiences from Infrastructure to management.
- Implemented innovative software for network Packet collection, storage and further real-time analysis using elastic stack, Wireshark, Kafka, Redis and neo4j.

- detailed work experience can be found at [jobs](#) page.

RESEARCH AND PROJECTS

Worked on projects of various topics like Operating Systems, Memory Management, Internet of Things and Computer Networks. Detailed description of the projects can be found [Here](#) .

- **File System:** Created file system that supported encryption(wolfTPM), corruption handling , user permission & Quota restriction.
- **Proxy with Cache support:** Created Proxy with support for cache GETFILE ,HTTP ,FTP and SFTP protocols.
- **New Functions in cycle accurate architectural simulator:** Added new simunation methods like second last used , markov chain based models in single processors, CMPs, PIMs, and thread level speculation ([SESC](#)).
- **Distributed Attendance System:** Developed a system that exploits the inherent parallelism in the problem of taking the attendance by deploying multiple NFC (Near Field Communication) readers across the classroom.
- **Vocals separation from music:** Used REPET (REpeating Pattern Extraction Technique) technique to subtract instrumental from the vocal and then gives you vocals.
- **Performance Bench marking in Super Scaler MIPS Process:** Extensively researched [sesc](#) to calculate additional bench marking like Branch Prediction , Cache misses etc.
- **MapReduce:** My take on MapReduce architecture [code](#).