# **Hritwik Singhal**

Site Reliability Engineer and Linux enthusiast.

- Bangalore, Karnataka, India
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**Site Reliability Engineer** with a passion for Python/C++ and Linux. I am a **dedicated** and self-driven **geek** with a strong zeal for open-source **development** who is constantly looking to build new systems. I would rather spend 4 hours writing a script to **automate** a task that would take me 40 seconds to do every day.

#### **Profiles**

in <u>Hritwik</u>

• Hritwik

#### **Skills**

#### Linux

SSH, Systemd, ZFS, RAID, LVM, ZLOG, Virtualization

#### Networking

TCP/IP, DNS, DHCP, VLAN, VPN, Firewalls, Nginx, Wireshark

#### Hadoop

Hive, NameNode, DataNode, Hue, Zeppelin, Distributed Systems

Nix, Terraform, CloudInit, NixOS

#### Automation and Scripting Tools

Ansible, Bash, Python, Git, Jenkins, Proxmox

#### Orchestration

Kubernetes, Docker, Microservices

## Monitoring

Grafana, Loki, Prometheus, ElasticSearch

## Soft Skills

Communication, Problem-Solving, Collaboration, Flexibility, Critical Thinking, Eager to learn

## **Hobbies**

Homelab

self hosting, degoogle

Reading Astronomy, Psychology, Physics

**Badminton** 

Gaming

## Languages

**Python** 

Bash Java

C/C++

Experience

#### Media.net

Site Reliability Engineer

July 2022 to July 2024 Bangalore, India

Proven on call proficiency in debugging live production issues during 24x7 oncall rotations.

- Ensured rapid resolution, minimizing downtimes and enhancing system resilience.
- Proficiently conducted and authored detailed **RCA** reports.
- Implemented **CI/CD** pipelines on self-managed **Jenkins** slaves.
  - Automated deployment processes of Conda virtual environments from custom configuration files within the Hadoop cluster, resulting in a 30% **reduction** in deployment time through standardized environment setup.
- Led the company-wide deployment of **Zeppelin** and **Hue** for 1000 developers.
  - Optimized deployment speed, reliability and secret management using **Nix** and **SOPS** through Infrastructure as Code (IaC) methodologies, reducing deployment time by 50%.
  - Implemented NGINX optimizations, resulting in a reduction of application load times from ~3s to ~500ms.
- Leveraged **Nix** and **Terraform** to efficiently scale an existing Hadoop cluster on
  - Increased node count from **20 to 70** by revamping monolithic IaC codebase to enhance modularity, inheritance structure, and scalability of individual components, which enabled said scaling with minimal code changes, thus reducing deployment time by **50%**.
- Implemented a streamlined resource pipeline for Hadoop teams, enhancing capacity planning through dynamic data analysis.
  - Integrated automated decision-making systems and analytics dashboards enabling agile response to evolving resource requirements.
  - Optimized cluster settings based on team-specific path size limits, generating granular data for easy reporting and aggregation, thus scaling the cluster by **more than 30%** in capacity.
- Optimized disk read and write latencies from 20ms to sub-millisecond for **HDFS** and **YARN** applications by tuning operational **ZFS** parameters, thus mitigating more than **80%** frequent latency spikes during operational load.

#### Media.net

**January 2022 to July 2022** 

Mumbai, India

Site Reliability Engineer Intern

Conducted in-depth analysis of Java garbage collection times by scrutinizing server GC logs from a Hadoop cluster executing MapReduce applications. Utilized findings to fine-tune GC parameters, optimize heap size, and enhance cluster performance, ensuring efficient operation.

## **Projects**

## NebulaCrawler

- Engineered a Kubernetes-driven web scraping architecture for a bespoke search engine. Pods are employed as autonomous crawlers, seamlessly pushing scraped webpage data to Elasticsearch and URL data to Redis.
- Integrated Prometheus exporter SDK to seamlessly export pertinent metrics, including scraped URLs and failures, ensuring robust monitoring and analysis capabilities.

## DiskDoctor

- Developed a robust solution for comprehensive disk status reporting across a 200-node Proxmox cluster, encompassing 800 disks including SSDs, HDDs, and NVMes.
- Leveraged multithreaded APIs to ensure high throughput in monitoring disk health and alerting on degradation. Integrated SSH access, Proxmox API, and **Cloudera** API for seamless monitoring and management of disk infrastructure.

## TerraNixLab

Managed **Proxmox**-based homelab infrastructure with **Terraform**, integrating **Nix** for Infrastructure as Code (IaC) principles Adding capabilities for provisioning of containers, VMs and CNAME entries in Cloudflare, through said IaC Codebase.

## Education

## LNM Institute of Information Technology, Jaipur

August 2018 to May 2022

**B.Tech in Computer Science** 

# **Extra Curricular Activites**

# PADI Open Water Scuba Diver

Jan 2024

Qualified to a depth of 18m, can dive anywhere in the world and can assemble and use my scuba gear.

## Solo Travelling

2022 - 2023

Started Solo travelling, exploring places and meeting new people. This vastly broadened my perspective and completely transformed my life.

## Trek to Summit of Mt. Kedarkantha

Jan 2021

12,500 ft at -10C

Summit to peak of Mt. Kedarkantha in Uttarakhand on a 6 day trek.