

# Aditya Kumar Singh

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## SUMMARY

Senior Software Engineer with strong experience in C/C++ and Java development, Linux, multi-threading, debugging and performance optimization. Hands-on in Docker, Kubernetes, CI/CD and cloud-native deployments for distributed systems. Experienced in production troubleshooting using perf, gdb, sanitizers and profiling tools.

## EDUCATION

### •Indian Institute of Technology (IIT) Hyderabad

M.Tech in Computer Science Engineering | CGPA: 8.64

2019 - 2022

Hyderabad, India

### •University Institute of Engineering & Technology, CSJMU

B.Tech in Computer Science Engineering | CGPA: 7.89

2014 - 2018

Kanpur, U.P.

## EXPERIENCE

### •Radisys India Limited

Senior Software Engineer - Cloud Engineering

Mar 2023 - Present

Bangalore

- **DU Feature Development:** Designed and developed multiple DU application features including Multi-FH and Multi-MH connections, enhancing network flexibility, scalability, and PM/FM Counters for Network metrics.
- **Kubernetes Orchestration & Golang:** Built a custom **Kubernetes controller in Go** to automate 5G-RAN profile creation, reducing deployment effort by **30%** compared to Helm while enforcing strict **CPU** and **HugePages** allocation.
- **System Performance Tuning:** Performed **Linux system-level optimization** for CU-DU modules (5G RAN) by tuning CPU governors and I/O paths; diagnosed **NUMA bottlenecks** using **pidstat/numastat**, cutting CPU requirement and system power usage by **15%**.
- **Advanced Debugging & Stability:** Performed root-cause analysis of **DU application failures** using **GDB** and **AddressSanitizer (ASan)**, proactively identifying and fixing complex memory corruption issues.
- **CI/CD & Code Quality:** Established a C++ unit testing framework achieving **90%+ code coverage**, effectively blocking regression bugs in the **CI/CD pipeline** before production release.

### •Dremio Software India Private Limited

Software Engineer - Cloud Platform

Aug 2022 - Feb 2023

Hyderabad

- **Billing System Framework:** Designed and developed the core billing infrastructure for Dremio Cloud using **Java** and **MySQL**, ensuring accurate metering for high-volume data usage.
- **Marketplace Integration:** Integrated billing accounts with **AWS Marketplace** via **TACKLE**, enabling seamless automated payment processing.
- **Query Acceleration:** Optimized query performance for BI/SQL clients by implementing **Data Reflections**, reducing data retrieval latency by **30%** for critical analytical workloads.
- **Financial Integrity:** Engineered reconciliation logic to detect inconsistent replicas and automate credit reversals, ensuring financial accuracy across the cloud platform.

### •Indian Institute of Technology (IIT) Hyderabad

Research Assistant - Intel 5GCRAN

Aug 2019 - Jul 2022

Hyderabad

- **Open Source Contribution:** Contributed to the **OpenAirInterface (OAI)** project for 5G-Cloud RAN, optimizing the architecture of L2/L3 RAN functions for improved energy efficiency.
- **Kernel Profiling:** Performed deep-dive energy profiling using **Intel VTune**, **perf**, and **GDB**, identifying and refactoring high-energy consumption paths in the kernel.
- **Testbed Optimization:** Optimized RAN performance on a real-time OAI testbed utilizing **USRP (B210/N300)** SDRs and programmable SIMs.
- **Automation:** Developed **Python** utilities for automated log parsing and massive data processing to visualize energy usage patterns across different O-RAN split options.

## TECHNICAL SKILLS

- **Programming Languages:** C/C++, Golang, Java, MySQL, Python, Bash Scripting
- **DevOps & Tools:** Docker, Kubernetes, Git, Maven, CMake, LaTeX, IntelliJ IDEA
- **Performance & Debugging:** Intel VTune, Linux Perf, GDB, Wireshark, Address Sanitizer, pidstat, numastat
- **Domain & Simulation:** 5G-RAN, O-RAN, OpenAirInterface (OAI), NS-3, Low-Level Systems
- **Testing:** JUnit, Mockito, Google Test (GTest)

## PROJECTS

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### • **Master's Thesis: Cost-Benefit Analysis of O-RAN Deployment Scenarios**

*Aug 2019 - Jul 2022*

*IIT Hyderabad*

- Conducted TCO Analysis (CAPEX & OPEX) for deploying different split options for CU-DU-RU placement in 5G Networks.
- Formulated cost-effective network deployment strategies for telecom operators based on regional population.

## RESEARCH AND PUBLICATIONS

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- **Conference Paper:** U. Pawar, **Aditya Kumar Singh**, et al., "Understanding Energy Consumption of Cloud Radio Access Networks: an Experimental Study," *2020 IEEE 3rd 5G World Forum (5GWF)*, 2020. [[Link](#)]
- **Poster Presentation:** Shah Alam, **Aditya Kumar Singh**, "Design and Implementation of Image Cryptography using RSA Algorithm," *IEEE International Conference on Engineering Science & Advance Research*, 2018.

## CERTIFICATIONS

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- **Architecting with Google Kubernetes Engine: Foundations** - Coursera
- **Data Reflections** - Dremio Software
- **Dremio Fundamentals** - Dremio Software

## MISCELLANEOUS

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- **Competitive Programming**, Active problem solver on LeetCode, HackerRank, and GeeksforGeeks, focusing on Data Structures & Algorithms (DSA) and System Design concepts.
- **Interests**, Cricket, Chess, Fitness Training