

SUMMARY

Software Engineer with strong experience in C/C++ system development, Linux performance optimization, and real-time distributed systems. Hands-on expertise in profiling & optimizing CPU, memory, and I/O paths for high-performance 5G RAN workloads. Skilled in Kubernetes, containerized deployments, diagnostics, and debugging in production-like environments. Seeking to apply kernel-performance, systems design, and low-level engineering experience in platform and large-scale system development roles.

EDUCATION

Degree	Institute	Board / University	CGPA/Percentage	Year
M.Tech CSE	Indian Institute of Technology (IIT), Hyderabad	IIT-Hyderabad	8.64	2019-2022
B.Tech CSE	University Institute of Engineering & Technology	CSJM University, Kanpur, U.P.	7.89	2014-2018

EXPERIENCE

- Radisys India Limited

Senior Software Engineer - Cloud Engineering

Mar 2023 - Present

Bangalore

- **C/C++ Development & Orchestration:** Orchestrated 5G-RAN components using C/C++, Docker, and Kubernetes to ensure seamless deployment and scalability.
 - **System Performance Engineering:** Conducted system-level performance engineering of CU-DU modules on Linux-based Intel servers. Tuned CPU governors, optimized I/O pathways, and utilized `pidstat` and `numastat` to resolve NUMA-related bottlenecks and minimize latency.
 - **Advanced Debugging:** Resolved complex distributed system issues and memory corruptions utilizing `perf`, `gdb`, Address Sanitizer, and Leak Sanitizer, significantly reducing mean-time-to-resolution.
 - **Automation & Orchestration:** Developed Go-based controller to streamline deployment and profile creation, enforcing precise **CPU core** and **memory** requirements for optimized RAN component scaling.
 - **Software Stability:** Established unit testing frameworks to ensure 90%+ code coverage, significantly reducing regression bugs in the CI/CD pipeline.
- 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.
 - **Marketplace Integration:** Integrated billing accounts with AWS Marketplace via TACKLE to enable seamless payment processing.
 - **Query Acceleration:** Optimized query performance for BI and SQL clients by implementing **Data Reflections** and advanced design strategies, significantly reducing data retrieval latency.
 - **Data Consistency & Financial Integrity:** Engineered reconciliation logic to detect and resolve inconsistent replicas, handling automated credit reversals to ensure financial accuracy across the cloud platform.
- Indian Institute of Technology- Hyderabad

Research Assistant - Intel 5GCRAN

Aug 2019 - Jul 2022

Hyderabad

- **Open Source Contribution:** Contributed to the **OpenAirInterface (OAI)** project for 5G-Cloud RAN, focusing on energy efficiency and architectural optimization of L2/L3 RAN functions.
 - **Kernel Profiling & Debugging:** Performed deep-dive energy profiling and system debugging using **Intel V-Tune**, `perf`, and `gdb` to identify and minimize high-energy consumption paths in the kernel.
 - **5G Testbed Optimization:** Analyzed and optimized RAN performance on a real-time OAI testbed utilizing **USRP (B210/N300)** SDRs, COTS servers, and Nexus UEs with programmable SIMs.
 - **Data Analysis Automation:** Developed **Python** utilities for automated log parsing and massive data processing to visualize energy usage patterns across different O-RAN split options.

PROJECTS

- Master’s Thesis : Cost-Benefit analysis of different ORAN deployment scenarios for 5G Networks

Prof. Bheemarjuna Reddy Tamma and Dr. Antony Franklin

Aug 2019 - Jul 2022

- TCO Analysis (CAPEX & OPEX) of deploying different split options for CU-DU-RU placement.
 - Cost-effective Network deployment strategy for telecom operators in different regions based on Population and Traffic.

TECHNICAL SKILLS

- **Programming Languages:** C/C++, Java, Go Language and MySQL
- **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
- **Testing:** JUnit, Mockito, Google Test

RESEARCH AND PUBLICATIONS

- **Conference:**
U. Pawar, **Aditya Kumar Singh**, K. Malde, B. R. Tamma and A. Antony Franklin, "Understanding Energy Consumption of Cloud Radio Access Networks: an Experimental Study," 2020 IEEE 3rd 5G World Forum (5GWF), 2020
Published Version
- **Poster Presentation:**
Shah Alam, **Aditya Kumar Singh** "Design and Implementation of Image Cryptography using RSA Algorithm" IEEE International Conference on Engineering Science & Advance Research Faculty of Engineering Technology, 2018

CERTIFICATIONS

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

MISCELLANEOUS

- **Participation**, Participated in different Programming Competitions on LeetCode, HackerRank, GFG and Olympiad Exam.
- **Interest**, Cricket, Chess, Bodybuilding, and Fitness training