Sandeep Kumar

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PROFILE

A senior software developer with around **4** years of experience. Working as a **C++ Linux application** developer and developing cutting-edge 5G use cases, including traffic steering in near real-time (low latency requirement) and showcasing various near real-time RIC applications in **PlugFest**, **Fyuz**, **TIP**, and **MWC**. **Winner** of the first-ever **TIP Silver badge** for Traffic Steering use case.

SKILLS

- C++, STL, Design patterns , SOLID principles, OOPs, Multithreading , Data structure and algorithms, Linux, Git, Docker, Kubernetes, CMake, Makefile, gdb, valgrind, core-dump analysis, REST, GRPC, ASN1, Socket Programming, Python/ML/DL .

PROFESSIONAL EXPERIENCE

Senior software Developer 08/2021 – present
HCL Technologies (R&D)

- Developed the **REST** support in the C++ app framework in the **5G ORAN** open-source community. This framework significantly enhances the ease and speed of developing applications for the RIC (RAN Intelligent Controller).
- Designed and developed various applications for advanced traffic steering use case that dynamically shifts users from one cell to another, improving Quality of Experience (QoE) and balancing the load across various frequency bands.
- Developed a **scalable multithread** C++ (KPI monitor) **low latency** application that collects metrics in real-time and parses them using **ASN1** decoders.
- Implemented the C++ load balancing algorithm and increased the overall throughput of users by **20%** for the advanced traffic steering use case.
- Wrote both static and dynamic libraries in C++ for the Linux platform.
- Developed a C++ containerised application called Bouncer to benchmark the RAN intelligent controller.
- Decreased end-to-end latency of the complete system by **75%** by implementing **Kafka** streaming service in C++ applications.
- Bug fixes and feature additions in C++ and **Go** applications in the 5G-ORAN-SC/Linux foundation.
- Employed gdb and valgrind extensively as well as core dump analysis to identify run-time errors such as memory leaks and segment faults.

Associate system engineer trainee 10/2016 – 05/2017
TCS Pune, India

- POC on C++ client aaplication and C++ Training

PATENT & OPEN SOURCE CONTRIBUTION

- **PATENT** : - Method and system for benchmarking and testing of radio access network intelligent controllers (application no : -**202411012240**) . The E2-node simulator and the benchmarking application are two separate components of the RIC benchmarking, it poses difficulties in achieving comprehensive latency measurements. .We solved this issue by a integrating benchmarking and **E2** Global procedure and **SCTP** functionality In benchmarking app.
- C++ xApp framework; C++
- Dynamic, Memory allocation (Near **Real-time RIC** platform); Go
- MWC Exhibition (QOS use case) :- Designed and developed **AI/ML** based use case to improve the quality of service of connected end devices in ORAN.

EDUCATION

Master Of Technology (Engineering Analysis and Design) 07/2019 – 07/2021
IIT DELHI New Delhi, India

Bachelor of Technology (Mechanical Engineering) 07/2012 – 07/2016
Dr. A.P.J. Abdul Kalam Technical University aktu.ac.in