DIPEN PATEL

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SUMMARY — Senior C++ Developer with 10+ years of experience in low-latency, high-performance back-end, telecom, fintech and distributed systems. Specialized in C/C++ (STL, C++11/14/17), microservices, embedded development, and optimized software architecture. Proven expertise in telecom protocols (Diameter, GTP, SIP, GSM, VoLTE), real-time embedded platforms, and cloud-native deployments (Docker, AWS, Jenkins CI/CD). Experienced in leading teams, mentoring engineers, and driving system performance improvements through cache-aware algorithms, lock-free queues, and SIMD optimizations.

TECHNICAL COMPETENCIES

- **Languages:** C, C++ (STL, C++11/14/17), Python
- **Databases & Storage:** Oracle, MySQL, Redis, Couchbase
- **Frameworks & Tools:** gRPC, OpenSSL, JWT, tinyxml2, cjson, PySpark, Git, Docker, AWS, Jenkins CI/CD
- **Protocols:** TCP/IP, UDP, GTP, PTP, SyncE, SIP, Diameter, MAP, GSM, VoLTE
- **Performance & Debugging Tools:** Low-latency design, lock-free queues, cache-aware algorithms, SIMD, Google Benchmark, perf, Valgrind, GDB, Address Sanitizer, Wireshark, Google Test (gtest), CUnit

EXPERIENCE

Radisys India Limited   **Sept 2022 – Present**
Lead Engineer - Platform

Project: 5G O-RAN RADIO UNIT

- Architected an ARM-based interface in C bridging **Mplane** and **Low-Phy** hardware, enabling seamless control and monitoring of ORAN Radio Units.
- Developed a **gRPC**-based service for managing and programming RFFE cards, providing a scalable and maintainable interface for Radio Unit operations.
- Implemented **PTP** and **SyncE** to achieve precise time synchronization, ensuring compliance with 5G network standards.
- Automated hardware communication through **I2C/UART**, simplifying integration with peripheral devices.
- Integrated **CUnit** testing into the development workflow, improving test coverage and reducing defects before release.
- Supported bring-up of ORAN hardware on **Intel** and **Xilinx ARM64** boards, enabling **Zero-Touch Provisioning (ZTP)** from POST.
- Created an ARM-based upgrade library (u-boot, kernel, FPGA) with rollback support, increasing system reliability during field upgrades.
- Designed a monitoring module for temperature and power across hardware resources, improving system stability and preventing overheating issues.
- Maintained and optimized **Yocto/Petalinux** build systems, reducing build complexity and streamlining deployment.

Mobileum India Pvt. Ltd.   **March 2021 – August 2022**
Sr Software Engineer

Project: GTP Proxy and SPRS

- Worked on GTP Proxy and SPRS, interacting with **SGW/PGW, SGSN/GGSN, PCRF**, and **DNS** to support roaming capabilities for leading network providers.
- Handled 2G, 3G, and 4G GPRS using the **GTP** GPRS Tunneling Protocol.
- Led a team of 3 freshers, assisting them in understanding the product and resolving bugs.

Project: MISM and SIMLocal

- MISM enables a subscriber to maintain more than one active mobile device with simultaneous call, SMS, and data capabilities, all linked to a single published GSM number.
- Managed key messages such as **UL, CL, GUL, SRISM, ATM, MT-FMS**, and **Ready for SM** within the MISM system.

- Implemented the "Store and Forward SMS" feature, enhancing message delivery reliability.
- Developed a broadcast feature to facilitate widespread message dissemination.
- Added support for VoLTE SMS using ATM and SRISM protocols, expanding SMS capabilities over LTE networks.

Dev Information Technology   **April 2019 to March 2021**
Sr Software Engineer

Project: Infosys Finacle

- Developed and optimized high-throughput payment processing for SWIFT, IMPS, and NEFT flows, increasing TPS from 4 to 98.
- Implemented **memory-efficient data structures, in-memory caching, and multithreaded processing** to reduce latency.
- Applied low-latency optimization techniques: **lock-free queues, cache-aware algorithms, SIMD intrinsics, loop unrolling, and compile-time evaluation**.
- Conducted performance benchmarking and profiling to identify bottlenecks and maximize throughput.

Oracle India   **April 2018 to March 2019**
Member of Technical Staff

Project: Oracle BRM

- Developed BRM Opcodes using **C++** for charging, billing, and revenue management in subscription-based services.
- Collaborated in an **Agile/SCRUM** environment to deliver and maintain high-performance billing and rating modules for large-scale deployments.

Huawei India Pvt. Ltd.   **Jan 2016 to March 2018**
Associate Software Engineer

Project: Convergent Billing System(CBS)

- Developed and customized core modules of the Convergent Billing System in **C/C++**, focusing on high-performance transaction processing and protocol handling.
- Implemented authentication, authorization, and accounting (AAA) features over TCP/IP, and extended the system to support billing and charging workflows.
- Enhanced support for Voice, SMS, and data services, including integration of flexible billing rules using a custom rule engine.

EDUCATION

Lovely Professional University   **2011-2015**
Bachelor of Technology in Electronic and Communications

PUBLICATION

- Patel D, Kumar V, Kumar A, "Simulation of Drum kit synthesizer". In proceeding of Advanced Computing and Communication Systems (ICACCS), 2016 3rd International Conference.