DIPEN PATEL

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SUMMARY — Lead Engineer with 10+ years in low-latency, high-performance back-end and distributed systems, specializing in scalable microservices and optimized software architecture.

TECHNICAL COMPETENCIES

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

RECENT EXPERIENCE

RadiSys Ind Pvt Ltd   **Since Sept 2022**
Lead Engineer - Platform

Project: 5G O-RAN RADIO UNIT

- Designed and implemented an ARM-based interface application bridging **Mplane** and **Low-Phy** hardware, facilitating hardware control for ORAN Distributed Units and monitoring ORAN Radio Units.
- Developed application using **gRPC** to managed and program the RFFE card in Radio-Unit .
- Implemented and validated **Precision Time Protocol (PTP)** and **Synchronous Ethernet (SyncE)** for accurate, high-speed time synchronization.
- Utilized **I2C/UART** for reading and writing data in embedded systems, enabling efficient communication with peripheral devices.
- Integrated **CUnit framework**, reducing testing time by 70% and enhancing code reliability.
- Provided bring-up support for ORAN-based Radio Unit hardware on **Intel** and **Xilinx** ARM64 boards, enabling **ZTP** zero-touch provisioning from POST.
- Created an ARM-based library for application and OS (u-boot, kernel, FPGA) upgrades, incorporating a rollback feature to handle upgrade failures.
- Implemented an application to monitor temperature and power across all hardware resources, ensuring optimal performance and safety.
- Developed and maintained **Yocto/Petalinux** build systems, improving build efficiency and streamlining deployment processes.

Mobileum Ind 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 Ind Pvt Ltd   **April 2018 to March 2019**
Member of Technical Staff

Project: Oracle BRM

- Developed Oracle BRM modules for charging, billing, and revenue management of subscription-based services.
- Implemented BRM **Opcodes**.
- Participated in the Agile (SCRUM) SDLC to develop and maintain billing and rating modules

Huawei Ind Pvt Ltd   **Jan 2016 to March 2018**
Associate Software Enginer

Project: Convergent Billing System(CBS)

- Customized the Convergent Billing System (CBS) for GSM, implementing AAA and credit control using Diameter (DCC) over TCP.
- Implemented Voice, SMS, and GPRS AAA services and customized Charging Rule Language (CRL) for flexible billing.

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.