**Sanjeev Gupta, Principle SW Engineer**

[**Sanjeevmit98@gmail.com**](mailto:Sanjeevmit98@gmail.com)**; +1-240-645-5320**

**Summary of Qualifications (Knowledge & Skill Areas)**

 11 Years of Embedded Software & System design, development in wireless domain

 Adept at overseeing all phases of software development lifecycle

 Outstanding technical skills, eager and able to quickly learn new concepts and technologies

 Exceptional experience working in fast-paced, deadline-oriented environments

 Highly motivated, committed and problem solver

 **Speciality:**

 Strong domain expertise in **Telecom industry**

 VoLTE Key Achievement Award at Broadcom Corporation

 Team Award” from Lucent RNC-UMTS Business Unit

 “Individual Divisional Award” for excellent contribution at C-DoT from SGSN Business Unit

**Tools & Technology Expertise**

|  |  |
| --- | --- |
| PROGRAMMING | C, C++, Java |
| TECHNOLOGY | LTE, UMTS, GPRS, Wi-Max, WLAN, 3GPP2 1x/EVDO, IMS |
| WIRELESS PROTOCOLS | VoLTE (SIP, RTP, RTCP), SRVCC,R-SRVCC, 3GPP (Access Stratum (RLC, MAC, PDCP) , Iu-PS (RANAP), S1-AP, GTP, GPRS Rel99 SM, LLC, BSSGP), GMR-3G (RLC, MAC, RRC), Compression Protocols (ROHC, IPHC) |
| OTHER PROTOCOLS | TCP/UDP, IPv6, SIGTRAN, PPP, GTP’, H.248, Q931, IUA,  SNMP, DNS, IAPP, CDMA RP i/f, GRE |
| OPERATING SYSTEM | ThreadX, QNX, Linux, Solaris, VxWorks |
| Mobile Middleware SW | Android RIL Telephony, Qualcomm QMI, QMUX Layers |
| MOBILE PLATFORM | Android, Blackberry10 |
| MOBILE CHIPSET | Qcom MDM9200,9600, MSM8660,8960, BRCM 21892 |
| DEVICE DRIVERS | TCP/IP Network Driver, SDIO & USB EHCI Host Interface |
| TOOLS & UTILITIES | Qualcomm Modem Tools [QXDM, QPST], ClearCase, Wind  River Workbench, Purify, Pure Coverage, Memscope |

|  |  |
| --- | --- |
| TEST SETUP | R&S CMW500, LBS, Anritsu, VoLTE Setup [ATT, Verizon, Conformance, Ericsson IoT] , K1297 |
| DATABASE | O2, Oracle |

**Project Experience**

|  |  |  |
| --- | --- | --- |
| **Project name: Voice Over LTE Solution** | | **Duration: Current** |
| Role | **Principal Engineer, Modem Platform** | |
| Client | Broadcom Corporation, Sunnyvale | |
| Abstract | **Design, Architect & optimization of VoLTE solution** | |
| Responsibilities |  **Define, Integrate & debug Modem and Android RIL interfaces to**  **IMS Core Stack for Normal Voice, Emergency, SRVCC, SMS**   Design & Development of **Multi-Mode Connection Framework** modules in Modem and AP [Android RIL] for PDN Management, Access Domain Selection, network Interface Configuration, RAT Re- selection, **Wi-Fi** offload   **VoLTE Call Setup Performance Analysis & Debugging**   VoLTEAudio Performance & **stability analysis** including system jitter, packet loss/impairment, Radio Aspects Analysis [**SPS scheduling**, **ROHC, DRX**], Kernel Audio & Network Driver debugging   Design, development, Integration of Emergency Service [Access Domain Selection, Silent Redialing, RAT Preserve & Reselection, Optimization of Emergency **Attach Procedures**]   Adaptation of Media Manager in **Modem** [bearer **filter in Modem**, **DSP**  **interaction for Audio path**] for optimized power & system jitter   Debugging & Triage for many of Volte [Radio, SIP Signaling & Audio]  issues during Carrier, System, IOT Testing   Conformance, Integration testing for **VoLTE Test Coverage**   Prototype non-trusted **3GPP Access** [**Wi-Fi Interworking**]   Performance Analysis & Profiling for Modem IPCs | |

**2 |** P a g e

|  |  |  |
| --- | --- | --- |
| **Project name: WiMax & 3GPP2 modem solution into Blackberry device** | | **Duration: Oct 2010 to April 2012** |
| Role | **Wireless Protocol Engineer** | |
| Client | Research In Motion, Irving Texas | |
| Abstract | Design, Development, Integration of Qcom MSM 8660,8960, MDM 9200, 9600  Tri/Dual Mode 3GPP LTE, HSPA+ & 3GPP2 modem solution | |
| Responsibilities |  Design, development of USB EHCI, ECM based Network Driver comprising of data channels for TCP/IP traffic and Control channels for **Radio Telephony**   Design & Development of **Virtual Network Interface for dual modem**  Broadcom WiMax & Qcom CDMA **for IP Continuity**   **LTE Modem** bring up with respect to Radio & Data control path   Design & development of **Radio Telephony Software on Application processor** to manage the Radio & Data connectivity over Qcom QMI, QMUX   Debugged complex issues related to **LTE Radio** & Data connectivity &  resolved them ahead of Qcom provided solution which helped to reduce the product development times by number of weeks   Optimized Modem IPCs [QMUX, QMI], Data Services dsapi, ds profile, RMNET modules for multi PDN, Dual IP, throughput & performance   Implemented utility in driver for power management at USB Interface during data inactivity | |

**3 |** P a g e

|  |  |  |
| --- | --- | --- |
| **Project name: Network Monitoring Agent Software**  **Application for LTE Core Network** | | **Duration: Aug 2010 to Oct 2010** |
| Role | **Senior Mobile Software Engineer** | |
| Client | Netscout Systems, San Jose CA. | |
| Abstract | Design, Development, Integration of Network Monitoring Agent Software  Application for **LTE Core Network** | |
| Responsibilities |  Analyze Requirement & Study **protocol specification for LTE S1AP**,  **S1MME protocols**   Design & Development of Software application to generate the KPIs for  S1AP protocol.   Integration of software application with **Network monitoring agent** | |

|  |  |  |
| --- | --- | --- |
| **Project name: 3GPP Iu-PS Control/User Plane software** | | **Duration: Jun 2007 to Aug 2010** |
| Role | **Principal Engineer** | |
| Client | Hughes Systique Corporation (Maryland, USA & Gurgaon, India) | |
| Responsibilities |  Design, Development, Integration of **3GPP Iu-PS Control/User** Plane software for GlobalStar at Hughes Network System   Development of Convergence layer to provision User Plane   Development of Control Plane software for **Iu-PS Control procedures**   Integration and Testing of Iu-PS Control/user Plane software with other modules in **RAN**   Participated in Design and Code reviews   Design, development of **Mobile Data Offload Solution(MDO)** for  Stoke Pvt. Ltd   Evolved the Software architecture for MDO product   Lead team for full software development cycle   Technical Proposal for **System Learning Entity** in MDO which learns the ongoing and new signaling context i.e. **SCTP, M3UA** and **SCCP** and provision the same at MDO   Design, development of **Telematics Control Unit (TCU)** at Hughes  Network System   Lead the design & development for Call Processing modules   Lead the development for Data services modules i.e. **Remote door**  **Unlock**, **Vehicle tracking**, **Software Upgrade**/**Download**   Contribute to Project planning, design and code reviews   Guide team members with the technical knowledge   Responsible for **Integration of Application Processor** with other  Modules in TCU   Design, Development and Integration of **UT Access Stack for**  **Hughes Network System** | |

**4 |** P a g e

 Contribution to **GMR-3G Specifications**

 Contribution towards the Software Architecture evolution of **UT Access Protocol Stack**

 Lead the **RLC/MAC** team for full software development cycle of

RLC/MAC

 Evolution of RLC/MAC Software Architecture which outlines different sub-modules, functional

 entities and interfaces among them

 Design, development, Unit and Integration testing of RLC/MAC features and functionalities: SAR/ARQ, RRC Control interface, De- multiplexing of **PDUs, TBF management, CSN Encoding/Decoding, Access and Ciphering Procedure**

 Organizing and participation in **RLC/MAC Design**, Code reviews and Release Planning

 Lead the Integration of RLC/MAC with other Access Stack Protocol

layers

 Contribution to System Integration Testing of UT with **S-BSS**

|  |  |  |
| --- | --- | --- |
| **Project name: 3G Consulting** | | **Duration: Jan 2006 to June 2007** |
| Role | **Senior Engineer** | |
| Client | Continuous Computing India Pvt | |
| Responsibilities |  Design and development of Trillium Stack for 3GPP Rel7 PDCP  protocol   Lead the team for complete Software life cycle   Evolution of Software Architecture including the High, Low level design for **PDCP protocol**   Interact and co-ordinate with RNC teams for Interface definition with other access protocol layers RLC, RRC   Design and development of **ROHC compression protocol**   Guide the team members with technical knowledge   Co-ordinate for Project Planning and Management   Enhancement of **Trillium 3GPP RLC/MAC Protocol Stack** for  Release 5   Designed, developed and tested the 3GPP Release 5 changes related to HS-DSCH functionality into **RLC and MAC layer**   Development of NodeB solution for Radio Frame Network at  Bangalore, India   Integrated **Trilliun 3GPP HSDPA Protocol layer** with other  NodeB components   Developed and tested NodeB application to provision Data path across FP and **HSDPA protocol**   Development of **Multi-Service Access Node**, **Access Gateway**  **(MSAN)** at Fujitsu Telecom, UK   Design and Development of **new features for MSAN** | |

**5 |** P a g e

 Onsite Maintenance support for existing features and solution

|  |  |  |
| --- | --- | --- |
| **Project name: User and Management Plane features for Lucent 3GPP UMTS-RNC** | | **Duration: July 2004 to Jan 2006** |
| Role | **Senior Engineer** | |
| Client | Hughes Software System, Bangalore, India | |
| Abstract | Design and Development of User and Management Plane features for Lucent  3GPP UMTS-RNC. | |
| Responsibilities |  Design and developed procedures to provision the Signaling and  Traffic bearer User Plane context to higher layers for **SRNS relocation procedure**   Implemented the **Network QoS feature** in terms of differentiation and preservation of resources at RLC and MAC layer respectively for different type of RABs   Implemented **RNC Performance Counters** related to traffic shaping at  RLC/MAC   Contributed towards maintenance support for existing features | |

|  |  |  |
| --- | --- | --- |
| **Project name: GPRS Core Network** | | **Duration: Aug 2002 to July 2004** |
| Role | **Research Engineer** | |
| Client | Centre for Development of Telematics, Delhi, India | |
| Abstract | Design and Development of **GPRS Core Network** Supporting nodes  **GSNs (SGSN, GGSN, Merged GSNs**). | |
| Responsibilities |  Contributed towards GSNs Product Requirement Specifications   Contributed towards **Software Architecture evolution for GSNs**, which outlines different subsystems, features, entities and interfaces among them   Design **BSSGP**, **SM protocol layers**, including features i.e. BSSGP  Flow Control, Session   Management, Data Unit Transfer, **QoS Control** and **Gb interface initialization**/**Management**   Design and developed BSSGP protocol Layer, network interfaces i.e. network writer/reader for the **MGSN Prototype**   Unit Tested BSSGP and integrated Gb interface stack for MGSN  prototype   Design administration framework for GSNs, involving Node/Network management System   Design and developed “**Trouble Management system**” a web, Java | |

**6 |** P a g e

based tool for reporting and tracking problems arising from **C-DOT’s**

**ATM switch network**

**Professional Experience**

|  |  |
| --- | --- |
| Broadcom Corporation | NA |
| Research In Motion, Irving Texas | Oct 2010 to April, 2012 |
| Netscout Systems, San Jose CA | Aug 2010 to Oct 2010 |
| Hughes Systique Corporation (USA & India) | June 2007 to Aug 2010 |
| Continuous Computing India Pvt | Jan 2006 to June 2007 |
| Hughes Software System | July 2004 - Jan 2006 |
| Centre for Development of Telematics, Delhi, India | June 2007 - July 2004 |

**Education**

 **MS in Software Systems**, Birla Institute of Technology & Science, Pilani, India June,

2002

 **Master of Information Technology**, Guru Jambheshwar University, Haryana, India

Nov, 2000

 **Bachelor of Computer Science**, Kurukshetra University, Haryana, India June 1998

**Training & Certification**

 Certification in “**Linux System Programming**”, Birla Institute of Technology &

Science, Pilani, India

 Attended Professional Training programs on **LTE BootCamp** (**Interworking with**

**EHRPD, UMTS), 1x**

 **EVDO, IPv6 for LTE, HSPA+, IMS, QNX**

**7 |** P a g e