

Experience Summary:

11 years of experience in Software Design and Development for different Linux based telecom, networking and embedded products, End to End Cyber Security solutions for different Automotive OEMs covering Linux/Android/RTOS (Integrity, qnx) Security from requirement gathering to EOL (End of Line).

Experience Highlights:

- Experience in software development using C language.
- Good understanding of data structure and algorithm.
- Understanding of Object-oriented analysis and design (OOAD).
- Hands-on experience in multitasking, scheduling, Linux based Inter process communications and Synchronization techniques.
- Experience in developing the software in multi-threaded and multi-process environment.
- Hands-on with openssl (keys/certificates/PKI).
- Development of signing infrastructure using Utimaco HSM, integration of NXP High Assurance Boot (HAB) into Visteon Products using various HSM's.
- Experience with secure boot for different processors (SM8155(QUALCOMM), SM6155(QUALCOMM), TEGRA(NVIDIA), IMX6(NXP)).
- Experience with secure storage using ARM Trust Zone Technology for Qualcomm sm8155/6155.
- TLS/SSL Analysis, Designing and implementation of Alert 44, IP failover and other aspect of certificates/CRL download from server on the target.
- Understanding of JCA (Java Cryptography Architecture) and JSSE (Java Secure Socket Extension) Architecture to enable TLS/SSL communication by providing a custom KeyStore Provider along with all the supporting classes.
- Experience in binder IPC, to enable communication between custom keyStore and corresponding demon service.
- Experience in IDC (Inter Domain communication).
- Good understanding of different Processors and Microcontroller.
- Experience in performing unit testing, integration testing and creating test plans as per the standard.
- Experience working in agile mode, experience managing team as a scrum master.

Employment History:

- Working as a Technical Architect at Harman Connected Services from **22 December 2020 till date**.
- Worked as Technical Lead (Cyber Security) with **Visteon from 4 June 2018 to 21 December 2020**.
- Worked as a Software Developer in **“GE Transportation” from 28 December 2015 to 1 June 2018**.
- Worked as a Software Engineer at **“L&T TS” from 17 February 2014 to 24 December 2015**.
- Worked as a Project Engineer at **“Wipro Technologies” Bangalore from 25 October 2010 to 14 February 2014**.

Expertise:

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|---------------------------------|--|
| • Controllers/Processor | Renesas M32C/8A and M32C, SM8155, SM6155, IMX6 |
| • Operating Systems | Linux, Windows, MTEX(RTOS), Micrium RTOS ,QNX |
| • Languages | C, C++ |
| • Protocols | TCP/IP, SNMP |
| • Configuration Management Tool | GIT, clear case, clear quest, JIRA, perforce |
| • Emulator | Renesas PC7501, E8A (JTAG Debugger) |

Projects and Responsibilities:

Cyber-Security Technical Architect (Harman)

December 2020– till date

Description –

End to End security analysis and implementation for different infotainment unit using different Qualcomm and other ARM based processor.

- Design and development using Franca Common API for Security manager and SeurityBe.
- TLS/SSL Analysis, Designing and implementation of Alert 44, IP failover and other aspect of certificates/CRL download from server on the target.
- Understanding of JCA (Java Cryptography Architecture) and JSSE (Java Secure Socket Extension) Architecture to enable TLS/SSL communication by providing a custom KeyStore Provider along with all the supporting classes.
- Implementation of binder IPC, to enable communication between custom keyStore and corresponding demon service.
- Enabling IDC communication between Android and Integrity.
- Implementation of Secure boot, secure storage (using arm trust zone).

Cyber-Security Senior Design Engineer (Visteon)

June2018– December2020

Description –

End to End security analysis and implementation for different OEM(BMW, GAK, MAHINDRA, FORD), that involves Secure boot, IP tables, Se-Linux, Arm trust zone and secure communication for different processor (Qualcomm 8155, NVIDIA, NXP imx6/8 and others).

- Development of signing infrastructure using Utimaco HSM, integration of NXP High Assurance Boot (HAB) into Visteon Products using various HSM's.
- Secure Boot for Qualcomm sm8155, sm8166 and Tegra for NVIDIA.
- Providing secure storage, FDE, FBE using ARM Trust Zone Technology for Qualcomm sm8155/6155.

Positive train control/Trip Optimizer – Software Engineer (GE) December 2015 – June 2018

Description –

GE's Trip Optimizer, a patented (US20100023190 A1) product of Ecomagination, automatically controls a locomotive's throttle to keep trains on schedule while minimizing fuel usage, emissions, and maintenance cost. Trip Optimizer creates an optimal trip profile that can control Tractive and braking efforts by automatically learning a train's characteristics like train length, weight, grade, track conditions, weather, and locomotive performance.

- Language using C++ on QNX (RTOS) platform.
- Design and developed on-board EHI system for the webtec display.
- Complete ownership of EHI and Tools sub-systems in all the phases of Software Development Life Cycle (SDLC).
- Led CMU software efforts for BNSF, Sm, Roy Hill, Aurizon projects and delivered on time as per spec.

Sedona - Wireless Data Back haul - Software Engineer (Lnt)

April 2015–December 2015

Description -

Sedona SDIDU is basically a Linux based wireless data communication product which functions along with an ODU to transfer IO channel (LIU) contents at different speeds/media over the wireless link to the link partner ODU/IDU. The system supports a variety of I/O interfaces including T1/E1, STM-1/OC-3, DS-3/E3/STS-1, and Ethernet.

- Language used C/C++ on Linux platform.
- Analyze different mib2c code generation approaches available.

BNC Wi-Fi Card Printers: - Software Engineer (Lnt)

August 2014–April 2015

Description -

The scope of the project is to finalize a third party wi-fi module to support existing Label Printers and interface the finalized module with the existing printer code.

- Language using C++ on Ucos (Micrium Rtos)
- Involved in evaluating different wi-fi module based on different wi-fi performance factors including data throughput and different wi-fi securities.

Auth key Generation for Feature Authorization -Software Engineer (Lnt)

March 2014–August 2014

Description -

The scope of the project is to generate and decode authorization key for feature authorization mechanism for client's IDUs. The feature authorization content's integrity shall be protected using encryption that may be enabled or disabled. The feature authorization content storage size shall be optimized & compressed to fit in small memory (less than 20K) while providing support to authorize up to 4000 features.

- Language used C on Linux platform.
- Design and software development.
- Implemented Compression using LZMA library.
- Code Reviews & Code optimizations for improved performance of system.

Avaya CAD 94xx and 14xx Digital Phones (Wipro)

February 2011 to March 2014

Description -

94xx is a new Digital phone series from Avaya. These phones support Integral, CM and IPO switch types. Responsibilities includes firmware development includes boot loader, device drivers, Factory firmware development and application firmware to support CM and Integral switches.

- Language used C/C++ using M-Tex(RTOS).
 - Bootloader, factory software, SPI/UART protocol analysis.
 - Requirements gathering, High Level & Detailed Level Design implementation, Software Development, Unit testing & Integration testing to enrich system capabilities & features.
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Education:

Completed B. E (Computer science) (2006-2010) from RGPV, Bhopal, M.P.