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| **Summary** | | |
| * Principal Embedded Software Engineer with **15+** years of experience in the field of **Platform Software**, **BSP (Board Support Package)** development (**Linux and uBoot**) and firmware for **consumer, data center, and avionics industry** with **international work exposure** in the **US, Taiwan, China, and India.** * Highly experienced with **Platform software**, **Linux Board Support Package Development**, **Linux Device Driver Development,** and **Board Bring-up for ARM, PowerPC based** SoCs from **AMD,** **Freescale, Texas Instrument, and Marvell.** * **Invented and patented *US-11641407-B2* with Pensando Systems (later acquired by AMD) about NC-SI extension solution with enhanced BMC integration for configurability and debuggability on Ethernet cards.** [**https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/11641407**](https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/11641407) * Strong knowledge of Linux device drivers, various Linux subsystems (**PCIe, DMA, SPI, Ethernet, VirtIO, NC-SI, BMC integration, SerDes, I2C, MDIO, UART,** etc.) as well as **Linux** **internals** for **debugging** and **optimizing** **Linux kernel**. * **Strong experience in leading team of 10+ engineers** at Offshore design center. * Experience working with **pre-silicon validation** platforms. * Good experience in the Design and development of **Embedded Software in C/C++**. * Hands-on Experience in **Diagnostics** and **Power On Self Test (POST)** development in **uBoot and Linux.** * Experience with **DO-178B Class A** compliance software development life cycle for the avionics industry. * **Excellent debugging skills and solution-oriented approach** * **Experience with Customer Support (HPE, DELL, Oracle, Juniper, H3C, Huawei, Microsoft, Arista, Brocade, Dell, Ciena, etc.) globally.** * **Traveled multiple times to China, Taiwan, and India for customer board bring-up and support.** * **Got multiple recognitions from VP and CEOs of companies for Problem-Solving Skills and Winning customers’ confidence by resolving their integration issues.** * Worked with customers on-site even during extreme pressure conditions and **derived the solution to match customers’ expectations**.   **Employment** | | |
| **Principal Software Engineer** | **Advanced Micro Devices Inc.** | May 2018 – present |
| ***Pensando/AMD DPU ASIC platform software and driver development, Diagnostics suite, and Bring up:***   * **Development** and **Bring-up** of platform software for **3 generations of Networking ASICs with 100G and 200G Networking** capabilities. * Implemented the VirtIO control path for for Pensando DPU. * Experience working with Zephyr RTOS for next-gen Pensando ASIC * End-to-end integration with Uboot, Linux kernel, Buildroot and Pensando SDK for full fledge Pensando software stack * Design and implemented the firmware upgrade solution for Pensando DPU and enhanced it with each generation of ASICs. * Archotected and Developed from scratch the **NC-SI protocol over RMII and SMBus** interface for integrating Pensando/AMD DPU with different BMC vendors. * Architecting the solution and **helping junior engineers** during design and implementation * Completely owned the bring-up activity and led 2 more engineers(US and India) for Pensando Giglio ASIC (3rd generation of Pensando DPU) * Implemented the **board diagnostics** suite, Power On Self Test (**POST**). * Designed and Developed **the recovery firmware** for Pensando ASICs. * Developed the build infrastructure to build and install ASIC agnostics software. * **Design and Development of the NC-SI protocol over RMII and SMBus interface for integrating Pensando/ADM DPU with different BMC vendors**. * Architected and developed the **VMWare Monterey solutions** with Pensando/AMD DPU and integrated with HPE and Dell BMC * Integrated Pensando/AMD DPU with Xilinx **FPGA** for interfacing with external hardware e.g. 1G MAC, I2C controllers for transceivers etc. * Design and Develop the **test cases and test suites** for validating networking features implemented on Pensando/AMD DPU. * Implemented the live **software upgrade feature** for Pensando/AMD DPU firmware in the field. * Architecting the **integration of Pensando platform software with the customer’s engineering team** for Pensando/AMD DPU. | | |
| **Senior Lead Embedded Software Engineer** | **Cavium Inc.** | Nov 2014 – May 2018 |
| ***Cavium/XPliant Switch ASIC platform driver development, Diagnostics suite, and Bring up:***   * **Development** and **Bring up** of **3 ASIC with 32x100G Ethernet** MAC driver, **Avago 25G NRZ SerDes** interface driver, **PCIe-based DMA** device driver, and **PCIe endpoint device driver** for XPliant family ASIC. * **Led the team of 10+ engineers** at offshore design center (contractors) * Implemented the **board diagnostics** suite and **ASIC Manufacturing Diagnostics utilities**. * **Working with remote ASIC Manufacturing team** to **automate** the **manufacturing diagnostics**. * Implemented the Linux PCIe endpoint driver for 100 Gbps Switch ASIC for **Intel, PowerPC, ARM,** and almost all well-known architecture **across different flavors of Linux (2.6.X to 3.10.X)** * Debugged and solved extremely complex PCIe issues using a PCIe analyzer * **Switch Board brings up tools like PCIe Analyzer, Oscilloscope, Ixia, Spirent, etc.** * **Integrating 3rd party software** with XPliant SDK. * Implementation of **QoS(Quality Of Service) network features** in XPliant SDK. * Enhancement of **ACL (Access Control List) in XPliant programmable ASIC** for a customer. | | |
| **Lead Software Engineer** | Volansys Technologies | Apr 2012 – Nov 2014 |
| ***XPliant SDK development:***   * **Leading a team of 12 engineers** to work on customer (XPliant/Cavium) 100 Gbps Switch ASIC SDK developments, **auto-code generation** for HW table access from Excel spreadsheet, and network feature-testing effort. * **Implemented the regression test infrastructure** to validate the test cases on XPliant SDK.   ***Strix Wireless Systems (802.11n based Mesh Network Wireless Router on PowerPC P2020 SoC)***   * **Leading a team of 6 engineers** to work on two products of Wireless **AP and CPE for a board support package** with **uClibc** and Diagnostics suite effort. * The board bring up and DIagnostics of WiFi **802.11 b/g/n Wireless CPE** (Customer Premises Equipment) * The board bring up and DIagnostics of WiFi **802.11 a/b/g/n Wireless AP** (Access Point) * Integrating the QUALCOMM Atheros 802.11 WiFi stack(MadWiFi) with BSP(Board Support Package) for AR9390 * Sanity and Field testing of WiFi AP and CPE in the Lab as well as supporting customers in the Field for any issues. * Porting of U-boot and Linux BSP as per board changes and customer requirements * **Optimized the Linux boot time** to achieve 5 seconds device startup time | | |
| **Software Engineer II** | **eInfochips Ltd** | **Jan 2005 – Apr 2012** |
| ***Linux BSP development:***   * Porting of Uboot and Linux from **TI Davinci SoC to DM350 SoC**. * Implemented the **SPI** (Serial Peripheral Interface) **Host controller driver** for TI’s DaVinci family of SoC in Linux 2.6. * Porting of Linux BSP for **Marvell’s multi-core ARM SoC**.   ***PowerPC P2020-based Dome Camera:***   * Implemented the driver for the DMA engine to consume video frames from the camera, and encode it through DSP display on an HD monitor with **Freescale P2020**. * Implementing driver for I2C-based temperature sensor, RTC, SPI EEPROM, Camera Lens * Implementing the product’s **manufacturing diagnostics** and **Power On Self Test (POST)**.   ***Multi-channel Video Streaming Server:***   * Implemented multi-threaded application on Texas Instrument **TI DM6467**(running at 1GHz speed) where three threads responsible for capturing Video(640x480 resolution) over 16 channels Video Splitter, **encode video through DSP** in **H.264** format and **RTSP stream** the encoded video over the network. * Seamless integration between these threads to get a 30 FPS (Frames Per Seconds) streaming rate for all 16 different channel videos.   ***Avionics:***   * Ported the **USB 2.0 Host Control driver** from **BSD Linux to LynxOS** for **Rockwell Collins with DO-178B** Compliance Software life cycle. | | |
| **Education** | | |
| **Gujarat, India** | **North Gujarat University** | **July 2001 – May 2005** |
| * B.E. in Electronics and Communications with distinction * N.M. Patel High School | | |
| **Achievements and Awards** | | |
| * **Invented and patented** ([***US-11641407-B2***](https://ppubs.uspto.gov/dirsearch-public/print/downloadPdf/11641407)) the NC-SI enhancement for better configurability and debuggability with BMC * Got visibility with Cavium VP and CEO due to **extreme proficiency in debugging and fixing the issues in Cavium lab and at customer locations across the globe**. * **Recognized by multiple Cavium customers** for best Problem-Solving Techniques and Approaches * One Point Contact for Bringing up Cavium XPliant-based ASIC across all ODMs and Customers for MAC, SerDes, PCIe, and DMA (China, Taiwan, India, and USA) | | |
| **Languages and Technologies** | | |
| * C, C++, Python, Golang, Shell script, **uClibc**, Glibc * **Busybox**, **Buildroot**, **Gdb**, Gcov, **Valgrind**, Gprof, Oprofile, Flash File Systems, RAM FileSystem, **JTAG Debugger, Freescale CodeWarrior,** **Visual Studio Code**; **GreenHills Multi**, **TI Code Composer Studio, Lauterbatch** * **Architectures:** X86, ARM, PowerPC, MIPS | | |