**Raja Chandra Rohith Raparthi**

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**PROFESSIONAL SUMMARY**

* **6** plus years of substantial experience in Embedded product development and in firmware Engineering.
* Experience on **Design**, **validation, debugging, simulation models.**
* Expertise in modelling tools like **MATLAB/Simulink**, **State flow**.
* Good knowledge on writing firmware scripting in **Embedded C.**
* Good Knowledge on Vector Tools **CANOE, CANalyzer**.
* Experience on **J1939**,**CAN** and **UDS protocols**.
* Experience on Debugging environment on **Trace32, Keil, COIDE**,**INCA.**
* Experience Requirement handling with **DOORS and Polarion.**
* Experience on simulation environment for debugging the WIFI protocol, Peripheral cases on FPGA and Fixed the **DMA** related issues.
* Experience on optimizing **C and MATLAB Algorithms** for high data throughput.
* Implementation of firmware’s for peripherals **I2C, SPI,** **UART** using **Embedded C**  **On Cortex M4(ARM)** using **COIDE**.
* Good experience on **ARM and 32-bit Microcontrollers**.
* Good working exposure on **GIT** and **SVN** repository.
* Good knowledge on 802.11AH standard support in WIFI Chip for 2Mhz and 4Mhz. Have a good Knowledge on the Wi-Fi protocols and WIFI packet analysis.
* Have very good exposure to **software development life cycle** in Requirements, Design, Coding, validation, Implementation and Maintenance.
* Experience in understanding the **Datasheets/Technical Specifications** Drawing the Schematics and able to understand the existing schematics.
* Experience in GNU tools (GCC, GDB, Make files).
* Debugging and testing experience using **Simulators, Oscilloscopes and Logic Analyzers, Function Generators, Multimeters**.

**TECHNICALSKILLS**

**Modelling Tools:** MATLAB/Simulink, State flow, INCA

**Languages**: Embedded C.

**Processors**: Cortex (m4 ARM), AVR, PIC32

**Peripheral Devices:** I2C, RS-232, SPI, UART, PWM, CAN

**Tool Kits**: COIDE, KEIL IDE, Xilinx ISE,Trace32

**Modules**: AVR, ARM, FPGA

**Build Tools**: Make file,

**Bug Tracking Tools:** JIRA, Bugzilla.

**Scripting**: Embedded C, python.

**Monitoring Tools**: ETAS INCA, Measure Data Analyzer, Logic Analyzer, chip scope, Oscilloscope.

**Operating Systems**: Windows, LINUX, Mac OS.

**Respository Tools:** SVN, Source code(GIT),Polarion.

**PROFESSIONAL EXPERIENCE**

**Client: Navistar IL                                                 July 2017 – Till Date**

**Embedded Software Developer**

**Employer: Caprus IT Inc**

**Project:** Development of Simulink Models and Validating Simulink models on HIL (Hardware-In-Loop).

**Role and Responsibilities:**

* Analyzing the test report to find the root cause of failure of test cases (Plant model or Test script) and sending feedback/suggestions to offshore team.
* Involved in every step of **SDLC process** like requirement analysis, designing, coding, testing, releasing and providing product maintenance, and documentation at each stage.
* Functional **simulation** of developed models using CAPL and plant based closed-loop simulation techniques.
* Development of control algorithms using Model-based Controls Development process **(MATLAB/Simulink)**.
* Involved in the development of Software requirements and functional specifications for **Body control module(BCM)** and **Advanced Driver Assistance (ADAS)**.
* Involved in the design of Advanced Driver Assistance systems using modeling tools such as **Matlab, Simulink/State flow/Target Link.**
* Validated Embedded Kernel software in Embedded C and MISRA C guidelines.
* Involved in developing software interfacing modules for automotive communication protocols using **CANalyzer, CANOE**.
* Involved in debugging in finding Root cause analysis for **PGN’s** and **SPN’s**, Engine and vehicle functionality.
* Execution of functional validation test cases on industry-standard **HIL (Hardware-in-the-loop)** equipment.
* Development and execution of functional validation test cases using the right acceptance criteria based on requirements.
* Development of appropriate documentation to support process compliance.

**Environment: MATLAB, Simulink, State flow, INCA, Measure Data Analyzer**

**Service Oriented solutions        FEB 2017 – July 2017**

**Role and Responsibilities**

* Developed API’s that were extensively used throughout the component building and for further enhancements using embedded C Programming.
* Developed and executed test scripts to verify and validate the component built.
* Actively participated in debugging stage.
* Analyzed and resolved issues found by customers or design verification test engineers.
* Software Build Integration, Maintenance & Release.
* Involved in every step of **SDLC process** like requirement analysis, designing, coding, testing, releasing and providing product maintenance, and documentation at each stage.

**Keypad reader interface with Xilinx FPGA Spartan3 using VHDL.**

* Design interface architecture for keypad reader.
* Implemented architecture using VHDL
* Simulated in Mentor Graphics Model Sim.
* Synthesized using Xilinx and tested on FPGA Spartan 3.

**Environment:** Xilinx ISE, chip scope,

**Red Pine Signals, India June 2013 - July2015**

**Embedded software Engineer**

**Role and Responsibilities**

* **802.11ah protocol implementation:** In order to add 802.11ah support to 11n required changes came in mac layer. Mac header preparation and TX vector preparation has been done by me for 2Mhz and 4Mhz bandwidths in 900Mhz band.
* **RS9118 WIFI (11N and 11W) protocol bring up on FPGA:** In order to Integrate the WIFI hardware in to the new SOC and with different techniques to excite WIFI Hardware, FPGA Bring up is made on which WIFI Hardware is realized and Validated with new techniques. Along with 11n, 11W bring up is done which provide extended security for WIFI management frames after connection.
* **AHB-APB bridge interface:** In order to build up interface in between Host and Wi-Fi chip with High speed and to support Both Master and slave support from the Device so that Device can access the Host’s Memory directly from the AHB.
* Coding was in C, in a Linux environment for ARM processor.
* Device side Firmware needed to provide read and write from and to the Host is been added by me with AHB level registers programming. It also maintains buffer management to control the flow.
* **RS9118 chip peripheral bring up Description:** In order to support Red pine’s RS9118 chip with different communication protocols we added support to access external devices like flash, sensor, LCD. In this we studied and implemented protocols like CAN, SDRAM, SDIO, Camera interface in firmware which runs on ARM cortex M4.
* Executed red pine modules(RS9113) using Imx53 hosted mode platform on Linux and android platform using various interfaces (SDIO, USB, UART) with Wi-Fi and Bluetooth features in RS9113 module. Also, performed on RS9117 Module
* The RS9117 module project mainly deals in establishing connection between the RS9113 Module and Access point to transfer the packets from the module Access point and Bluetooth deals with exchange of data between RS9113 and the module which is paired up with it (mobile) to and for of data take place.
* Worked on the SPI interface on IMX6-sololite for making it to work as a Host for the Wi-Fi chip which runs with SPI interface. Have the Debugging experience on SPI protocol for timing issues.

**Environment:** Linux, COIDE, XILINX ISE, MPLAB, KEIL, Red Hat Linux, Python, ARM

**Client: HCI Technocrats, India July 2012 – June 2013**

**Trainee: Embedded software engineer**

**Employer: Business Intelli solutions**

**Project: Implementation on CAN protocol using ARM Processor for Data Acquisition**

* CAN (Control Area Network) protocol is a computer network and bus standard used for communication between ECU’s (Electronic Control Units) without a dedicated computer.
* ARM Processor is a 32-bit RISC processor developed by ARM limited. Due to its excellent power saving features, it has got a dominant use in embedded systems.
* In this Project an embedded system was developed to get remote access of data within Control Area Network (CAN). This was done to communicate temperature information to other nodes

**Responsibilities**

* Analyzed and documented requirements
* Prepared HLD, LLD and obtained customer approval.
* Developed embedded C code and supported scheduling algorithms.
* Tested the C code for standards like MISRA, Code Check.
* Designed a **Traffic Signal Controller** using **8086 microprocessors** that requires **assembly language** programming.
* Developed a **Real-Time Clock** using **8051 microcontrollers** to communicate with the LEDs to display the time on LEDs.
* The responsibilities included **developing**, **debugging** and **unit testing** of the developed code.
* Used **coding methods** to enhance program execution and functionality.

**Environment:** Logic Analyser, Oscilloscope. CAN, ARM based micro controller (Philips LPC2129), KEIL IDE, Embedded C, Assembly.

**Academic Work Experience:**

**Name of the University: Gannon University**

* Worked as Graduate Teaching Assistant for **'Embedded System Design& VHDL '** in fall 2015.

**Academics:**

* Bachelors in Electronics and communication, JNTU, Hyderabad, India. **Jan 2008 – April 2012**
* Masters in Embedded Software Engineering Gannon University Erie PA USA. **Sept 2015 – Dec2016**