**Curriculum Vitae**

**Senior Embedded Software Engineer**

**Name : Mohammed Nayeem ur Rahman**

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**Work experience: Experience of ~5 years**

**Notice period: 3 Months.**

**Duration: 9months 28-02-2018 to 19-11-2018 (Qualcomm Hyderabad)**

Presently working as senior software Engineer in **Qualcomm Hyderabad.**

My role here includes development Linux system services, bug fix and enhancement of DSP RPC driver and also works in testing and propagating kernel changes to opensource google.

**Skills Acquired:**

* Git, Gerrit , Jenkins, Electric commander, RPC, Kernel change propagations.
* Experience in usage of logging Tools such as QXDM, QPST, QCAT, QFIL, JTAG and ADB commands etc.

**Project-1: Duration 11 months 27-03-2017 to 05-02-2018(Xilinx India pvt. Ltd.)**

**Description:**

* Work on PetaLinux tool used to customize, build & deploy Embedded Linux OS on Xilinx processing systems.The PetaLinux tool in-turn uses the open source Yocto, Bitbake build system. The wrapper written in Shell, Python & TCL scripts, converts PetaLinux commands to Bitbake commands.

**Role and Responsibilities:**

* Fix bugs in the PetaLinux OS customising tool.
* Enhance the Tool adding additional features.
* Verifying bugs related to the tool and providing work-arounds and fixes to the customer

**Project-2: Duration 4 months (Wipro Technologies Ltd. 18-09-2014 to 24-03-2017 (2y, 6m))**

**Air quality management**

**Description**:

* The project aims to measure and monitor environmental gas concentration of harmful gases like CO, No2, Particulate matter, Temperature, humidity etc. using corresponding sensors. The sensor data is processed by SIB (Sensor Interface board) and sent to the cloud via a gateway end point. The gateway or SPU (Sensor processing unit) transfers the data to the cloud.
* An end user can monitor or fetch data from the cloud and control sensor specific parameters like frequency, reporting interval etc.
* The sensor data transfer from sensors to SIB and SIB to SPU takes place via I2C protocol.
* Developed the sources in Cpp, test suite in python and Swig is used as an interface between Cpp and python, and the custom built OS is generated using bitbake and yocto tools.
* Modified configuration files to build image for a particular board
* SDK( software development kit ) generation using Yocto project Development Environment
* Involved in building the Toolchain for Intel specific boards and thereby cross-compiling the sources on Host that works on the Target board
* Knowledge of writing own bitbake file i.e. .bb file or recipe file and also .bbappend file
* Knowledge of creating, enabling and modifying own Layer files in Yocto project
* Hands on working experience in writing a new recipe used to fetch, unpack, compile, install and package the software components
* knowledge of Creating a new BSP Layer Using the yocto-bsp Script
* Modified the Linux kernel for different drivers and rebuilt the kernel using Yocto
* customizing images by modifying configuration files in Yocto project
* Creation of custom built Linux distribution using Yocto project
* Worked on meta-intel BSP (Board support package) supported by Yocto
* Worked to create image, SDk for Intel quark, Atom based Soc's (system on chips)

**Role and Responsibilities:**

* Dediprog SF100 to flash the SPI memory on gateway board with firmware/BIOS using dpcmd Linux tool
* Knowledge of different packages in linux and their installations, journalctl, WindRiver Linux, Encryption dm-crypt, gpg tool, iptables, cmake, System services, smart and cronjob.
* Developed a Tool which tests all the Physical IP's present on the Gateway board like ddr,eMMC,ethernet,gpio,I2C,pcie,scsi,spi,USB and also developed a logging storage in python to display the results in HTML format.
* Flash image from USB to eMMC and creation of lockdown linux image.

**Project-3: Duration 4 months (Wipro Technologies Ltd.)**

**Role:**

* Modifying Linux host controller driver source to support for multiple instances of the device

**Responsibilities:**

* Modifying SPI/USB/SDIO Linux device driver source to support for multiple instances of the device and developing an Interface in Python to support automation testing of Linux device drivers

**Project-4: Duration 8 months (Wipro Technologies Ltd.)**

**Role:**

* Development, Testing and integration of Linux device drivers of modules part of Intel single-board-computers having a Quark X1000 SoC

**Responsibilities:**

* Integration and Testing of MMC/SD/SDIO host controller Linux device drivers
* Integration and Testing of Serial communication protocols like SPI,I2C and UART and other IP drivers on X1000 based SoC Platforms like Intel Galileo gen 1, Intel Galileo gen 2...etc.
* Worked in ATF(Automation testing framework) developed in Python script for the automation of Testing device drivers
* Developed Unix Shell scripts to automate the process of testing SDIO/MMC/eMMC peripherals on the SoC

**Skills Acquired:**

* Acquired hands-on working experience in single-board computers like Intel Galileo gen-2,Intel Galileo gen-1,Raspberry pi, Beagle bone black and UDOO boards
* Experience in Linux device drivers and Kernel programming
* open-source code coverage tool like Gcov
* Basic understanding of web-based git repository(version control system)
* Basic understanding of Linux power management and system power states
* Well-versed with yocto project which is used to customise the Linux system supporting ARM, MIPS, PowerPC and x86/x86 64 architectures
* Basic understanding of all the software requirements to build an Embedded system like firmware, BIOS, Bootloader(GRUB, Uboot etc), kernel, BSP, SDK and Toolchain
* TCP/IP and UDP network protocols and networking interfaces like Bluetooth, wifi and Ethernet

**Project-5:** **Duration 10 months (Wipro Technologies Ltd.)**

* Worked on Open-source Software library called DirectFB for the Graphics cluster
* Embedded Linux system development (or) building. It involves extraction, configuration, compilation and installation of all components, and possibly fixing issues and adapting configuration files
* Graphical Application development and GUI development using DirectFB
* Running test cases on a platform supporting hardware acceleration using GPU

**Project -6(Graduate Apprentice): Duration 4 months (Bharat Electronics Ltd.)**

* Hands on working experience in Network Analyzer, Spectrum Analyzer, Signal Generators & others
* Involved in PCB designing Using CADSTAR and was part of Naval team, designing an ESM systems to detect the electromagnetic radiations from RADARS

**Academic Projects:**

**Project during C-DAC’s Diploma:**

* **Title**: Designing Prototype of Smart Watch Using Beagle Bone Black
* **Role Played**: Device tree code for Beagle Bone Black

**Description**: This project facilitates to handle a call coming from one's phone using a Wrist Watch. The communication between phone and Beagle Bone Black (BBB) is established using Bluetooth. The android phone acts as a Bluetooth client and BBB acts as Bluetooth server. The code of server and client are ported on the respective devices. The information regarding call is displayed on LCD via serial communication protocol (SPI).Device tree is used to load specific peripherals and also for mode selection of a pin.

**Major Project:**

* **Title**: The Efficient Implementation of Floating Point Multiplier
* **Platform**: RTL Coding (Verilog/VHDL)

**Description**: This project is based on implementing a 32 by 32 bit floating point multiplier. The project uses Ripple carry adders to implement a 32-bit floating point multiplier. It is an efficient technique in terms of speed and accuracy and the coding is done in Verilog and VHDL. This project mainly uses Xilinx or Multisim & FPGA kit for simulation.

**Mini Project:**

* **Title**: Digital Alarm Clock with LCD Interfacing Using AT89C52
* **Description**: This project incorporates the functionality of a Digital Clock using LCD. This project uses AT89C52 microcontroller programmed in embedded-C language. This project enables us to see time in digital format, provides alarm facility & with the help of temperature sensor temperature and can be displayed using an LCD

**Education:**

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| --- | --- | --- | --- | --- | --- |
| Level | Stream | Institute/College | Board/University | Year of Passing | Percentage |
| PG-Diploma | D.E.S.D | CDAC-Hyderabad | CDAC-ACTS, Pune | 2014 | 70.00% |
| B.Tech. | E.C.E | Sri Indu college of Engineering and Technology | Jawaharlal Nehru Technological University | 2013 | 75.98% |
| XII | M.P.C | Narayana Junior college | Board of Intermediate Education | 2009 | 92.20% |
| X | General | St. Alpha's model school | Board of Secondary Education | 2007 | 85.33% |

**Skills:**

* **Hardware:**
* **Microprocessors:**
* 8085
* **Microcontrollers:**
* *CISC :* 8051
* *RISC :* AVR,PIC,ARM
* **Single-board computers:**
* Intel Galileo gen-2 and Intel Galileo gen-1 ( X86 Architecture )
* Raspberry-pi, Beagle bone black and UDOO ( ARM Architecture )
* **Software:**
* **Dev-Ops:** Python, Shell scripting, gerrit, git, Jenkins & Electric Commander

**Programming Languages:**

**Active:**

* C since 2009,Embedded C since 2013, Shell scripting since 2015,Python scripting since 2015

**Passive:**

* Assembly Language since 2010,Basic Android application development since 2014, HTML since 2015,CSS since 2015,C++ since 2015 and Data structures since 2009
* **Scripting Languages:**
* Shell scripting since 2015,Python scripting since 2015,bash scripting since 2015
* **Operating systems:**
* Linux(Ubuntu & Fedora),Windows 7,Windows xp, Android
* **Real time operating systems (RTOS):**
* RTAI, uCOS
* **Debuggers:**
* gdb(GNU project debugger) since 2015 and DDD(Data display debugger) since 2015
* **Static code analysis tools:**
* Pylint since 2015 , Shellcheck since 2015
* **IDE’s:**
* Eclipse since 2014, pyCharm since 2015
* **Text editors:**
* vi, vim, gedit and sublime text editors
* **Tools:**
* Proteus, Orcad, CADSTAR,keil uVision, PIC-C,Xilinx ISE,Multisim,MATLAB,TINA simulator,LOGO! Soft comfort, VMLab, AVR-Studio, GCC, Octave, putty, Minicom,SSH,SCP
* **Other Accolades:**
* Presented a PPT on “VIRTUAL RETINA DISPLAY” at MVSR College of Engineering and Technology
* Won 2nd prize in the “Ramanujan Talent Test” conducted by “Manasa Gangotri junior college”

**Training and certifications:**

1. *VLSI design using verilog HDL*
2. *PIC microcontrollers – programming and applications*
3. *ARM microcontrollers – programming and applications*
4. *Automation using micro PLC's (Siemens LOGO!)*
5. *SCADA(RS view) – programming and application*

**Additional Activities:**

* Udemy ( VLSI academy online course ) by Kunal Ghosh

**Personal niceties:**

* **Gender :** Male
* **Languages :**
* **English** : Fluently Spoken and written
* **Hindi** : Fluently Spoken and written
* **Telugu**  : Fluently Spoken and written
* **Urdu** : native
* **Arabic** : notions
* **Marital status:** married
* **Hobbies:** Reading books, Playing cricket and badminton and watching documentary films.

**Current Location : Hyderabad, Telangana.**