Sabyasachi Mitra

Software Engineer

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Objective

Working in an organization which will provide me an opportunity to develop my skill set so that I can be productive by utilizing my knowledge in developing projects in various domains with high learning curve and can grow both as an individual and group.

Summary

- ✓ 2+ years of experience in embedded application & system development in **C, C++.**
- ✓ Work experience in **8 and 32 bit microcontroller** firmware development.
- ✓ Work Experience in **Embedded Linux** porting, BSP and device driver.
- ✓ Work experience on **FPGAs**.

✓ Work experience in Network Automation Development in **shell** and **Perl** and desktop and embedded application development in **python**.

✓ Worked under various phases of SDLC and PDLC process such as Design, coding and testing.

✓ Basic experience on schematic design and understanding and circuit simulation.

Education

Graduated with B.E in Electrical and Electronics, KCG College, Anna University, Chennai 2010.

Certification

Advance Diploma in Embedded System Development and Design from Cranes Software International, Bangalore 2011.

Professional Experience

- ✓ Software Engineer in **Dexcel Electronics Designs** from October 2012 till date.

✓ Automation Engineer in **Elitecore Technology (Cyberoam)** from December 2011 to July 2012.

Technical Skill

Programming Language	: C, C++, Shell, Perl, and Python
Hardware tools	: Oscilloscopes
Hardware Platforms	: ALTERA, XILINX, ATMEL, ST
Operating systems	: Windows, Linux, RTOS (RTAI)
IDE	: VC++, Keil, eclipse
Version Control	: CVS, Perforce
EDA and simulation tools	: Allegro 16.2, Matlab, Modelsim, Isim, Quartus-II

Project Experience

Dexcel Electronics Designs **Software Engineer**

Current Responsibility:

✓ Understanding I2S protocol and BSP implementation for mono audio codec WM8974 for ARM CORTEX A8.

Current project: Crypto currency R&D

A crypto currency is a medium of exchange designed around securely exchanging information which a process is made possible by certain principles of cryptography. Crypto currencies are specifications regarding the use of currency which seek to incorporate principles of cryptography to implement a distributed, decentralized and secure information economy.

Language : C, C++, python
Tools : Xilinx ISE 14.6, Oscilloscope
Hardware : Vertex-7 FPGA, ARM CORTEX-M3 and CORTEX-A8, MAXIM 31790
Platform : Linux

Project Responsibility:

✓ Understanding Algorithms like Salsa20 and SHA256 design and development implementations on software side which would be an RTL design reference.

✓ Theoretical Analysis and implementation of CUDA in FPGA multiple cores as proof of concept of mining in Multi-core FPGA with the hardware team for performance optimization.

✓ Linux Application redesign, debugging and development for custom mining software.

✓ Firmware Design and application development for MCU ASIC board.

✓ U-boot porting on ARM Cortex-A8 with MMC, UART and Ethernet support.

✓ LCD driver, PWM fans controller driver and application development.

✓ Modified NAND flash timing parameters in kernel-3.2.

✓ LAMP Web server porting on cortexA8 and socket communication in python.

✓ Board level testing using oscilloscope and chip scope for interrupts and data verification.

✓ Writing test cases and test software development on functional and production level for MCU ASIC chip and Board verification.

Project #4 Smart Router R&D

Smart Router is a software layer that runs on a microcontroller which acts as an APDU router between ME, SIM.

IDE/tools : Comprion, IT3, Keil, Visual Studio 2010
Hardware/debugger : STM32 Microcontroller, ST Link
Language : C

Responsibility:

✓ Developing firmware application for smart router.

- ✓ Parental control SIM application and Location trace under GSM 3GPP standards and terminal testing

Project #3 FPGA FUSION Proof of Concept

Aim of the project is produce a fused image and video on FPGA with H.264. The proof of concept is to run the algorithm on FPGA with Linux. Later the software source will be taken as a reference for RTL design.

Hardware : S2255 card, Camera Unit, Altera FPGA, Oscilloscope
Platform : Linux
Language : C, C++

Responsibility:

- ✓ Porting u-boot and Linux kernel on the FPGA.
- ✓ Modifying application to capture intermediate files for each step and write them to image.
- ✓ Compiling S2255 video driver.
- ✓ Wrote YTOYUYV converter function which converts the Y component buffer to YUYV component and display fused video using SDL for live streaming.
- ✓ Implemented TSS (Three Step Search) Motion estimation algorithm for H.264 video codec.

Project #2 Mini PciExpress FPGA R&D

This is a pcie card with Altera FPGA .The Pcie hard IP core in it will be made use of to communicate with a system over Pcie bus for data encryption and decryption. This card is offload engine, proving to be a hardware accelerator for software on tasks that could be CPU intensive.

Platform : Linux
Language : C

Responsibility:

- ✓ Writing standalone Low level pcie device driver for the host Linux PC.
- ✓ Application development for data transfer between host and Pcie.
- ✓ Testing and throughput analysis

Project #1 ESP AUTOMATION CONTROLLER UNIT

This project aims at developing ESP control circuit by making it automatic for error detection for firing and controlling thyrystors units.

Client : BHEL
Hardware : PIC 8bit MCU, Oscilloscope
IDE : MPLAB, MATLAB
Platform : Windows XP
Language : C

Module Responsibility:

- ✓ Firmware development for thyrystors firing circuit.
- ✓ Error corrections, hardware debugging and circuit simulations

Elitecore Technologies
Cyberoam Division Automation Engineer

Project #2 UTM X.6, X.7
These were UTM (Unified Threat Management) security devices that work on network protocol management with layer 8 technology for enhancement of security solutions.

Product : CR 100i, 35i, 50i.
Language : Shell, Perl
Platform : LINUX
Version Control : Perforce

Module Responsibility:

- ✓ Writing Firmware upgrade, Appliance reboot and Network processing scripts.
- ✓ GUI based Firewall, IPS (Intrusion prevention System), Application filter, bandwidth Scripts for Cyberoam UTM (Unified Threat Management) device.
- ✓ Involved in code analysis and requirement.
- ✓ Documentation of High level Architecture simplification and process as per design methodology.

Project #1 Central Server Control System
Setting up a central server and client communications set up using sockets and connecting it to the data base with MYSQL. The server will send data to multiple automation client machines and it will check the entry of the clients in the data base as well as the commands with respect to the client machines.

Language : C, Shell
Platform : LINUX
Database : MYSQL
Version Control : Perforce

Module Responsibility:

- ✓ Writing server and client sockets for communication with MYSQL data base and creating a central automated information server.
- ✓ Creating parser API's for web server access through php.

Achievements

- ✓ Appreciated as an employee possessing key skills and effort.
- ✓ CCNSP Certified by Cyberoam for UTM product in Elitecore Technologies.
- ✓ Awarded for contributing in Research and Development for product engineering.

Professional Strengths

- ✓ Good communication skills.

- ✓ Positive attitude.
- ✓ Interest to learn new technology and concepts and work on that.