**MUBASHIRUDDIN SHAIKH**

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Position of Interest:

SOFTWARE ENGINEER – EMBEDDED SYSTEMS

**Summary of Qualifications:**

* Bachelor’s degree in Electronics & Communications with working experience in Embedded Systems and Software Engineering domains
* Sharp, Top Producing Software Engineer with over 13 years experience providing programming & applying various sensor technologies to embedded systems expertise
* Logical, detailed oriented, with sturdy programming skills, work diligently on long, tedious assignments
* Maintain excellent interpersonal communication, time management, Interviewing, Negotiating and problem resolution skills
* Willingness to take risks; work effectively under pressure; meet organizational goals
* Consistently deliver strong and sustainable technological gains
* Demonstration of effective social behavior; teaching & instructing
* Good cross cultural skills with the effective interaction with few countries like China/USA & Korea
* **2** Yearsof **C++** and more than **13** years of **C** language expertise.

**Languages:** Python**,** C, C++, Embedded C/C++, C# (ASP.NET), SQL Server2005.

**Software:** MSWindows7/10, Red Hat/Fedora Linux, Microsoft Word/Power Point/Excel

**RTOS:** embOS**,** RTX, SYS BIOS (TI), CoOs, uItron, uCOS,

**Tools:** Eclipse(c++ IDE) Drive Master(SATA test tool), VCS(Synopsys), Jenkins( Continuous Integration Tool ), gtest ( Google c++ test Framework )Keil Compiler and uVision2 debugger for ARM Cortex M3, Code Composer Studio, Spectrum Digital XDS510, Visual Studio 2010, CooCox Tool Chain for Cortex M3 Controller, RVDS for ARM Cortex M3, Keil Simulator for 8051, Tasking Compiler for Tricore Architecture, Tessy (Automated Code Coverage Tool), IAR Embedded Workbench for ARM 7T based ATMEL controller, Code Wright (IDE), UDE Debugger, Micropross Smart Card Test Suite, Trace32 for ARM.

**Microcontrollers:**  Xtensa, EFM32 Giant Gecko, STM32 (32-Bit Cortex M3 from ST Micro), Arm Cortex M3 (32-Bit low power uC from ARM Custom FPGA from SMSC), TMS320DM814x, Magic Pixel MP612 (32-Bit Chinese Multimedia SOC), Infineon TC1766 (32-bit Tricore Architecture uC), Atmel AT91SAM7S128/256 (ARM7TDMI based 32-Bit uC),

**Version Control Tools:** git,Mercurial, SVN, Clear Case, CVS, Microsoft VSS (Visual Source Safe)

**Protocols**: I2C, SMBus, NVMe, PCIe, CAN, USB, Nokia F-Bus Protocol, Low-level BREW protocol, Low level OBEX protocol and AT commands, PTP Protocol, T=0 ,T=1 and T=CL Smart Card Protocols, SPI/I2C.

**RELEVANT EXPERIENCE**

∆ CAREER CHRONOLOGY

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| **COMPANY** | **DESIGNATION** | **DURATION** |
| OCZ Storage Solution | Senior Software Engineer | 01/2016 to Till Date |
| I2O Water | Senior Software Engineer | 01/2015 to 11/2015 |
| SRT( Software Radio Technology ) Marine | Senior Software Engineer | 10/2013 to 12/2014 |
| Accel FrontLine (UK) | Senior Software Engineer | 01/2013 to 9/2013 |
| Access IS | Design Engineer | 12/2011 to 09/2012 |
| Global Edge Software Ltd, India | Technical Lead | 11/2010 to 06/2011 |
| SMSC , Chennai, India | Senior Software Engineer | 03/2010 to 11/2010 |
| Samsung India Software Centre(NOIDA), India | Lead Engineer Lev 1 | 2/2008 to 03/2010 |
| Robert Bosch, Coimbatore, India | Senior Software Engineer | 07/2007 to 2/2008 |
| Aelix Comm. Systems, Bangalore, India | Member of Technical Staff | 3/2005 to 07/2007 |
| LogiPro, Bangalore, India | Software Engineer | 09/2004 to 03/2005 |

∆ ACCOUNTABILITIES

* Coding and unit testing; Code review of team members; involving in preparation of project plan
* Configuration management using Clear case/Visual SourceSafe/ Perforce
* Debugging using Lauterbach/ Keil uVision2/ RVDS / IAR Embedded Workbench/ Spectrum Digital XDS510
* Implemented globalization and localization of software; handled the tasks of developing full life cycle application
* Conducted software analysis, software review, system risks analysis, identifying code metrics and analysis of software reliability
* Mentored & trained personnel on policies & procedures regarding systems, programming and troubleshooting
* Monitored production support systems in the absence of lead engineer
* Designing, developing and *testing cutting edge high-performance network protocol and security products on a variety of real time operating systems (RTOS) and a broad range of hardware*
* *Participating in the design of embedded software modules/subsystems that optimize and balance the goals: run-time performance, memory requirements, simplicity and correctness, development time and effort, reusability, extendibility, reliability, and safety*
* *Maximizing the reuse of existing internal or external software components in order to shorten the product development cycle*

*∆ PROJECTS HANDLED*

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| **Title 1:** | **Automation tool for testing the Production boards at manufacturing site** |
| **Client:** | OCZ Storage Solutions |
| **Organization:** | TME (Toshiba Memory Europe) |
| **Tools/Languages Used:** | Python, AutoHotKey, Tkinter(UI framework for Python), Inno Installer |
| **Team Size:** | 2 |
| **Role:** | Team Member (Programmer ) |
| **Duration:** | 3 months(On going) |
| **Overview:** | The aim of this project was to provide a UI based test tool for testing the first batch of production boards at the manufacturer’s end. It was divided into two parts, the firmware that sits on the processor giving UART interface to query different parts of the board like NAND, DRAM, PLP caps etc. and the script that runs on the host PC that is responsible for automating the test and provide a final result of PASS/FAIL. Python 3.0 and Tkinter UI framework for python 3.0 was used for this. I was responsible for the design and development of the host application as well as participated in some parts of Firmware development. |
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| **Responsibility:** | * Understanding the Host Test tool requirement * Finding the set of tools to make this possible |
|  | * Coding and testing |
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| **Title 2:** | **Verification of various ASIC modules and write HAL for them** |
| **Client:** | OCZ Storage Solutions |
| **Organization:** | TME (Toshiba Memory Europe) |
| **Tools/Languages Used:** | VCS(Synopsys), Eclipse, Xtensa-gcc, Xtensa-gdb, git |
| **Team Size:** | 18 |
| **Role:** | Team Member (Programmer ) |
| **Duration:** | 1 Year 5 months |
| **Overview:** | This was mostly a verification task. My responsibility was to verify some of the ASIC modules of the upcoming SSD controller. Part of the verification task was also to write a thin HAL for the tested modules. Some of these modules are Interrupt Controller, Timer and Reed Solomon/Raid5 Encoder/decoder and I2C/SMBus. The controller used is based on Cadence Xtensa softcore. |
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| **Responsibility:** | * Writing down the test cases for each module. * Writing down the HAL requirement. * Coding and testing the HAL on Simulation/FPGA/Palladium. |
| **Title 3:** | **Writing the security module for SATA drive complying to SATA III standard.** |
| **Client:** | OCZ Storage Solutions |
| **Organization:** | TME (Toshiba Memory Europe) |
| **Tools/Languages Used:** | Eclipse, SVN, GCC, GDB |
| **Team Size:** | 12 |
| **Role:** | Team Member (Programmer ) |
| **Duration:** | 1 Year 2 months |
| **Overview:** | My responsibility was to design and code the security module for SATA drives. Drive Master (A SATA Compliance test suite) was used to do unit test as well as some integration testing of the code. It was written in pure C and custom gcc compiler was used. Testing was done both on FPGA and silicon. The controller used was a customized ARM core. |
| **Responsibility:** | * Understanding the project requirement. * Coding. * Unit Testing. |
| **Title 4:** | **Proteus, Smart Water Technology & Pressure Management** |
| **Client:** | I2O Water |
| **Organization:** | I2O Water |
| **Tools/Languages Used:** | **Embedded C**, Keil uVision 5 for ARM |
| **Team Size:** | 6 |
| **Role:** | Team Member (Programmer ) |
| **Duration:** | 11 months |
| **Overview:** | The Product, Proteus, is a smart water pressure logger and management system. It works in  sync with an actuator to control and manage water pressure across the cities where it is  deployed. |
| **Responsibility:** | * Understanding the project requirement. * Coding. * Unit Testing. |
| **Title 5:** | **AIS Class A mobile Station** |
| **Client:** | SRT Marine |
| **Organization** | SRT Marine |
| **Tools/Languages Used:** | **Embedded C++**, Keil uVision4 for Cortex M3 |
| **Team Size:** | 8 |
| **Role:** | Team Member (Programmer ) |
| **Duration:** | 14 Months |
| **Overview:** | The product is an AIS Class A Mobile Station. My responsibility is to work with my team members to get the product done within the stipulated time. The project was divided into modules and I was responsible for designing and unit testing some of the modules, one of them being the NMEA parser Library. The code was written in C++ and Enterprise Architect was used for UML design. Most of the coding was done at the application level. |
| **Responsibility:** | * Understanding the device side requirement. * Coding. * Unit Testing. |
| **Title 6:** | **Various CR implementation for Parking assistance system** |
| **Client:** | ASL Vision (Lewes, UK) |
| **Organization:** | Accel FrontLine(UK) |
| **Tools/Languages Used:** | **Embedded C++**, TI CCS, Spectrum Digital XDS510 |
| **Team Size:** | 3 |
| **Role:** | Team Member |
| **Duration:** | 8 Months |
| **Overview:** | The project involves porting many features from one variant of the product to another (Parking Assistance and Surround View System). Some of the porting are as follows:   * Adding multiple diagnostic screens for various new functionalities. * Adding image decompression thread which decompresses the compressed BMP images. This was done to save Flash memory as the number of variants (CAR Models) kept increasing. * Doing required changes to the linker script based on the new memory requirements and in the process tiding it up, so that adding new memory sections will be easy. * Linting the modules to comply with company standards. |
| **Responsibility:** | * Understanding the device side requirement. * Coding. * Unit Testing. |
| **Title 7:** | **Boot Loader for Contact and Contactless Smartcard Reader** |
| **Client:** | Access IS (Reading, UK) |
| **Organization:** | Access IS (Reading, UK) |
| **Tools/Languages Used:** | **Embedded C**, CooCox IDE(Open source model driven Tool chain for Cortex M3  based controllers) |
| **Team Size:** | 1 |
| **Role:** | Design Engineer |
| **Duration:** | 2.5 months |
| **Overview:** | The aim of this project was to design and code a boot loader for one of Access’s product (**Contact and Contactless Smartcard Reader**). The role of the boot loader was to allow both the application and the Boot Loader to be updated on the field without the units being bought to company. Y-Modem protocol was use d by the Boot Loader to communicate with the PC application. Basic sanity check was done on the Binary being loaded and also the current Boot Loader and application version was checked before the App/Boot Loader could be flashed. |
| **Responsibility:** | * Understanding the device side requirement. * Doing the low level design for the Boot Loader. * Coding. * Unit Testing. |
| **Title 8:** | **Contact and Contactless Smartcard Reader(2 Contact and 1 RFID in 1)** |
| **Client:** | Access IS (Reading, UK) |
| **Organization:** | Access IS (Reading, UK) |
| **Tools/Languages Used:** | **Embedded C++**, CooCox IDE (Open source model driven Tool chain for Cortex M3 based controllers) , CoOs, StarUML |
| **Team Size:** | 2 |
| **Role:** | Design Engineer |
| **Duration:**  **Overview:** | 10 months  The goal of this project is to design a product with two contact and a single contactless (7816 and 14443) smart card readers in a single device. The mode of communication with the host being USB (CCID class). An STM32 microcontroller was used to achieve this with help of a ROM based RFID controller (PN532). The product will be enumerated as 3 CCID Smart Card readers, each for 2 Contact and 1 contactless reader, respectively. |
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| **Responsibility:** | * Understanding the device side requirement. * Assist in choosing proper hardware. * Doing the high level and low level design of the software. * Evaluating different tool chain to use for the development. * Coding the different software components. * Unit Testing. |
| **Title 9:** | **Bug Fixing and Maintenance** |
| **Client:** | Intel Mobile Communication (Bangalore) |
| **Organization:** | Global Edge Software Ltd. |
| **Tools/Languages Used:** | **Embedded C** , ARM RVDS Cross compiler, Source Insight, Trace32 for ARM |
| **Team Size:** | 5 |
| **Role:** | Team Leader |
| **Duration:** | 7 months |
| **Overview:** | My responsibilities included bug fixing and maintenance of bugs arising in the memory management module for the X-Gold series platform. Along with that other parallel activities include support for creating a unified scatter file, which helped us reducing the bugs arising due to the ever changing memory map of the platform. |
| **Responsibilities:** | * Understanding the bugs and distributing based on sub modules (cache/ scatter file/ Memory controller etc.). * Fixing scatter file and Cache related bugs. * Code review. |
| **Title 10:** | **Design and implementation of the Smartcard T=0/T=1 Protocol** |
| **Client:** | SMSC (Austin) |
| **Organization:** | Standard Microsystems Corporation (SMSC India) |
| **Tools/Languages Used:** | **Embedded C** , Keil/RVDS Compiler, Source Insight (Editor), Micropross SmartCard Testing Tool |
| **Team Size:** | 2 |
| **Role:** | Team Member |
| **Duration:**  **Overview:** | 4 months  The aim of this project is to design and code the Layer 3 of the Smartcard. The most famous physical layer protocols used in Smart Card are T=0 and T=1 Protocol. After the porting and verification of the Smartcard module, the layer 3 implementation was done keeping in mind that the USB CCID protocol will be used as the interfacing means instead of RS-232 serial protocol. The T=0 and T=1 protocol was implemented such a way that the kind of protocol will be dynamically selected based on the ATR (Answer To Reset) of the Smart Card. The protocol also sticks to the EMV (Euro pay MasterCard VISA) specification. |
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| **Responsibilities:** | * Understanding the device side requirement. * Designing and coding of the T=0 and T=1 Protocol. * Unit testing and EMV specification compliance testing. * Code review. |
| **Title 11:** | **Porting Smart Card Module** |
| **Client:** | SMSC (Austin) |
| **Organization:** | Standard Microsystems Corporation (SMSC India) |
| **Tools/Languages Used:** | **Embedded C** , Keil/RVDS Compiler, Source Insight(Editor) |
| **Team Size:** | 2 |
| **Role:** | Team Member |
| **Duration** | 3 Months |
| **Overview:** | The aim of this project is to port the layer 1 of Smartcard module from 8051 core to ARM Cortex M3 core. My responsibility was to understand the product datasheet and work in hand with my team member to port the entire layer 1 of the Smart Card Module to our custom ARM Cortex M3 core. Also included in my responsibility is the verification of the Smartcard module, i.e. test the Silicon and raise any bugs available in the silicon. |
| **Responsibilities:** | * Understanding the device side requirement. * Porting of the layer 1 of Smart Card module. * Verification of the Smartcard silicon. * Code review. |
| **Title 12:** | **PTP Driver Implementation** |
| **Client:** | Samsung (Korea) |
| **Organization:** | SISC (Samsung India) |
| **Tools/Languages Used:** | **Embedded C**, Lextra Compiler, Source Insight; RTOS Used: uItron based proprietary RTOS (Cosmos) |
| **Team Size:** | 4 |
| **Role** | Team Leader |
| **Duration:** | 8 Months |
| **Overview:** | This project was related to a product called Digital Photo Frame (DPF). The goal was to implement the PTP (Picture Transfer Protocol based on PIMA 15740:2000) driver for DPF. This would give user an option to connect the device either as a Mass Storage or PTP device. The latter option would restrict the device from accepting anything other than picture files. I was responsible for the design of the driver, device enumeration process and implementing few PTP commands. |
| **Responsibilities:** | * Understanding the device side requirement. * Design of the **PTP Class Driver**. * Task analysis and allocation. * Code review of the driver. |
| **Title 13** | **Digital Photo Frame/ Minimonitor** |
| **Client:** | Samsung (Korea) |
| **Organization:** | SISC (Samsung India) |
| **Tools/Languages Used:** | **Embedded C** , Lextra Compiler, Source Insight; RTOS Used: uItron based proprietary RTOS (Cosmos) |
| **Team Size:** | 4 |
| **Role** | Team Leader |
| **Duration:** | 8 Months |
| **Overview:** | This project was related to a product called Digital Photo Frame (DPF). The goal was to implement logic to make the DPF multifunction as a Mini monitor, once it is connected to a PC using USB cable. The already available slave USB 2.0 was used to implement this functionality. The user will be given an option to connect the device as a mini monitor or mass storage. The project includes a Windows virtual Display driver for DPF and a device side implementation to support the driver and finally make it work as mini monitor. I was involved in the device side design and coding, working in parallel with the Windows device driver team to accomplish the goal. |
| **Responsibilities:** | * Understanding the device side requirement. * Co-ordinate with the Windows driver team. * Design of the embedded application. * Task analysis and allocation. * Code review of the application. |
| **Title 14:** | **Digital Photo Frame/ Multiple Slide Show effects** |
| **Client:** | Samsung (Korea) |
| **Organization:** | SISC (Samsung India) |
| **Tools/Languages Used:** | **Embedded C**, Lextra Compiler, Source Insight; RTOS Used: uItron based proprietary RTOS (Cosmos) |
| **Team Size:** | 4 |
| **Role** | Team Member |
| **Duration:** | 10 months |
| **Overview:** | The goal of this project was to add many new slide effects to the DPF. There were around 25 new slide effects added to the DPF along with the currently existing ones. Along with the full screen effects, many split screen effects were also added. The DPF had 4 different memory sources, USB Host, CF, SD and internal 1 GB NAND memory. So, one of the requirements was also to show all the slide effects in a cyclic manner from all the active memory sources. Many optimizations to the current Slide effects were also done. I was involved in the overall algorithm design of many effects along with the design of multi -drive and split screen Slide Effects. |
| **Responsibilities:** | * Understanding the requirement. * Design of the embedded application. * Unit Test Plan. * Task analysis and allocation. * Code review of the application. |
| **Title 15:** | **Change Requests in 5 different modules** |
| **Client:** | Robert Bosch (France) |
| **Organization:** | Robert Bosch – India (Coimbatore) |
| **Tools/Languages Used:** | **Embedded C** , Borland Code Wright, Ascet (Proprietary modeling tool); RTOS Used: ERCOS |
| **Team Size:** | 4 |
| **Role** | Team Member |
| **Duration:** | 7 Months |
| **Overview:** | This project includes many change requests given by client Robert Bosch (France). My responsibility includes, going through the different change requests, communicating with the originator for the CRQ, and finally accomplishing the required change either by doing manual coding or by using modeling tool for auto generation of the code, integrating the changed module with the remaining modules, removing any integration errors and finally doing the Module check, with a test plan designed by me, on the debugger remotely. The CRQs covers different modules like Ignition unit, Filter unit etc. |
| **Title 16:** | **SwizzleStik** |
| **Client:** | Spark Technologies (USA) |
| **Organization** | Aelix Communication Systems – Bangalore, India |
| **Tools/Languages Used:** | **Embedded C** , IAR Embedded Workbench; RTOS USED: uCOS II |
| **Team Size** | 20 |
| **Role** | Team Leader |
| **Duration:** | 16 Months |
| **Overview** | This product is an extension of the previous product (CellStik) and is targeted for the US market. The purpose of this product is to take the backup of the phone book of a Cell phone. Along with that it also has the ability of updating and backup of the ring tones, music and photos. The same hardware will also work as a pen drive with 512MB to 1GB.The hardware was designed around an ARM7TDMI core based ATMEL controller, Cypress USB host controller and the RTOS used was uCOS II. |
| **Responsibilities** | * Understanding the requirements. * Design of the embedded application. * Unit Test Plan and finalizing the unit test document. * Task analysis and allocation. * Code review of the application. * Involved in preparation of project plan |
| **Title 17:** | **Cellstik** |
| **Client:** | Spark Technologies (USA) |
| **Organization** | Aelix Communication Systems - Bangalore |
| **Tools/Languages Used:** | **Embedded C** , IAR Embedded Workbench; RTOS Used: uCOS II |
| **Team Size** | 16 |
| **Role** | Module Leader |
| **Duration:** | 12 Months |
| **Overview** | The product on which I worked is called CellStik and is targeted for the US market. The purpose of this product is to take the backup of the phone book of a Cell phone. The hardware was designed around an ARM7TDMI core based ATMEL controller and the RTOS used was uCOS II. |
| **Responsibilities** | * Involved in the Design of the embedded application. * Involved in Unit Test Plan design. * Design of **UART and USB CDC device driver** and unit testing of the same and required modification of **USB Mass storage driver**. * Task analysis and allocation. * Involved in Code review of the application. |
| **Title 18:** | **CAS-1142** |
| **Client:** | Infineon |
| **Organization** | Siemens Information Systems Limited |
| **Tools/Languages Used:** | **Embedded C** , Tasking C Compiler, Cross view Debugger and Tessy |
| **Team Size** | 10 |
| **Role** | Software Engineer (Team Member) |
| **Duration:** | 6 months |
| **Overview** | The objective of this project is to design the driver for DIO (Digital I/O), WDT (watchdog timer) and CAN. The Controller in use was Infineon’s Tricore Architecture based TC1766 (32- bit microcontroller). Coding include a mixed C and Assembly language. TriBoard (an evaluation board for tricore controllers) was used as target during the development process. Tasking compiler along with the cross view debugger was used. Tessy was used for finding the C1-code coverage (branch coverage). Tessy is an automated tool for finding C1 code coverage of C codes. |
| **Responsibilities** | * Implementing the required **device driver APIs** for DIO, WDT and CAN. * Unit testing of the device drivers. * Code coverage of the drivers using Tessy. * Involved in Code review of the driver. |

**EDUCATION**

B.E in Electronics and Communication from Vidya Vikas Institute of Engineering and Technology, VTU Mysore, Karnataka, India – 2003

REFERENCES AVAILABLE ON REQUEST