

YUSUF HUSAINY

Embedded Software and Firmware Engineer

Katy, TX

-Email me on Indeed: <http://www.indeed.com/r/YUSUF-HUSAINY/7fe02b5435828ecf>

Summary:

With 7 years of total industry experience in embedded systems, in that 5 years of bare-metal and RTOS based firmware development, worked across India, Singapore and US, my core strength I bring to the table is hands on engineering for hardware-firmware integration, which includes board-bring up, HAL development, comms stacks development (UART, CAN, I2C, SPI, USB), for bare-metal and RTOS based systems. Can read board schematics, component datasheets, reference manuals and develop firmware code accordingly.

Skills:

- Programming Languages –
- C: 5+ years
- C++: 1.5 years

Competencies –

- MCU firmware development: low level BSP/HAL driver development, comms stack development.
- RTOS – ChibiOS
- Software Tools: STM32 IDE, AtmelStudio, Eclipse IDE, SEGGER Ozone IDE, command line gdb debugging, Windows OS and Linux OS as environments for dev, build, debug. Understanding the toolchain's compiler-linker pipeline and debug interface, can work with any toolchain.
- Versioning tools: Git, SVN, TFS, ClearCase, Perforce.
- Hardware tools: ST-Link, J-Link debug emulators, hands-on experience with bench tools usage like oscilloscopes, logic analyzers, bus analyzers, function generators, multimeters to diagnose and debug potential hardware faults.

I am a US Green Card Holder, authorized to work for any US employer.

Authorized to work in the US for any employer

Work Experience

Full Time Embedded Software Engineer

SAExploration and Wireless Seismic Inc - Houston, TX

August 2019 to October 2020

This project spanned across 2 companies, since the WSI project and team was transferred to SAE. Worked as part of the firmware team supporting agile based development activities in their seismic acquisition product RTS3. Was responsible for board bring up for new board prototypes and worked closely with hardware team to troubleshoot board level issues. Primarily was tasked with implementation of node deployment sequence application and comms between drone controller and darts (seismic acquisition nodes) over UART and radio. Immediately after starting, key achievement was a time constrained 2-day

effort in getting drone controller board up and running, shipping to client to fetch \$300k in revenue for the company for hardware and firmware delivery. Team was downsized in Oct'20.

Contract Firmware Engineer

Halliburton - Houston, TX

February 2017 to August 2019

Supported the firmware activities of Halliburton-Sperry in their next-gen downhole drilling tools. Work heavily involved implementation with object-oriented C HAL framework and ChibiOS RTOS for STM32 family of ARM Cortex-M microcontrollers. Worked with implementation of USB, CAN, UART, Power Line Comms, FRAM, ADC, DAC, PWM, I2C and SPI based sensor peripheral HAL drivers and comms stack. Wrote minimalistic Python test scripts to validate firmware implementations. Wrote USB-UART virtual firmware drivers for ChibiOS, for STM32 platform and posix platform for simulation, with 3 USB CDC interfaces for 3 uart ports enumerated over, to push 17MBpsec data. One of the highlights of my work was implementation of UART-COBS comms module, used to transfer data bytes over a serial interface. Involved with initial design of CAN bus protocol definition with minimal overhead for intra tool communication in downhole environments. Wrote 1553 Power Line Comms decoder over an ADC for 40Kbaud communication. Ported CAN driver, UART drivers, uart cobs to simulation environment on posix based system for testing applications before hardware prototype was ready.

Contract Firmware Engineer

Rockwell Automation - Singapore

April 2015 to November 2016

Played a contract role in bare-metal framework development for Industrial Automation IEC 61508 certified safety IO controllers' products at client location, Rockwell Automation in Singapore. Work involved: HAL architecture design and implementation of drivers in C++ for Freescale Cortex-M MCU and Renesas MCU using IAR toolchains for Interrupt, UART, GPIO, Timers, DMA subsystems. Worked on iterative firmware test apps development for hardware prototype board-bring up. Being part of the team working towards safety certification, understood the importance of high-quality firmware implementation while working in Agile based software life cycle, which involved thorough phases of code coverage using Coverity, MISRA checks, unit testing.

Another project I worked with while full-time at Agiliad Tech in India, involved Linux USB driver bug-fix support and implementation of device display mirroring application code for a handheld ultrasonic medical device.

Software Engineer

Persistent Systems Ltd - Pune, Maharashtra

August 2013 to September 2014

Sustenance support for Windows XP Display Drivers on Intel Haswell Graphics chipsets.

Jr. Embedded Systems Engineer

Aeron Systems Pvt. Ltd - Pune, Maharashtra

May 2013 to July 2013

Contractual short 3-month project, Worked as C developer for their industrial measurement and control products, few of the activities/competencies I worked on: OpenGL aerial navigation UI, TCP/IP client-server implementations, uClinux config and build for Blackfin DSP and ARM MCU, firmware enhancements for open-source USB MSC and USB VirtualCOM drivers.

Embedded Systems Engineer

Mapyn Technologies Pvt Ltd - Pune, Maharashtra

March 2013 to July 2013

Short 5-month project, PoC code development for GStreamer based media streaming server and client applications used to facilitate a wireless solution for medical endoscopy procedures.

Education

Post Graduate Diploma in Embedded Systems Design

CDAC-ACTS - Pune, Maharashtra

August 2012 to February 2013

Bachelor of Engineering in Electronics and Telecommunications

University of Pune - Pune, Maharashtra

August 2007 to November 2011

Skills

- C (5 years)
- C++ (2 years)
- Embedded Systems (7 years)
- Linux (4 years)
- Git (4 years)
- Embedded Software (7 years)
- Firmware
- Microcontroller (5 years)

Links

<https://in.linkedin.com/in/yusufhusainy>

Publications

Development and Implementation of a Linux- Xenomai based Hard Real-Time Device Driver for PCI Data Acquisition System (DAS) Card

<http://www.ijcaonline.org/archives/volume81/number12/14065-2292>

November 2013

This paper elaborates the implementation of a PCI based device driver for a Data Acquisition System (DAS) Card using the RTDM (Real-Time Driver Model) skin over Xenomai kernel, which is integrated with the Linux kernel. A C language kernel module was written for the PCI bus based driver to provide hard real-time capabilities and determinism to any application accessing the DAS card. The PCI DAS card used consisted of 12-bit ADC, 12-bit DAC, Programmable Digital I/O lines (TTL compatible) and Timers/Counters. In order to test all the features of the DAS and the performance of the driver, a test

system, consisting of a 3-axis analog accelerometer connected to the ADC of the DAS via a junction box and powered by its DAC, was been constructed. Additionally, a 3-axis digital accelerometer communicated with an AVR development board via I2C in order to generate conditioned input for the programmable digital I/O lines of the DAS card. A graphical tilt measurement application involving real time acquisition of the accelerometers data was implemented using OpenGL. Finally, the driver was thoroughly tested with this arrangement, and the interrupt latencies were noted to be around 4 μ sec.