Edoardo Rossi

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PROFILE

Highly proficient **SOFTWARE ENGINEER** with over 25 years of experience in embedded systems. Very professional and enthusiastic with a positive “can-do” attitude. Accurate with strong problem solving skills. Creative and resourceful. Meets tight and demanding deadlines under pressure. Full software life-cycle knowledge, including SCRUM methodologies. Now seeking next rewarding opportunity to make successful impact in a customer focused team.

SKILLS

- RTOS & Bare-Metal Programming
- Audio & Digital TV
- Network Protocols
- Device Drivers

EXPERTISE

- C/C++ (25+ years), STL, SQLite, Qt
- VxWorks (5+ years), Embedded Linux (15+ years)
- x86, ARM (Freescale i.MX6 DL , LPC111x, STM32F10, S6E2G), PPC, SH4
- DVB, MPEG-TS, MPEG III Layer 2
- ADC, I2S, I2C, SPI, UART, MDB
- GSM/LTE, TCP/IP, UDP, SSL, AES, MD5
- Eclipse, MDK-ARMv5, LPCXpresso, Visual Studio
- Bugzilla, Trac, JIRA, Subversion, Git, Repo
- Confident in low level debugging and schematics

ACHIEVEMENTS

RTOS & Bare-Metal Programming

- Combining different PWM software controllers running on ARM for driving RGB lighting into a single firmware and deployed on two different PCB designs with the ability of auto-detecting its operational mode. This enabled the client to save development and manufacturing costs, being more future proof as well as providing an easy parts replacement solution.
- Used expert knowledge in embedded RTOS to port existing DTV software running on VxWorks RTOS to a new advanced architecture designed for HDTV and running on x86 Linux. This resulted in obtaining a first move advantage over competitors on launching the HDTV service in Europe and subsequent capture of 70% of market share.

Audio & Digital TV

- Used expertise in professional broadcast digital audio to successfully implement a multithreaded application running on ARM Linux for recording audio from the RION NL-52/42 measuring instrument into a contiguous sequence of WAV, FLAC and MP3 audio files also available on-demand via a secure GSM/LTE connection. This resulted in a cost effective and well ahead of competitor's solution for live monitoring of environmental noise, noise at work, noise nuisance and noise surveillance.
- Used expertise in professional broadcast to successfully implement software models of innovative ASIC capable of encoding and decoding multiple MPEG2, h.264 and HEVC transport stream in real time. This resulted in the software models being used by hardware engineers to validate HDL designs as well as provide a complete ASIC emulation for application developers.

Network Protocols

- Used expert understanding of Linux OSI model for developing a web server running on ARM Linux that implementing a custom HTTP Live streaming protocol was able to deliver stored and on the fly WAV and MP3 encoded audio to HTML5 enabled browsers. This resulted in a compelling solution for remote audio monitoring without any third party media player being required and therefore improved security.

Device Drivers

- Applied extensive experience in embedded C to design patent pending device driver templates for VxWorks RTOS to support a new companion chip designed for automotive applications. This resulted in software engineers working on a stable and thoroughly tested framework.

CAREER HISTORY

www.rossisoft.co.uk - RossiSoft Ltd

Owner & Principal Software Engineer
Feb 2014 – present
This is the company name for new contracts, open source projects and for professional training with a Pluralsight hard-core developer membership.

Open Source Projects

- Ported the Squeezeslave media player software written in C to several ARM, MIPS and PPC embedded Linux platforms and implemented custom OSS audio and IR device drivers.
- Developed in C++ a high performance DirectShow MPEG-TS transformation filter that including the OpenSSL & CSA software libraries and using conditional access via AES and MD5 protocols, enables the popular DVR solution SageTV (now Google Fiber) the tuning of additional DVB channels.
- Developed several plug-ins in Java for SageTV DVR product to enhance user experience.
- Valgrind patch to support ARMv5 architectures.

Pluralsight passed exam subjects (transcripts available on request)

- C#, .NET, Android, TDD

Ongoing training

- JavaScript, React

www.cranems.co.uk – CRANE MERCHANDISING SYSTEMS

Senior Software Engineer – R&D
October 2016 – March 2020 (3 years 5 months contract)

- Implemented in C a single PWM controller firmware running on two different ARM (LPC111x) based custom designed PCB including I2C controlled constant-current LED drivers and connected via SPI to a C++ Linux based high-level platform (Freescale i.MX6 DL):
  - Node addressable RGB lighting controlled by standard Linux LED device protocol interface.
  - Fully backward compatible LED design, featuring a rich set of animation and effects via proprietary command based protocol interface, as well as standard Linux LED device protocol interface.
- Implemented in C++ a new safety feature for custom I/O board PCB running on ARM with eCos RTOS, controlling all the motors, valves, switches, sensors and connected via UART to the platform.
- Working on back-end application software running on Linux platform by implementing new features and fixing bugs using C++, Boost, STL, Qt and SQLite libraries.
- Implemented in C++ a stand-alone cross platform (Linux (x86/ARM)/Windows) tool to generate patch files from SQLite, XML and JSON sources for differential upgrade of configuration files either locally or OTA.
- Introduced more software development standard practices like a powerful Linux build server dedicated to the whole software team, ability to run Eclipse from Linux server and display content on Windows via Xming with all the advantages given, gdbserver for remote debugging, GoogleTest and a custom VNC server running on the platform to remotely control the UI.

www.covalent.co.uk - Covalent Design Ltd

Senior Software Engineer
June 2016 – Aug 2016 (3 months contract)

- Using MDK-ARMv5 and Cypress PDL, implemented in C and C++ high performance device libraries for ARM Cortex-M4 (S6E2G) to control the multiple ADC (4-20mA), I2C and SPI devices on board the MCU along with a custom HTTP client for IoT applications.
- Implemented in C++ protocol libraries to control the following devices:
  - Alphasense's Optical Particle Monitor, CO^2 and Methane Infrared, Volatile Organic Compound.
  - Analog Devices CN0357 (CO^2).
  - Honeywell (HIH6130) and Innovative Sensor Technology (HYT271) humidity and temperature sensors.

www.ericsson.com - Ericsson TV

Senior Software Engineer – R&D
Oct 2015 – May 2016 (8 months contract)

- Implemented in C and C++ on Debian Linux accurate software models of new cutting-edge ASIC (multiple MPEG2, h.264 and HEVC transport stream encoder/decoder) for metric-driven verification (MDV) purposes.
- Integrated the models with existing abstraction layer in C++ for application developers to emulate complete ASIC functionality in software.
- Developed in C++ application for the RTL team to perform design-driven testing (DDT) of SystemVerilog code.

www.xors.com - XOR Systems Ltd

Senior Software Engineer – R&D
Apr 2015 – Sept 2015 (6 months contract)

- Implemented in C++ for ARM a multithreaded application that by recording broadcast quality audio samples from the RION NL-52/42 measuring instrument, compress to contiguous FLAC files for historical analysis as well as

encode to high quality MP3 for streaming over the Internet, enables monitoring environmental noise, noise at work, noise nuisance and noise surveillance, live and everywhere.
- Designed in C++ for ARM a web server implementing a custom HTTP Live Streaming protocol for delivering, over an SSH secured GSM/LTE network tunnel, real-time encoded WAV and MP3 live audio to HTML5 enabled browsers without requiring any third party audio players.
- Developed in C++ application able to concatenate any number of FLAC files into a single MP3 with automatic encoding rate for high quality audio, low power consumption and minimal storage.

www.grassvalley.com - Miranda Technologies Ltd
Senior Software Engineer – Digital TV Workflow & Playout
July 2004 – Feb 2014 (9 years 8 months)
- Porting of RossVideo 2D/3D DVE client software in C from VxWorks RTOS to embedded Linux within the first two weeks of employment obtaining the company's employee excellence award.
- Developed in C software and automation support of custom HDTV enabled DVE hardware, successfully dealing with FPGA designers and enabling the launch of the first HDTV broadcast in Europe.
- Implemented in C a multi-channel PCM audio playback support on legacy VxWorks RTOS based media players when thought not possible due to challenging hardware limits.
- Designed in C high performance Hardware Abstraction Layer for ISHD family of modular media players to provide the application layer of readable and double buffer access to hardware registers.
- Porting the entire ISHD Linux C/C++ code-base to new IS750 media player sporting a dual SD/HD 2D DVE capable video hardware.
- Developed in C embedded Linux for PPC a line discipline driver for the new LGK-3901 media player.
- Implemented in C++ “iControl” serial protocol support for the LGK-3091 and real-time thumbnails generation in JPEG format.
- Implemented in C++.NET support for Dolby D & Dolby E bitstream dynamic audio engine configuration on existing IS750 configuration tool. This strategic feature resulted in a considerable order of IS750 media player from BSkyB.
- Enhanced custom high performance FTP server for media management to allow concurrent file transfer of files greater than 4 GB without breaking backward compatibility.
- Implemented in C++ the TCP/IP and UDP client to control locally or over the Internet (SSL/DTLS) the whole NVISION family of audio and video compact router.
- Implemented in C++ an embedded Linux command line tool to exercise operational behaviours with any NVISION Compact Router and the ability to export results in XML or JSON format for QA.

Tao Group
Senior Software Engineer – R&D
Jan 2003 – July 2004 (1 year 7 months)
Tao Group has developed int**e**nt®, a binary portable, language independent, high performance multimedia platform used by leading OEM in consumer electronics products, smart mobile appliances and DTV.
- Porting VxWorks RTOS device drivers framework in C to the int**e**nt® platform and debugger integration. This resulted in granting a major contracts with Sony for their AirBoard product.

www.windriver.com - Wind River Systems
Senior Software Engineer / Team Leader – Architectural Engineering Department
May 2000 – Jan 2003 (2 years 9 months)
- Managed team of four developers for the design and development of VxWorks RTOS device drivers to support the SH4 companion chip SH7751 (USB, CAN, MOST, SPI, I2S, I2C, PCI, RS-232/422, IrDA, AC97, S/PDIF, ATAPI) made by Renesas used by Siemens VDO and targeted to Car Infotainment applications.
- Designed in C patent pending device driver templates enabling the team of developers to work more efficiently and dramatically reduce the number of bugs.
- Responsible for the full software life-cycle, integration, testing, release and customer liaison. After completion the project was successfully deployed on the BMW X5 series.

PREVIOUS EXPERIENCE
Junior/Senior Software Engineer
Apr 1989 – May 2000 (11 years 5 months)
Available as separate document on request.

ADDITIONAL PROFESSIONAL TRAINING
- (2014) SCRUM Development Team
- (2003) Project Planning Scheduling & Control

EDUCATION
BEng degree, ITIS GL Lagrange, Italy
(1982 - 1987) Electronics & Software Engineering.