Evan Mortimore

Over 40 years experience in Software Systems Engineering

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Technologies

Extensive experience in Video Streaming, Embedded Linux, Bare-Metal Firmware, OpenGL, RTOS, Device Drivers and Networking Development.

Development Environments

Languages: C++11, C, Java, OpenGL Shading Language, Python, Assembler, HTML/CSS
Hardware: PC, x86 embedded, ARM Linux, Xilinx UltraScale, micro-controllers, peripheral circuit design
Operating Systems: Linux, Windows, Android, Mac OS X, iOS, FreeRTOS, Nucleus RTOS, U-boot
Tools: MSVC, VS Code, Xcode, Eclipse, Make, CMake, Docker, bitbake, petalinux, git, SVN, Jenkins, TeamCity

Experience

3/21 to 4/23 – RED Digital Cinema, Inc.

Leading manufacturer of professional digital cinema cameras.

- Added device driver and UI support for I2C-based audio limiter for V-Raptor camera.
- Added multithreaded implementation of sensor calibration routines for boot time improvements.
- Designed and implemented JSON schema for electronic ND filter calibration in factory.
- Optimized audio buffer writing to media for V-Raptor and Komodo cameras.
- Integrated 3rd party wireless Timecode & Genlock module on V-Raptor XL camera.
- Added audio support to RED streaming code.
- Implemented factory reset via record button press while powering on.
- Added physical dimensions of active sensor region to RCP API.
- Normalized loading of FPGA bit files for UltraScale processors at boot time across all camera products.
- Implemented auto-reboot after firmware upgrade files detected across all camera products.

3/17 to 3/21 – HID Global / Crossmatch Technologies, Inc.

Biometric Scanners and SDKs for Identification/Authorization in Government and Industry.

- Ported legacy single finger SDK to latest generation SDK, for Linux, Windows and Android.
- Ported legacy multiple finger SDK to latest generation SDK for Windows and Linux.
- Developed all new code for latest SDK for new iris scanner for Java, Linux, and Android.
- Aided development of the latest SDK for new technology single finger scanner for iOS and Linux.
- Complete rewrite of Android production build system for modern Android.
- Ported single fingerprint capture SDK to iOS, the first iOS offering from the company.

9/15 to 3/17 – Mad Style Productions Inc.

Consulting Services for Application Development

- Developing MQTT gateway for IoT applications using embedded Linux on commodity ARM SOC based boards including Raspberry Pi, Beaglebone, and other ARM based development boards.
- Developed a cross-platform OpenGL framework in C++11 as open source for non-gaming visualization for robotic sensors, IoT energy monitoring, non-linear video editing, etc.
- Ported U-Boot, Linux Kernel, Busybox to Raspberry Pi 3 from scratch, and authored a tutorial document on GitHub, for minimal IoT server applications on inexpensive hardware.
- Developed hardware and firmware for IMU prototype for quad-rotor applications.
- Designed and developed prototype TRIAC lamp dimmer, using Cypress BLE PSoC.
- Developed the Lighting Control Assistant Android application for Eaton/Cooper.
- Ported Lighting Control Assistant to iOS, also for Eaton/Cooper.

7/13 to 9/15 – Roku Inc.

Embedded Linux Devices for Consumer Video Streaming Products

- Debugging of several Linux kernel/driver issues prior to release of cost-reduced Roku products.
- Configured and verified I2C and I2S kernel drivers for connection to TI Class D amplifier.
- Implemented audio subsystem in 1st generation Roku TV system.
- TI amplifier tuning using TI evaluation modules.
- Reverse-engineered XML configuration of internal audio sub-processor in Sigma Designs SOC.
- Analysis/Debug of several IEC60958/IEC61937 detection errors in Nucleus RTOS MIPS A/V coprocessor firmware.
- Implemented redesigned audio subsystem in 2nd generation Roku TV system.
- Implemented audio cross-fade feature request for Netflix, a top-tier streaming content partner.

3/08 to 3/13 – Lumenergi, Inc.

Energy Efficient Lighting Systems for Commercial Real Estate Properties

- Fluorescent ballast firmware, with improved dimming smoothness and range for 0-10 volt control input.
- Implemented Digital Addressable Lighting Interface (DALI) protocol firmware for ballast.
- Built prototype hardware interface for debugging ballast firmware in real-time.
- Designed and built high performance USB light level sensor for characterizing ballast performance, using OpenGL to plot light levels in real-time for flicker analysis.
- Designed and took to production a USB to DALI hardware bridge interface.
- Principal architect for 2nd generation USB-based DALI lighting control system, optimized for performance.
- Architect and sole implementer of firmware and cross-platform drivers for all USB to DALI devices.
- Hardware architect for 802.15.4 wireless control system. Designed, produced and brought up prototype hardware, firmware and drivers for Linux and Windows using off-the-shelf radio modules.
- Wrote unit test framework to test driver/firmware interface, incorporating Python as scripting language.
- Invented novel approach for commissioning of large-scale DALI lighting systems. Developed system to prove validity of concept, involving light sensor design, signal processing algorithms, and application UI featuring extensive use of touch gestures, voice feedback and OpenGL ES mapping visualization on Android tablet. Ported 2D font rendering engine to OpenGL ES 2.0 for Android mapping application. Listed as inventor in patent applications related to this work.
- Named as co-inventor on numerous patent applications for work in scalable lighting control systems.

11/06 to 11/07 – Rearden Labs / OnLive

Technology Incubator / Online Gaming Service

- Implemented API interception techniques providing complete capture of video (OpenGL, DirectX and GDI), audio and controller input to allow real-time remote game play.
- Implemented initial real-time audio streaming subsystem.
- Implemented high performance, real-time OpenGL GUI presentation engine: 8 simultaneous 720p streams at 60fps.
- Implemented OpenGL pixel-shader for color space conversion to optimize video performance.
- Major contributor to architecture of first OnLive multi-game demonstration system, with multiple 8-core Xeon based servers with top-end NVidia graphics cards.

05/06 to 10/06 – Cirond Corporation

Enterprise Grade Internet Security Appliances

- Ported the company's Secure Gateway Operating System to a new OEM security appliance platform.
- Made enhancements to SGOS to provide network and USB Flash booting.
- Researched Linux from Scratch (LFS) as a foundation for next generation SGOS implementation.
- Implemented real-time MPEG-2 transport multiplexer for newly created video CODEC and AAC audio.
- Architect of large-scale video streaming system for top-tier Japanese Internet Service Providers.

11/05 to 05/06 – XVD Corporation

Video Compression Products for Broadcast and Internet applications - consultant

- Adapted XVD CamCast live real-time streaming encoders to the StreamSmith SDK from Mobius.
- Wrote the *XVD Program Stream (XPS) Specification* for Toshiba.
- Adapted the StreamSmith multiplexer to produce XPS compliant bit streams.
- Implemented XPS player / server demo with the StreamSmith SDK.

04/01 to 11/05 – Mobius Digital Video, Inc.

Professional grade MPEG Encoding Hardware and Software for PC's - consultant.

- Designed and implemented StreamSmith, the SDK for multiple hardware MPEG-2 encoder products.
- Developed an application using the SDK, providing full control of multiple simultaneous encoders.
- Developed proprietary real-time MPEG-2 System/Program/Transport multiplexer in software.
- Implemented DirectShow software decoding support with optional OpenGL rendering in real-time, as well as hardware MPEG-2 decoder support.
- Implemented an RTP streaming engine from scratch according to the RFC documents.
- Developed a Web based interface for encoder server farms.
- Administered and provided all content for the company Web site. Hand coded HTML and CSS**.**

04/97 to 03/2001 – FutureTel Inc.

MPEG encoding hardware and SDK for PC's - consultant.

- Assisted in the enhancement of existing FutureTel device drivers, SDK, and applications to support a new hardware MPEG 2 encoder.
- Ported existing software from Windows 3.1 to Windows NT 4.0.
- Designed and implemented 2nd generation SDK to support multiple simultaneous encoders, real-time streaming, and multicast networking.

10/96 to 3/97 – CWA Communications.

R&D firm specializing in telecommunication hardware and software design - consultant.

- Debugged and enhanced an IP-over-HDLC protocol layer.

10/78 to 12/94 – Available Upon Request