BRETT R. JONES

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Senior Software Engineer with 25+ years of experience in a wide variety of software languages on a wide variety of platforms. Most proficient in C++/C/QT on Linux or Windows OS

Languages: C++, C, Java, Various Assembly Languages

Environments: QT, Embedded Linux, Android, Windows, Visual Studio, wxWidgets, Code Blocks

Software Engineering Experience:

Election Systems and Software (August 2023 to December 2023) C++/Embedded Linux Contractor

Modernize Rules and Tabulation c++ code to Core Guidelines/c++20 standard. Doxygen updates for same.

Union Pacific Rail Road (October 2017 to August 2023) C++/Qt/Linux contractor

Worked on next generation C++/C/Qt/Linux Train Dispatch System called CADX that has 2.7 million lines of code. Created graphical display of train warrants. Reworked track rules logic and display. Created IETMS multiple transport layer communication feature including GUI and device states. Rework ORACLE database access to use a common, maintainable C++ Object. Bug fixes and enhancements mainly of GUI, Railroad Network Display System and Train Authorities logic. Performance and accuracy enhancements of QGraphicsScene based display system. Rework of CADX custom script loaders to native Qt and C++ code.

AGCO Corp – Hesston KS (September 2012 to September 2017) Senior Software Engineer

Worked on Linux based C1000, C2100, and NT01 display platform for tractors and combines. Mostly bug fixing and enhancements including new workflows and OPENGL speed optimization. Work for C1000/C2100 was in C++ and wxWidgets. Worked extensively with object pools and ISO11783 protocol over can bus. Later wrote 70% of GoTask. GoTask runs on Apple IOS and Android phones using C++ for all but the GUI and automatically networks wireless with C1000/C2100 to send and receive task and field data between the tractor and cloud. GoTask also runs in Windows/QT for rapid development. I wrote the Android GUI in Java and Windows GUI in QT and a coworker wrote the Apple GUI in IOS. I later reworked almost all of the QT/Linux Based NT01 display platform and GUI for Gleaner combines. Wrote at least 70% of new GUI and features for the new AGCO OPUS (Ideal) combines in QT/Embedded Linux.

- App for Android & iPhone (GoTask) communicates data to Cloud Based FMIS (Farm Management Information Systems)
- API's between vehicles to data structures in cloud via SSL (Secure Socket Layer)
- UDP/TCP Wireless Vehicle 2 Vehicle Detection and Networking
- Extensive QT Based GUI Design/Control/Sensor Feedback for optimum user experience
- Complete Inception to Production of OPUS Display Terminal GUI and features
- ISO11783 and Proprietary ISO Bus Protocols

John Deere – Urbandale IA (September 2010 to September 2012) Software Engineer Consultant

Initially worked on GS2 2630 display platform system for tractors which uses embedded windows CE. Later moved to GSix team to work on the next generation guidance display platform. GSix was initially developed on Windows then in Linux. Most work was with QT and porting the guidance logic from the 2630 platform. Created OPENGL 1.2 Map Widget in QT showing vehicle and spray coverage etc. and solved several issues including Z fighting and how to display/store map data world-wide vs just within farm boundaries. Complete Agile, TDD, ATDD, Emergent Design and QT training. All work was with C++ and QT for cross-platform portability.

- Training in Agile, TDD (Test Driven Development), ATTD (Acceptance Test Driven Development), Design Patterns and QT
- Extensive Unit Test development with Google Test/Google Mock
- Development of QT GUI to exact specifications including Unit Tests

Ordermatic Corporation – Oklahoma City OK (July 2006 to September 2010) Software Engineer

Wrote code for a Linux based Point OF Sales (POS) system. The primary focus of development was a proprietary embedded board with a 500Mhz processor that drove 16 video monitors and 17 serial devices and up to 12 order entry keyboards simultaneously. It also communicated with credit card pays system and Management and Reporting software and software updating via Ethernet. Used Sqlite extensively for databases of employees, tickets, settings, and communication store and forward. Creating a C++ multi-threaded program on that handled all of these devices and operations without slowdowns or stability issues was quite a challenge. This system is now in over a 100 Sonic Drive In stores and more being installed every month. Wrote an emulator of the POS system with wxWidgets with virtual devices that ran in windows for training and testing purposes. Wrote modules for the POS update system in VB.NET. The update system uses Secure Shell and SFTP for transfers. Wrote code which allows displays to be dynamically changeable. Added statistics and performance accumulation and reporting. Coded a custom GUI with dialog box hierarchy of classes and dialog manager for order entry interaction. Rewrote all security related to RFIDs, secure pass scanners, login etc. Wrote the brain of the new OM1 system as a windows service in C++. Wrote a 4 display kitchen monitor system in Linux and wxGTK.

- Complete Inception to Production development of resource limited embedded POS System
- Extensive networking design and development using TCP and SSL protocols
- Complete design and development of 16 Display UI and order entry

Maxtor – San Jose CA (January 2006 to July 2006) Embedded Engineer Consultant

Worked with embedded Linux in a Network Attached Storage Device. Modified Linux kernel to add watchdog and power control to SATA drives. Utilities I created include flash program (Uboot) update, memory tests, network connect/disconnect detection, drive health, and samba control. Created hard drive image creator in windows and image restore using a live boot CD with PCLinuxOS and a GUI user interface I created based on wxWidgets.

Entropics – San Diego CA (November 2005 to January 2006) Software Engineer Consultant

Worked with 4 processor (3 MIPS 1 COLDFIRE) embedded Ethernet to cable bridge and distribution system (Clink).

In C and COLDFIRE assembly created host to clink Ethernet bridge communication system per design documents. Worked with Greenhill probes/debugger/compiler and threadx embedded OS to create mail box message system, Ethernet bridge, PCI bus and Flex bus tests. First version was using polling. Later created interrupt handlers in assembly and C. Created simultaneous DMA transfers and pipelining for performance reasons.

Ordermatic Corporation – Oklahoma City OK (July 2005 to November 2005) Software Engineer Consultant

Created Administrator server and client tools similar in concept to PC ANYWHERE but built to survive frequent

disconnects and low bandwidth issues over satellite links. I created custom scripting and a interface to Visual Basic applications to automate unattended updating of remote locations with the administration tools. Created a socket library and a utility library that compiles and runs in both Windows and Linux platforms. Added networking capabilities, networking protocol, input capture/replay, multi-threaded print spooling, and order entry logic to Linux based POS system. Created Windows virtual POS emulator that made it possible to run the embedded Linux software under Windows OS and speed up the development process. Worked with SDL graphics and embedded Linux to create network enabled Touch Screens for order entry.

Storm Share - Plankinton SD (Mar 2003 to April 2005) Embedded Software Engineer

I wrote the firmware for a portable 128 bit encrypted hard drive called the Freedom Drive. The Freedom Drive has a COLDFIRE 5282 processor and an Ethernet interface and can be used as a network drive (NAS) or as a personal portable hard drive. I integrated software from various sources. I implemented encryption algorithms Blowfish, MD5 and DES from various open source code sources. I ported Blowfish from C to assembly for speed optimization. I implemented a complete TCP/IP stack from lwip, open source TCP/IP code. I wrote the network file sharing protocol, Ata driver, and file system from little or no reference code. The Freedom Drive product has been completed.

Iomega Corporation - Roy UT and Nacogdoches TX (April 1996 to Jan 2003) Software Engineer

Created disk duplication and compare production software in C++ and Linux. Later ported the software to Windows 98. Wrote code in C++ and windows to control disk duplication automation robots and enter the duplication results in a Microsoft Access database. Performed most of the embedded software engineering for a Zip drive base mp3 music player prototype. The firmware was in C and assembly on a TI processor TMS32010. Wrote “Iomega High Capacity Formatter” which formats Iomega drives with FAT32. Reverse engineered NTFS file format to enable recovery software to read NTFS files. Proficient with ATA/ATAPI and SCSI bus analyzers. Maintained and updated both Win9x and Win2K/XP drivers for Iomega drives. Wrote “Iomega Tools for Windows CE” except for the driver. Added features and maintained Iomega Tools for windows. Wrote XP/2k/9x ATAPI finder utility that determines which drives are connected to which ATA buss and tells customer how to configure his drive. Helped create several multimedia prototypes including a Web Cam capture program. Worked with ActiveX both as an interface to Iomega drives and also to hook into the windows operating system for security and explorer functions. Helped write DLLs for communication program prototype that used DLLs as a simple module plug-in. I am somewhat proficient with OPENGL and DirectX programming.

EDUCATION: A.A.S. In Electronics Technology at Salt Lake Community College