

EMPLOYMENT

Setup for Employee, Temporary, and Contract business arrangements to meet client needs

EDUCATION

University of Washington – BSEE 12/80 and 25+ years engineering experience

KNOWLEDGE AREAS

Commercial product design, Communications, Medical Ultrasound, Heart Monitoring and Defibrillation, Non-invasive blood pressure measurement, manufacturing automated test in controlled (CFR 21 Part 820, and DO-178B) high reliability design environments.

SKILL SUMMARY

- **Software Development:** Experienced in C/C++, Design Patterns, Atmel assembly, Windows, Linux, uClinux, VxWorks, microcontroller programming with tools such as Visual Studio, GNU C, GDB with DDD. Solid understanding of the overall software development processes. Also, experienced with software CM processes and tools such as ClearCase, ClearQuest and Linux/Unix/NT development environments.
- **Hardware:** Designed and developed board electronics for high performance medical applications. Designed and developed microprocessor hardware/firmware for gaming platform and medical applications. Environments include OrCAD (Windows), Viewlogic Powerview (Sun OS)
- **System Development:** As an engineering lead, participated in the design and development of a Win2K based high-end ultrasound system, and development for a 22K line C/Assembly based automated test system.
- **Program Management:** Project lead for several embedded applications/features. This involved requirements gathering and analysis, task breakdown and management, scheduling, implementation, integration and verification.
- **Technical Writing/Proposals:** Authored numerous technical documents including: software architecture/high-level designs, hardware specifications, user's manuals, data analysis reports and process documents.
- **Personnel Management:** Developed excellent organizational, communication and personnel management skills while mentoring engineers, supervising personnel and managing projects.

RELATED EXPERIENCE**StepwiseSolar**

January 2009 - Now

- Phase I - Research for markets, technologies, strategies, and requirements. Phase 2 - Design electronics schematic, PCB layout, and C/C++ software for a solar application. Electronics include an embedded Atmel processor for management electronics.

MythTV.org

September 2009

- Assembled, debugged, and installed MythTV HD recorder under OpenSUSE 11.1 x64 on an Athlon 4000+ X2 system using a Hauppauge 2250 Dual channel TV card. This system provides two DTV channels record/view, commercial skip capability, and networked programming for other viewing front-ends on the local network. This system replaces two analog TV Replay 5040 units on Comcast cable.

Honeywell

Redmond, WA – November 2007 through November 2008

- Created system, hardware, and software specifications for weather and traffic radar using DOORS requirements tool. Maintained and enhanced DOORS DXL scripting for daily controlled requirements interchange with overseas partner. My primary focus included system hardware specifications and 615A-2 Software Data Loader Using Ethernet Interface. Product application is for both military and civilian aircraft. To accomplish this required a team effort with other system and design engineers.

Redmond, WA – June 2007 to September 2007

- Responsible for finding and solving a difficult to repeat embedded system bug causing an Intel processor GP Exception. Task required working with senior staff and significant lab time analyzing Intel bus cycles to locate an Interrupt pragma bug in the C++ compiler used to produce product object code. This design assignment completed successfully after providing technical knowledge used to complete software release documentation requirements in a DO-178B design environment.

Sonasearch

Redmond, WA – September 2006 to December 2008

- Complete design of research sonar software for a Windows MFC application for production field use. This task required knowledge of C++, MFC, Hardware design, operating in a multi-threaded environment.

Honeywell

Redmond, WA – March 2005 to August 2006

- Development of DO-178B Structural Coverage Analysis Testing Tools for TI TMS320C6713 based product. Development used Microsoft C/C++, Python, and Excel/Word VBA Macro's in a Cygwin environment to accomplish task.

Independent Study

Bothell, WA – November 2004 to February 2005

- Xilinx ISE Embedded Development Kit – VHDL 32-bit soft processor system on an FPGA chip capable of running uClinux with hardware and software debug tool support.

Infinium Labs – On demand gaming set top box

Seattle, WA – Contract Project Engineer, May 2004 to October 2004

- Realtime Control Software – Developed security and realtime interface requirements and software code for Atmel AVR RISC processor. The project tools were GNU C and AVR native assembly.
- Security and Console Electronics – Complete missing microcontroller and FPGA hardware design. Then integrate existing display drive electronic design with new PC platform design.
- Independent study of Intel south bridge LPC bus.

Independent Activity

Bothell, WA – May 2003 to May 2004

- Took time off to manage/close a family crisis. Also used this time to install Asterisk to consolidate VoIP infrastructure using Broadvoice, FreeWorld Dialup, and IPKall services at home under Slackware and SUSE Linux. Wonder Shaper is used to solve QoS issues on a modest 30 IP home network for VoIP, streaming MP3, Streaming MP2, gaming, FTP, SSH, and standard Internet communications.

Siemens Medical Systems Inc. Ultrasound Group

Issaquah, WA – Contract Engineer, June 1996 to May 2003

- Continuous Wave and Steerable Continuous Wave Doppler Ultrasound – Software feature lead for responsible for ultrasound requirements, design, preliminary schedule, and implementation/code.
- Designed board for high speed 100+ channel A/D capture subsystem. The same board provides stable differential clocks and bias signals for the rest of the system.
- Real-time control of individual ultrasound transmit channels – Developed approach and software to provide functionality in a normally functioning ultrasound machine. This 10-week effort added new user interface and low level hardware control software with supporting requirements documentation to an existing system.
- Responsible for coordinating single board product design. Coordinated efforts of 4 senior design engineers. Performed analysis for board high speed bus designs. Debugged FPGA PCI implementation for a single board product.
- Responsible for introducing and training newly hired software talent to existing product development tools, environment and practices.
- Implemented system wide state save and restore memento pattern using C++. The pattern maintains data encapsulation for an objects internal state while allowing a calling process to later restore an objects internal state.
- Completed implementation and review of FDA regulated Ultrasound transmit power software subsystem.
- Developed a specification to describe an OEM external customer interface for an ultrasound image and screen capture subsystem. The specification was used for in house software development after verifying it met customer needs.
- Enhanced Worst Case Search tool for semiautomated transducer acoustics measurements using Microsoft C++. Updates added specified new functionality and repaired programming oversights. Converted WCS tool to a DLL. Repaired event processing communication across programming space and multithread boundaries.
- Created “CIA Programmers Guide” documentation for on site programmer reference and training.
- Implemented many ultrasound control algorithms to control an ultrasound machine using C++.
- Created TIA-602, Multitech and Hayes modem capability for a VxWorks serial driver in a Motorola 68060 based embedded system. Development environment included the Clearcase revision control system.
- Developed new assembly/C firmware for an embedded ADSP21020 processor. Tests using the firmware are developed in a Motorola 68060 C++ environment under existing proprietary user interface software.

Independent Study

Bothell, WA – May 1996

- Implemented UNIX sendmail, mgetty+sendfax, diald, dosemu, samba, and mp tools for server use. Rebuilt UNIX kernel as part of OS upgrade to host Internet mail domain.

Microsoft Corporation

Redmond, WA – Contract Engineer, April 1995 to April 1996

- Responsible for porting Microsoft Windows NT Hardware Test Certification shell source from Windows NT 3.51 to Windows 95 using MS Visual C++ 4.0. Created Internet distribution package using Install Shield. Maintained test source code control system (SLM) concurrent with the shell programming assignment.
- Developed software and algorithm under Windows NT Advanced Server 3.51 using Visual C++ 2.2 and 1.52. The program provides database evaluation data while developing an algorithm to reduce database size for use in two of the company's products.
- Produced 30 Web Page HTML document tree describing test design and usage. The pages are used

by both final customers and the test design team.

Motorola

Bothell, WA – Contract Engineer, March 1993 to March 1995

- Design Engineer for a Windows mobile computer. High integration achieved using SCAMP II 82C315A system controller. The computer is designed for operation in wide temperature ranges seen in mobile environments.
- Developed GUI software under Windows using Microsoft Visual C++. The program is used for Motorola mobile computer CRT and keypad verification.
- Design support for a 5 inch VGA compatible monochrome CRT assembly.
- CDPD (Cellular Digital Packet Data) System Validation and Verification Infrastructure. Provided test tools, configuration and connectivity solutions in wireless and wired TCP/IP WAN environment for mixed UNIX and MS-Windows environment.
- Designed a circuit to drive 4 VGA monitors from a notebook computer for CRT temperature qualification testing.

Physio Control Corporation

Redmond, WA – Project Design Test Engineer, February 1983 to March 1993

- Developed an electronic-mechanical simulator device to simulate patient non-invasive blood pressure signals for products in production. Two other engineering teams were unable to obtain closure on this project prior to my assignment. Outside interest caused company to evaluate potential sale of this device as a new product.
- Designed 15K lines of 25K line total mixed C and assembly for a real-time automated production test system. The test system software is used to control and analyze high speed high energy product waveforms and test fixture electronics. The test system performs over 300 tests for each product tested. Final test system validated successfully within schedule. Worked closely with partner senior engineer to integrate independently developed code into the final product.
- Managed six engineers to develop an automated test system for production. The test system is used to calibrate and test a medical product to provide heart therapy and heart measurement.
- Design electronics used for real-time automated calibration and test of high energy small signal medical instrumentation.
- Developed interrupt driven serial RS-232 communication software for automated production test platforms. Solution took the form of a MASM generated DOS INT14 TSR replacing BIOS serial communication function.
- Designed communication link between production test system and VAX computer. Both systems are heavily used multi-user, multi-tasking computing systems. The link provided datalogging, CAE information conduit for forward and back annotation of CAE designs, spooling, and general purpose file transfer.
- Created Motorola 6805 microcontroller embedded product test code. Tools used; UNIX hosted cross assembler, Tektronix emulator for real-time system debug.
- System manager on multi-user computer. Responsible for computer backup procedures, organizing file system for ease of maintenance and use.
- Developed test case specification in accordance with IEEE/ANSI Std 830-1984, "IEEE Guide to Software Requirements Specifications".
- Developed a Test Procedure Guideline to ensure Test Procedure compliance with Code of Federal Regulation (CFR) 21 Part 820 "Good Manufacturing Practice".