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Summary

Versatile Professional Engineer with over 15 years experience in software and hardware. Software successes include Embedded CAN based microcontrollers, device drivers, GUI applications and large signal processing system. Hardware achievements range from gate array designs, graphics co-processor to retail terminal systems.

Professional Experience

Great River Electronics:

2003 to Present

Industrial Electronics and Professional Audio Products.

Embedded Software Engineer:

Wrote Visual Basic Server and PIC microcontroller C programs to interface via a modem for real-time monitoring of an elevator controller's CAN bus.

Wrote 17,000 line C code program for a PIC microcontroller that drove a stand-alone PID controlled valve resulting in industry's best performing valve. Also wrote code for companion miniature display with human controller interface. Authored test environment software including 2 Visual Basic (VB) and peripheral interface software packages along with user documentation.

- Both products supported CAN and RS-232 serial buses.
- Performed design, implementation, test and on site customer integration.
- Re-worked math algorithms for speed including transcendentals.
- Integrated engineering tests and measures inside code resulting in enhanced functionality and speedier development.

Webdesigner and Custom Graphics:

2002 to 2003

Self employed webdesigner.

Webdesigner:

Designed, presented, performed web maintenance and revamp of web-sites including improved browser acceptance/HTML validation and search engine hit-rate increase.

- Developed clickable geographic maps for state and county oriented hot-links resulting in intuitive navigation.
- Automated website updates resulting in more current and consistent HTML content.

Innoveda, Inc.: System Level Design:

2000 to 2001

Innoveda: a commercial Engineering Design Automation (EDA) software suite provider, now part of Mentor Graphics.

Project Management:

Led team of 11 engineers, writers, and support staff of a \$4,000,000 sales/year SW product: HDLScore, used in determining coverage of Verilog and VHDL designs. Planned current and future releases with technical briefs, design & implementation specifications. Project management included staff off-site brainstorming, administrative & marketing reviews, scheduling, and intranet site documentation. Coordinated on-time 1 major and 6 minor releases.

- Architected enhancements including Temporal Logic to HDLScore posing the product for a leading edge release.

- Designed and implemented new software build environment resulting in simultaneous multi-platform build ability and reduced incremental make time 90% on multiple platforms/OS/version: Solaris, NT, Linux, HP-UX, AIX & IRIX.
- Successfully transferred out dated bug reporting system to customer/web based *Clarify* improving Customer Support.

Lockheed Martin: Air Traffic Control Engineering:

1995 to 2000

Principal Electrical Engineer

- 5 embedded designs including paired modem systems for remote radar data (involving assembly, C and drivers), co-processor ASIC and remote PC Power distribution.
- Solved training staff shortage by stepping in as trainer preventing schedule slip. Trained Chinese customers (3 times) in 5 week System & Hardware Air Traffic Control course that included Web and UNIX training. Developed class materials using traditional, HTML and multimedia on short notice. Conducted and evaluated student's exams.
- Design and procurement selection of Air Traffic Control system hardware including redundant LANs, Solaris-Unix/Intel platforms and GPS.
- System/Hardware Engineering for STARS proposal. Led and implemented system design for Air Traffic Control replacement system's Terminal Control Workstation. Successfully integrated multiple DPMI Pentium based computers with multiple LANs, Keyboards and Display systems. Defined multiple specifications for system equipment: e. g. 12 Meg video card, controller keyboard, cabinet design, and peripheral interfaces. Coordinated many vendor contacts and requirement resolutions.
- Wrote 3700 line "C" VME platform drivers and interfaces for OS-less system. Included Serial and modem communication between airport sites.
- Designed VME based system for Terminal Control Workstation. Led implementation team. Coordinated procurement, construction and test of 5 prototype units for 2 projects that both completed on time.
- As lead software programmer, wrote SEI Level 4 "C" based program to implement alternate Radar signal to Display path with new and re-used code on time for successful delivery.
- Authored 35,000 line Windows based GUI C++ program (3400 line help file) for 95 and NT to interface with FAA Optical Disk Sub-System including 32/16-bit thunk I/F, infinite transcript pad and automated diagnostics meeting customer requirements through deployment.
- Implemented PTR (code rework) in divergent areas including suicide note stack tracing, RS-232 serial interface and bit-wise serial interface trouble shooting.

Loral: Postal Engineering:

1992 to 1994

Senior Electrical Engineer:

- Project Engineer \$145,000 R&D budget (staff of 4 for half year) for the development of hardware and software for a Point-of-Sale (POS) terminal for the U. S. Post Office and other international post offices. Managed staff, account and day-to-day activities, conducted business meetings and presentations.
- Designed reduced size PC for POS terminal using PRO-Engineer resulting in smaller footprint yet faster with additional networking (LAN) ability.
- Designed architecture and add-on PCBs and for POS terminal for international work.
- Programmed device drivers for controlling multiple communication ports, a Credit Card reader, a Currency Validator and a printer.

Unisys: Engineering, Gate Array & Board Design

1988 to 1991

Electrical Engineer

- 4 ASIC designs: Self directed design and management of MSI replacement in a LSI 100K series gate array using Mentor Graphic's Neted, Quicksim & Quickfault. This effort was one pass, on time, in budget and 100% testable. Re-implementation of company standard ASIC in 4 weeks. 1st pass success. Completed checkout & redesign of Graphics processor. Exception algorithm design in math co-processor.
- Cell library designer and for 6 CMOS ASICs. Created dozens of models. Maintained these, vendors and various technologies files for product lifetime. Evaluated new EDA programs and tools, integrating them into existing processes and configured tools for site use.
- Extensive Mentor training. Trained over 50 people in Mentor tools.
- Solely designed and checked out high-speed serial/VME card that carried twice the number of channels over minimum design goal and incorporated full diagnostics.

Sperry-Univac/Unisys: Software

1983 to 1992

Electrical Engineer

- Extremely adept in C and C++, Windows & OOP programming. Numerous programs written and supported across multiple platforms simultaneously. EDIF translators, pattern translators, HDL simulators, Graphics editors for layout and various other ASIC design related tools.
- Set up 2 checkout teams' software/hardware board test environment that increased bug identification quickly.
- Enhanced checkout program for DMA card design doubling engineering performance and decreased test program load time by 6x (30 min. to 5).
- Managed 10 PLAs resulting in quicker reprogramming and fitting logic in minimum number of parts.
- Master model builder for hardware accelerators: Reduced previous model set size by 25% negating need to purchase 2-4 expansion units resulting in a \$60,000 cost saving.
- Developed 2nd order timing for custom cell IKOS model library resulting in tighter designs as less margins were needed using only a 1st order model
- Early System Administrator for Unix based workstations & Coordinated release on ASIC software support tools onto multiple OS platforms insuring uniform product for 7 projects.

Honeywell, System & Research Center

1981 to 1983

Research Assistant:

- Designed interface of a commercial video disk player as a real-time random video access memory - an early digital CD.
- Designed single board computer interface for flight simulator's controls.

Physical Electronics (Perkin-Elmer):

1979 to 1981

Engineer Intern:

- While an Intern, gained experience in production, test, production engineering and R&D design of electronic analog and digital equipment.

Computer

OS: Windows (XP, W2K, NT, W98, W95), Linux, Unix, Solaris, AIX

Languages: C++, C, Java, VB, Pascal, Lisp, HTML, Verilog, VHDL,

Tools: Office 2000, MS Designer, Pro/Engineer, AutoCAD, Mentor Graphics, P-Spice, GEDCOM, Unicode.

Communications: CAN, RS-232, PC IDE & ISA, VME, Proteus Digital Channel

Website: [//www.tc.umn.edu/~bluhm002](http://www.tc.umn.edu/~bluhm002)

Education

University of Minnesota

BSEE 1981

BSCI 1989

Professional Engineer

PE 1990 #MN 20427

Languages

English, French, Swedish

Organizations

Toastmasters

Earned CTM