

Richard M. Myers

Dick is a Staff Development Engineer at AISD and provides system level code development, FPGA hardware development (HDL), hardware and software support for simulation and emulation. He is experienced in operating systems (including real time) and production level C programming. Dick began work with AISD in early September 2000.

Summary of Work Experience

Skilled in C programming, Verilog HDL and Xilinx synthesis, DSP hardware modeling and Verilog system modeling in C, embedded systems design, high-speed data acquisition systems, and digital hardware design using Verilog HDL. Experienced with many bus architectures, and operating systems. Strong system integration experience (embedded, PC, UNIX, Real-time). Very interested in ultra low power and/or remote sensing applications. Also interested in small, networked devices running Linux or other real-time OS. Resourceful, creative, can-do attitude, and very strong troubleshooting skills.

Skills/Strengths

- Verilog HDL system modeling, simulation, synthesis and RTL translation. C algorithm porting to synthesizable Verilog (and vice-versa). DSP in hardware.
- C Programming, DSP Modeling, Real-time Programming, Embedded Systems, Porting Code, MATLAB, Pthreads.
- Embedded Linux (RTLinux), UNIX (Sun, HP), VxWorks, QNX, MC/OS, OS/2, Windows 95/NT.
- HW/SW Systems Integration, PC/104, PC (AT/PCI), VME .
- Particular emphasis on developing low-power systems.
- Parallel Computing Systems.
- Telemetry Applications.
- Electronics Design (Verilog, OrCAD).
- Xilinx FPGAs, PLDs.
- Networking, UNIX/PC System Administration.
- Creative, with Strong Problem Solving and Troubleshooting Skills.

Work and Experience History

9/00 - Current. - **Absolute Integrated Systems Developers (AISD)**, Grass Valley, CA - **Staff Development Engineer**: Participated in AISD effort to make software and hardware development tools (assembler, simulator, source-level debugger, in-circuit emulator) for a custom DSP chip. Made a cycle accurate Windows DLL from a Verilog model of the DSP core, and implemented memory,

memory-mapped registers, register set, timers, WD, interrupt support, A/D, etc in software. DLL is called from a VB GUI front end.

Developed Verilog HDL FPGA modem from C model. Developed master/slave physical layer protocol, microcontroller interface, specialized QPSK modem (up to 2MB), and other features in Xilinx FPGA using Verilog. Developed C model for custom QPSK modem used in a unique channel/environment. Worked with team members to write embedded software (C in Cygnal 8051) to implement data link/application layer of network protocol. Worked with team to fine tune network hardware and software to perform continuous time-synchronous data acquisitions among distributed acoustic sensors while achieving sub-microsecond timing skew and jitter.

Developed and tested DSP hardware models in C for Gigabit ethernet subfunctions, including feed forward and decision feedback equalizers, timing recovery, echo canceller, and cable model.

Continued work with SAIC on wireless ocean buoy. Helped SAIC to write a proposal to SPAWAR to develop a follow-on to the Advanced Off board Surveillance System (AOSS) system.

Productized several AISD software packages with user front-ends.

Architect and administrator of AISD's Linux-based server (Postfix mail, Apache, Hylafax, Samba, firewall) and network of Windows and Linux PCs.

4/99 to 8/00. - **Science Applications International Corporation (SAIC)**, Ocean/Remote Systems Division, San Diego, CA - **Electronics Engineer - (telecommuting consultant)**: Designed, integrated, and programmed the electronics to implement a wide band data link from an ocean buoy to shore. The system utilized a buoy-mounted PC/104 computer running RTLinux (in Flash) which acquired real-time wide band data from underwater instruments and transmitted it to a shore based Linux PC over a 2.4 Ghz wireless link (TCP/IP), where it could be stored or streamed (played) to the sound card. Local voltages/temps were also monitored and sent to the shore based PC. The software was written to handle data dropouts, data logging, link transparency, on-the-fly data compression (if compressible), and remote control and monitoring. Sadly, the funding was dropped before the system could be deployed and tested at-sea.

7/90 - 4/99 - **SPAWAR Systems Center, RDT&E Div. (formerly NRaD, NOSC)** - San Diego, CA **Electronics Engineer**: Worked on the Advanced Off board Surveillance System (AOSS) project. The AOSS system was deployed onto the sea floor where it collected and processed real time data from acoustic, electric field, magnetometer sensors. All collected data was stored locally on large capacity laptop drives. Processed data was transmitted to the surface via an

acoustic (wireless) data link, which was also used to send commands to the system. AOSS was based on three networked PC/104 computers running QNX. Responsibilities included system design of all processing hardware, sensor and modem integration, real-time data collection software (QNX), OS system administration, and power system design.

Designed high speed infrared (IR) imaging sensor data collection and processing systems (multiprocessor VME). Wrote C and MATLAB software to manipulate IR image data. Maintained complex and temperamental IR data acquisition system. Administered numerous UNIX and Windows based computers. Designed and built digital hardware to interface Boeing IR sensor to Ampex DCRSi data recorder. Collected IR data during US Navy missile tests off the coast of California and Hawaii.

Designed and built high speed digital interfaces, data simulators, and data acquisition systems to support the testing of prototype acoustic array systems. Performed system design, HW/SW upgrades and modifications, and VME system integration for the development of 68K/i860/Sun based acoustic data recording and real-time processing systems for US Navy sea tests. Participated in at-sea acoustic data collection tests locally and abroad. Supported post processing of collected sea test data. Installed computer hardware, operating systems (DOS, OS/2, SunOS, Linux, VxWorks, Windows), and configured application and networking software on numerous platforms.

Integrated a flux gate magnetometer, E-field sensors, and a DiFar acoustic sensor into an autonomous underwater recording package which was later deployed off the San Diego coast.

Responsible for systems design of an Automatic Link Establishment (ALE) radio exploitation system. Included interfacing considerations with existing signals exploitation systems, writing an ALE data simulator (in C), and operator interface design. Target system was an HP UNIX workstation.

Performed systems engineering for computing portion of prototype UHF/VHF Direction Finding system. Included system design and component selection using off-the-shelf VME/VXI bus boards.

Wrote software to interface embedded C40 based controller to military GPS receiver and UHF receiver. Wrote software to extract/format archived data from raw SCSI drive. Also provided VME systems integration support.

8/89 - 7/90 - **Naval Aviation Depot** - North Island, CA - **Electronics Engineer**

Dec '81 - Oct '85 - **U.S. Air Force** - **Electronics Technician**

Education

Bachelor of Science in Electrical Engineering, May 1989 - Washington State University, Pullman WA

Numerous courses from UCSD Extension in C programming, microprocessor system design, programmable logic devices, and acoustics.

QNX Real-time OS Programming Course, Mercury Computer Systems MC/OS and PowerPC Courses (parallel processing systems),

VxWorks Training Class, Sky Array Processor Programming Course, NRaD Systems Engineering Course.