DeaTech Research Inc

Biotechnology & Embedded Systems
Software Development Services

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Over 20 years in business.

Shannon Dealy - dealy@deatech.com

Embedded Systems	Molecular Biology	Scientific Software
Real-time control	Custom Bioinformatics	Linux / UNIX
Performance Optimization	Internet / Web	Software Cleanup

Education

MSc Molecular Medicine, 2016, Erasmus University, Rotterdam, NL

B.S. Biochemistry & Biophysics, chemistry minor, 2013, Oregon State University, USA

B.S. Computer Science, 1983, Oregon State University, USA

Applied Lean Software Development, 2004

Skills

Languages	AWK, Bash/sh, Basic, Bison, C/C++, Flex, Forth, Fortran, Java, Lisp, Pascal, Perl, PHP, PLM-51, Python, R, Smalltalk, TCL
Biotechnology	Medical Devices, RNA-Seq, Custom Bioinformatics, Experienced with many standard lab techniques (flow cytometry, PCR, cell culture, Western blot, immunostains, etc.)
Electronics	Embedded systems, digital & analog electronic design and debug, system diagnostics
Processors/Assembly Languages	ARM, x86, MIPS, MC68000, ATmega/Arduino, PIC, 8051, Z8, Z80, MC68HC16, plus many other older architectures.
Database	JDBC, MySQL, PostgreSQL, SQL
Development Tools	CVS, Eclipse, Git, Make, Mercurial, NetBeans, PyCharm, RStudio, Testthat, Visual Studio, Unittest
Kernels & O/S	AMX, Linux, MS-Windows, QNX, UNIX, VRTX
Internet and Networking	Apache, CGI, Drupal, HTML, HTTP, JSP, TCP/IP, XML, firewalls/security, many other networking technologies
Administration	Linux, MS-Windows, UNIX, QNX, Networking, Backups & Recovery
Specialized Skills	Performance Optimization, Parallel Processing, Battery Powered Devices, High Reliability and Fault Tolerant Systems, Bar Code Scanning, RF Data Communication, Genetic Algorithms
Specialized APIs	FedEx shipping APIs, Adobe Acrobat plugins, Optical Character Recognition (OmniPage & Abbyy), National Instruments NI-DAQ

Some of my past embedded systems work has included:

Air-Weigh	Created device drivers in C for a newly developed ARM-7 processor board used in the trucking industry. Drivers included: UARTs, SPI, I²C, EEPROM, A-D converters, timers and digital I/O.
Meteor Communications Corporation	Created device drivers and hardware diagnostics in C and assembly language for a MC68332 micro-controller to manage an RF data communication link.
	Analyzed a network of 8051 micro controllers controlling an RF communication link for causes of performance problems and numerous bugs. Made major software changes (in 8051 assembly and PLM-51) and devised field installable modifications to fix the hardware bugs, increasing system throughput to more than four times its best prior data rate.
	Other projects performed for Meteor Communications include: development of test/diagnostic software for use in PC board manufacturing; custom QNX device driver written in C for data acquisition; debugged several existing products, correcting a number of core hardware and software design problems; developed software to interface a GPS unit to a data communication system; ported a data acquisition and RF communication program to a new hardware platform; re-designed and coded software on a data acquisition unit to reduce memory consumption by 40%.
Althin Medical Inc.	Performed software cleanup on a kidney dialysis machine (originally 130,000 lines of C code). Converted to C++, redesigned algorithms and restructured the software for easier maintenance. This reduced the executable by 20% and source code by 45%, as well as fixing many bugs while maintaining 100% of the original features and user interface.
Physio Control	Wrote software using Lex, Yacc and C to analyze C source code for data dependencies in order to set software testing and validation priorities for a heart defibrillator unit. Setup a custom configured UNIX computer system to streamline the software build process, reducing the build time from several hours to less than 10 minutes. Worked as part of a team of engineers writing software requirements and test scripts used in software validation.
Biotope, Inc.	Created a custom file system and C language system calls for a blood analysis device. Developed software to use the analyzer's optical data acquisition system for reading bar codes. Wrote a text and graphics display driver for the system's LCD display. Performed system administration for a network of Sun workstations.
International Biomedics Incorporated	Head of software development. Worked with the Quality Assurance department to create specification, design and coding standards so that all new commercial software releases would meet FDA requirements. Wrote software specifications for a fetal tissue pH monitoring unit. Created a device driver in C to allow a PC printer to be used as a medical strip chart. Began development of a C language firmware core to allow replacement of much of the custom software in the fetal monitoring equipment with standard display, printing and networking drivers available from commercial vendors.