**Richard Fine • Micro Systems Development Inc.**

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**Summary:**

## Professional Software Engineer with over 43 years of experience developing real time embedded products. Strengths include software architecture and design, C/C++, Assembly language programming, real-time operating system and hardware module interfacing. Additional skills in trouble-shooting, network protocol (TCP/IP), test tool development and team contribution.

## **Skills:**

General: Embedded systems, multi-tasking O/S applications, software tools, object-oriented analysis and design, graphical user interfaces, development platforms.

Languages: C++ (since 1991), C (since 1983), Visual C++/Basic, Python, VBScipt, Assembly Languages for 8/16/32 bit Microcontrollers

CPU: TI DSP C2000, TI Stellaris, ARM, 80x86, 8051, dspPIC33, 6805, ST-9, AM335x Cortex-A8 ("BeagleBone Black")

Operating Systems: Linux (Embedded), MS Windows (9x, NT), Desktop Linux, Unix (Solaris, SunOS), MS-DOS, VRTX/SMX/Proprietary RTOS, Integrity (Green Hills), Free-DOS, JavaScript/HTML

**Education:**

UMASS North Dartmouth, BSEE 1976

**Professional Experience: (Consulting)**

**BioMerieux, Durham, NC** • (July 2017 - present) 2009-2011

# *Microbial Detection System (BacT/ALERT 3D & Virtuo Products)*

* Web based field service tool for Virtuo product
* HTML & JavaScript front end implementation
* C++ "Back end" support for added features/bug fixes
* Free-DOS operating system replacement of MS-DOS (BacT startup & maintenance).
* Kernel and Command Processor rebuild & bug fixes from supplied source
* Product feature improvement and maintenance File system upgrade and port (XFS for smxRTOS)
* Product feature improvement and maintenance
* Implementation/modification of device drivers (ZIP, USB and Compact Flash)

Skills Applied: C++, C, 80x86 Assembler, SMX, FreeDOS, Integrity (Green Hills),

**GPS Source, Pueblo CO** • Nov (2016) - May (2017)

# *GPS Signal Redistribution and ReTransmission*

* Custom SPI/GPIO drivers (AM335x platform) for inter-board communication
* Design optimized for high speed/lowest overhead data throughput
* SPI Driver Interface between kernel and user "middleware" layer

Skills Applied: (Embedded) Linux, C, Python, Drivers, Yocto

**KVH, Middletown, RI** • 2016 (July - Oct)

# *Mobile Satellite Set Top Box*

* Embedded Linux Port for Hardware/OS Distribution Upgrades
* Customization of 'initrd' image and factory/field (Bash) test scripts

Skills Applied: (Embedded) Linux, C, Scripts

**L-3 Henschel, Ayer, MA** • 2013-2016

# *Integrated Ship Control Systems for US Navy and Coast Guard*

* Machinery Plant/Control System for USCG (VME to PC/Linux port/development)
* Embedded Linux based Microphone Control System; Application and Drivers (Navy)
* Upgrade/Design/Implementation for Automated Bridge Systems - Helm/Navigation Computer System/Steering Controller Subsystems (Navy)

Skills Applied: (Embedded) Linux, C++/C (Real Time), Python, Subversion

**Comprehensive Power Inc, Marlborough, MA** • 2011-2012

# *Motor Drives and Control*

* High Speed (Multi-Board) Control and Communication/Protocol via CAN/RS485
* Embedded optimized data base for system operation and status
* Peripheral drivers/interface – CAN, I2C, ASYNC (RS485/232), SPI, A/D
* Secure custom board firmware downloader via PC Host

Skills Applied: TI DSP320F2809, Stellaris, TI Code Composer, JTAG, C, Subversion

**Northstar Technologies (Navico), Acton, MA** • 1988-1990,1992-1994,1997-2009

# *GPS Chart Plotter Navigation Systems*

* Linux (Embedded) – Platform development; Qtopia graphic performance improvements; openGL(ES) benchmark and qualification
* Team leader/participant for multiple variants of LORAN-C/GPS embedded products
* Multiple unit real time data and chart connectivity using TCP/IP
* Software architect/implementer on most aspects of system
* O/S installation and system task interface/communication
* Data Base for waypoint/route/user preference storage
* GUI screen layout, graphical system interface, LCD drivers and optimization
* Serial communication “protocol” for GPS/NMEA/custom devices

Skills Applied: Linux, C++, C, 80x86 Assembler, SMX, lex/yacc, Windows NT/9x

**Luminus Corporation, Billerica, MA** • 2007

### High Power LED Manufacturer

* Benchmark/Testing software development for LED power characteristic analysis, monitoring and data collection
* ARM based custom firmware for PWM hardware control/Visual C++ front end operator GUI and spectrometer interface

Skills Applied: C, ARM low level firmware

**Foxboro Company, Foxboro, MA** • 1985-1987, 1994-1996

### Process Control Monitoring Systems

* Team leader/participant for new products and existing product enhancements
* Implementation of “Display Builder” to create a graphical view process “page”
* Enhanced “trending” capabilities of UNIX based products
* Ported “trending” portion UNIX product to develop Windows based control system

Skills Applied: C, 80x86 Assembler, VRTX, Windows NT, Unix

**Hycor Division of Sippican Inc, Marion, MA** • 1991-2002 (intermittent)

### Marine CHAFF Decoy Deployment System

* Developed custom UI interface from previous embedded product
* Implemented multiple Windows/DOS based external device simulators
* (Re)Designed existing code base to handle multiple customer/external device variants
* Implemented multiple serial communication protocols for “threat/navig.” devices
* Worked closely with client during specification, testing & delivery phases of product

Skills Applied: C, 80x86 Assembler, VRTX/PC, Windows NT/98

**Bose Corporation, Framington, MA** • 1993

## ***Future Product Prototyping/Feasibility***

## Consulted with BOSE engineering on micro processor based product specifications

* Prototyped 6805 based protocol converter between Wave Radio/video cable device

## Implemented ST-9 based “bit stream” protocol translator for product demonstrations

## Skills applied: 6805, ST-9 Assembler

## **Fire Control Instruments, Newton, MA** • 1990-1991

### Fire and Security Alarm/Control System

## Project co-leader during development of new 80188 based product

* Implemented monitoring incoming switches, smoke detectors and alarms
* Implemented control algorithms for output sequencing and custom I/O relationships
* Designed multi-tasking architecture to handle screen, I/O and control events

# Skills Applied: C, SMX, 80x86 Assembler

**Articles Published:**

***Debugging with Real Time Scripts***, Embedded Systems Magazine, August 1993

**References & Work Prior to 1991:**

Furnished upon Request