

# Jeffrey R. Stone

## Wilton Softworks

Consulting Software Engineer Specializing in Embedded  
Real-time, Scientific and Industrial Applications

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Member: Consultants' Consortium

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### Summary of Experience

#### Technologies:

Embedded Real-Time  
Systems  
Event-driven Systems  
Multitasking Systems  
Data Acquisition  
Digital Filtering  
Neural Networks  
Automated Measurement  
Speech Synthesis  
Laser Ablation  
Sonar  
Gas Chromatography  
Capillary Electrophoresis  
Pneumatic Controls  
Thin-film Fabrication &  
Testing  
DNA- and Peptide-  
Synthesis

Ion Mobility Spectrometry  
Electro-Medical Devices  
FDA Good Development-  
Procedures Guidelines  
Model-Based Software-  
Engineering

#### Operating Systems:

AT&T Unix System-V  
MS Windows XP, 2000,  
NT, 95, 3.1, MS-DOS  
DEC OS/8, RT-11, RSX-  
11/M,M+, RSTS/E,  
VAX/VMS, ULTRIX  
DGC RTOS, RDOS  
Kadak AMX  
Phar Lap ETS

#### Languages:

C, C++, MS Visual C++

AWK  
FORTRAN and variants  
BASIC  
Most assembly languages

#### Hardware:

IBM PCs and compatibles  
Intel 80x86 family  
Analog Devices ADMC-  
300 DSP  
NSC-32000  
Sun 50 work-station  
Motorola MC68000 (NCR  
Tower)  
DEC PDP /7, /8, /9, /11,  
Micro-VAX-II  
DGC Nova, Nova 1200  
AVR micro-controllers

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### Consulting Experience

January 1975 - Present:

Independent software consultant on projects including the following:

#### Monadnock Art X Tech, Peterborough, NH, 8/15 – present

Conduct classes/workshops for hobbyists in use & programming of Arduino/AVR-based monitoring and control devices for home automation. Select & purchase hardware components. Design, write, prototype hardware software, and lesson-plans for class-work.  
(AVR, C++, Thermal measurement, Internet connectivity, external device control, ArduinoIDE)

#### Wilton Softworks, Wilton, NH, 4/11 – present

Software and hardware development for AVR-based monitoring and control devices. Self-trained in AVR C/C++ programming. Select & purchase hardware components. Design, write, prototype, build, and debug the hardware and software.  
(AVR, C++, Thermal measurement, external device control, Eclipse IDE)

#### Elbit Systems of America / KMC Systems, Merrimack, NH, 9/10 – 3/11

Software quality assurance testing for robotic laboratory diagnostic devices. Wrote, conducted,

and reported on software quality tests, both formal and informal, including testing and closing of bug- and other issue-fixes, conducted code reviews and submitted issue reports. (Electro-medical devices, SQA, FDA)

**Wilton Softworks**, Wilton, NH, 8/06 - 8/10

Designed and implemented a language-independent UML-state-machine-to-code generator to design, generate, maintain and diagram event driven systems. (C, AWK, UML, Software Tools, Model Based Software Engineering)

**Zoll Medical Corp.**, Chelmsford, MA, 11/05 - 9/06

Resolved issues and added features to control software for cardiac defibrillator/pacer/monitors. Designed and installed firmware upgrades for feature enhancements. Enhanced performance and reliability. Wrote and executed software release test procedures. Responsibilities included code design, code reviews, design, testing and documentation of quality assurance tests, and software change documentation. (C, Electro-medical devices, FDA, SQA)

**Cytec Corp.**, Boxborough, MA, 7/03 – 12/04

Resolved issues and implemented new features in control software for automated cytologic micro-slide preparation system and slide reviewing station. Engineered and documented release of updated control software for another micro-slide preparation system. Resolved issues and enhanced efficiency and reliability. Designed & used Shlaer-Mellor/UML state-diagrams for automatic code-generation. Documented existing code with Shlaer-Mellor state diagrams. Responsibilities included code design, code reviews, software testing and change documentation. (C++, Motorola 68332, Electro-medical device, FDA, Shlaer-Mellor, UML, IBM Rational Rose, Model Based Software Engineering, SQA)

**Cytec Corp.**, Boxborough, MA, 4/02 - 8/02

Resolved issues and implemented new features in control software for cytologic micro-slide preparation system. Resolved issues, improved reliability and operation in an ISO9001-certified company, under FDA Good Manufacturing Procedures Guidelines. Designed & used Shlaer-Mellor state-diagrams for automatic code-generation. Documented existing code with Shlaer-Mellor state diagrams. Responsibilities included code design, code reviews, software testing, and change documentation. (C++, Motorola 68332, System Architect, Electro-medical device, FDA, Shlaer-Mellor, Model Based Software Engineering, SQA)

**Arthur D. Little, Inc.**, Cambridge, MA, 1/01 - 7/01

Designed software architecture and wrote control program for a two-channel acoustic blood-clotting analyzer. Designed and implemented state machine interpreter, inter-thread messaging and timed- messaging facilities. Designed communication protocol between embedded system and graphical user interface. (C, Intel 80586, Phar Lap ETS Kernel)

**Voice Signal Technologies**, Cambridge, MA, 9/00 - 11/00

Researched and recommended networking technologies for networking a voice activated product. Designed prototype software to run on a hand-held computer for researching voice input strategies.

**Polaroid Graphics Imaging**, Waltham, MA, 4/99 - 6/00

Wrote electro-mechanical firmware for high end color laser printer including motor servo control and finite state machine library routines. Upgraded existing code to use new library features. Troubleshoot and isolated motor problem in new hardware upgrade. (C, Motorola MC68332, Laser Printing, Sparc workstation, Sun Solaris, Rational ClearCase)

**Double E Company**, W. Bridgewater, MA, 10/97 - 12/98

Designed firmware to control electronic industrial brake. Designed and implemented programs to

simulate & test control algorithms. Designed and implemented inter-processor communication between single board computer and three DSPs. (C, C++, Analog Devices ADMC 300 DSP Assembler, Intel 80386EX)

**Resonetics, Inc.**, Nashua, NH, 12/97 - 5/98

Designed and implemented a control program for laser ablation micro-machining system including operating a rotary stage and control of the laser. Designed user interface and communication protocol. (C, 80486, laser micro-machining)

**Ion Track Instruments, Incorporated**, Wilmington, MA, 4/97 - 12/97

Designed and implemented software enhancements to control pneumatic paper-handling devices for explosives trace detectors to collect and inspect airline passengers' boarding passes for explosive residues. (C, C++, 80486, GUI, Pneumatics, Data Acquisition, Ion Trap Mobility Spectrometry)

**Ion Track Instruments, Incorporated**, Wilmington, MA, 6/95 - 8/97

Designed, implemented, and enhanced software for hand-held portable Ion Trap Mobility Spectrometer for narcotics and explosives vapor detection. Implemented communication with host computer to record spectra and maintain substance data base. Enhanced software to include LCD display and push-button controls. Added new functionality including field calibration ability. (C, 80486, Data Acquisition, Ion Trap Mobility Spectrometry)

**Ion Track Instruments, Incorporated**, Wilmington, MA, 2/95 - 8/97

Enhanced software in second generation narcotics and explosives trace detectors for vapor and surface contamination, including improvements to detection algorithms and GUI. Added touch screen controls and support for alternate data acquisition hardware. Created common set of sources for similar instruments and placed under revision control. Product received Technology Innovation Award from *Aviation Week and Space Technology* magazine. (C, C++, 80486, GUI, Data Acquisition, Ion Trap Mobility Spectrometry)

**Certek Corp.**, Bedford, MA, 12/94 - 2/95

Consulted on and provided software support for development of electronic industrial braking system. Recommended single board computers, data acquisition equipment, and software development tools. (C, Intel 80186)

**Ion Track Instruments, Incorporated**, Wilmington, MA, 12/93 - 12/94

Enhanced software for explosive vapor detector, added neural network classifier, trained neural net to identify explosive compounds. (C, 80186, AMX, Neural Networks)

**Medical Laboratory Automation, Inc.**, Pleasantville, NY, 11/93 - 12/93

Designed and wrote programs to simulate blood clotting time tester and clotting time tester programmer, communicating via RS-232. (C, Intel 8086)

**Waters division of Millipore Inc.**, Milford, MA, 10/93 - 5/94

Enhanced a capillary electrophoresis system, adding remote control via serial line. (C, Wildcard 8088)

**Waters division of Millipore Inc.**, Milford, MA, 1/92 - 3/92

Supported development of capillary electrophoresis system during change of personnel. Identified and resolved issues, added support for new hardware, implemented new software features. (C, Wildcard 8088)

**Ion Track Instruments, Inc.**, Burlington, MA, 12/89 - 7/93

Designed and implemented a real-time embedded control program to collect, filter, and analyze continuous gas-chromatograms for detection of explosives. (C, 80186, AMX)

**Waters Division of Millipore Corp.**, Milford, MA, 9/88 - 9/89

Designed and implemented real-time embedded control program for capillary electrophoresis system. (C, Wildcard 8088)

**MilliGen Division of Millipore Corp.**, Bedford, MA, 4/87 - 4/88

Ported DNA synthesizer control program to two new products: peptide synthesizer and peptide sequencer. (C, 80186, AMX)

**MilliGen Division of Millipore Corp.**, Bedford, MA, 3/86 - 2/87

Designed and implemented real-time multi-tasking control program for DNA synthesizer. Wrote functional and architectural specifications, designed and implemented the software. Consulted on functional capabilities and means to achieve them. Specified and purchased software and hardware tools. Interviewed candidates for permanent software engineering positions. Trained successful candidate. (C, 80186, AMX)

**GenRad, Inc.**, West Concord, MA, 9/85 - 1/86

Designed and implemented core functions of a run-time executive for printed-circuit board tester and other projects. (C, NSC-32000 Assembly, NSC-32000, Sun 50 workstation, UNIX, ULTRIX)

**U.S. Windpower Inc.**, Burlington, MA, 3/85 - 4/85

Designed and implemented real-time wind-data collection system. (C, MS-DOS, NEC APC-II, Intel 8086)

**U.S. Windpower**, Burlington, MA, 12/84 - 1/85

Wrote software specifications and recommended components for data display device to simulate a strip chart recorder. (C, MS-DOS, NEC APC-II, Intel 8086)

**F & S Systems**, Framingham, MA, 7/84 - 1/85

Designed and wrote code for a Network Virtual Terminal program for use on ARPA Telnet. Designed and implemented protocol-based telecommunication & file transfer program. Designed and implemented debugging aid to merge C source with compiled code. (C, Unix, MC68000, Telnet, TCP/IP)

**General Computer Resources**, Waltham, MA, 3/83 - 12/85

Designed and implemented program generator for turbo-jet engine inspection system. Designed and debugged prototype inspection code. (C, PDP-11, Bendix Cordax measurement system & BMIL language)

**GenRad, Inc.**, W. Concord, MA, 3/80, 9/80, 4/81

Enhanced control programs for thin-film resistor trimmer to support new system hardware. (PDP-8 Assembly)