

# ANTHONY J. SILVA

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## OBJECTIVE

Challenging consulting or contracting work utilizing my experience in software and algorithm development, simulation and modeling, project management, and process improvement. Part-time work preferred; available full-time during periods of high demand.

## EXPERIENCE

### **L-3 Communications, Aerospace Electronics Division**

Waltham, MA

*Software Engineering Consultant*

*Oct. 2004 - Apr. 2007*

Designed and implemented a multi-console, platform-independent display system for surface ship defense using object-oriented design patterns, the Model-View-Controller paradigm (MVC), C++, and GTKmm, with architecture and class documentation automated and unified via Doxygen. Integrated the heterogeneous, simultaneous displays with an embedded torpedo countermeasures system using real-time CORBA. Work also yielded a library of reusable, general purpose components (serial communication, highly-automated cross-platform development environment setup and build system, push-model publish/subscribe, etc.) Initiated the division's engineering process improvement and quality assurance activities, such as configuration management and issue tracking, with guidance from CMU/SEI's Capability Maturity Model Integration (CMMI).

### **Bose Corporation, Professional Systems Division**

Framingham, MA

*Software Engineering Consultant*

*Aug. 2003 - Oct. 2003*

*Software Development Manager*

*Jan. 2000 - Feb. 2003*

Built the Pro Division's software development group from ground zero. Managed the development of and wrote code for FreeSpace Designer® and FreeSpace Installer®, Windows applications in Java and C++ for the automated design, sales, installation, optimization, and maintenance of sound systems in business music applications (retail stores, hotels, restaurants, etc.) This work led to a U.S. patent, #7206415. Defined corporate and divisional software development infrastructure, policies, and procedures, including feature and release planning, version control, bug tracking workflow, development platform consistency/maintenance. Gathered and distilled product requirements while working with customers and marketing staff. Prepared project plans, budgets, recruiting materials, and reports. Interviewed candidates for own group, as well as other groups throughout the corporation. Selected as one of four people to represent Bose Corp. in a national, full-page EETimes reader profile. Was selected for and completed Bose Leadership for Action program (advanced management training). Chose to leave Bose (was *not* laid off) in Feb. 2003 in order to resume and jump-start a second career as a professional musician (see below).

*Senior Software Engineer; Computer Systems Manager*

*Apr. 1995 - Jan. 2000*

Developed acoustic modeling code, graphical user interfaces, and real-time control and signal processing functions for Macintosh-based virtual reality applications (Modeler®, Auditorer®, etc.), which are used to simulate, optimize, and demonstrate the acoustics of large venues (stadiums, auditoriums, churches, etc.) and the sound systems installed within them. Refactored and merged large legacy code base to reduce size by 65% and port to new platforms. Optimized code to achieve 3x performance boost in the most time-consuming operations.

## **Atlantic Aerospace Electronics Corporation**

*Member Technical Staff; Computer Systems Manager*

Waltham, MA

*Jul. 1986 - Apr. 1995*

Helped build this successful startup company, as one of its earliest employees. Conceived, designed, implemented, and marketed the MetaMatrix Toolbox, Atlantic's first commercial software product, which extended MATLAB to handle data sets with an unlimited number of dimensions (long before The Mathworks added this capability to their own product). It comprised an interactive interpreter, a compiler for program/function files (MM-files, i.e., M-files with MetaMatrix syntax extensions), and numerous support functions. Assumed lead role during all phases of product evolution, from concept definition and market research through architecture specification, software development, and documentation, as well as initial marketing, sales, licensing, quality control, and distribution.

Developed signal processing software and algorithms for acoustic and electro-magnetic surveillance and countermeasure applications. Designed and implemented optimized adaptive beamforming algorithms in a real-time low-probability-of-intercept modem for fighter aircraft. Directed the development of a comprehensive library of signal and image processing software. Algorithm research included rapid, near-optimal FIR filter design, acoustic-sensor-based weapon guidance, and adaptive noise/interference cancellation. Defined and assigned computer administration tasks, and supervised the technical staff performing them. Prepared technical reports, customer briefings, proposals, and budgets. Held Top Secret security clearance.

## **RCA Automated Systems Division**

*Member Technical Staff*

Burlington, MA

*Jun. 1983 - Jul. 1986*

Designed software and hardware for spread-spectrum receiver test fixtures, and for a direct memory access controller providing communication between four CPUs in a high-speed, low-power signal processor for a phased-array sonar surveillance system. Analyzed signal processing algorithms for threat radio identification and for ground-implemented vehicle/helicopter/personnel classifiers. Held Top Secret security clearance. Was selected for and completed RCA Graduate Studies (accelerated master's degree) Program.

## **professional musician ([www.tonysilva.org](http://www.tonysilva.org))**

*Sep. 1976 – Aug. 1981, Feb. 2003 – present*

Currently play regularly with the Knights, an 8-piece general business band. Also fill in with various other Boston-area GB bands, club bands, and jazz duos/trios. Play saxophone, as well as some guitar, percussion, clarinet, flute, and piano.

## **EDUCATION**

### **Massachusetts Institute of Technology**

*M.S. - Electrical Engineering & Computer Science*

*B.S. - Electrical Engineering*

Cambridge, MA

*1986*

*1983*

### **other coursework**

*The Visual Display of Quantitative Information* (Edward Tufte/Graphics Press), Boston, MA

*1998*

*Introduction to Spectral Analysis and Estimation* (IEEE), Burlington, MA

*1991*

## **SKILLS**

- *programming*: C++ (ANSI/STL), Java, C, assembly language (Texas Instruments DSPs), Lisp (Scheme and Emacs Lisp), and IDL; design patterns, MVC architecture, object modeling (UML); CASE tools and IDEs (ArgoUML, GNU Make, Together Control Center, Source Navigator); cross-development, platform-independent development, and mixed-architecture systems; automatic code documentation (Javadoc, Doxygen).
- *numerical and symbolic analysis/visualization*: MATLAB (including custom MEX-file development in C), Octave, Mathematica, Maple, simulation and modeling of acoustic and electro-magnetic systems.

- *platform-independent GUI development*: Java/Swing, GTKmm/GTK+.
- *distributed computing, middleware*: CORBA (TAO).
- *compiler/interpreter construction*: scanner generation (Lex), parser generation (Yacc, Bison).
- *scripting*: Bourne shell, C shell, awk, sed, perl, etc.
- *mixed-language programming*: Java/JNI with C++, C++ with C, C with FORTRAN, C preprocessing of Pascal code to achieve both host-platform (compiler) and target-platform (run-time) independence.
- *performance optimization*: profiling; analysis of disassembler output; selective replacement of standard C code with C-callable assembly, in-line coding, unrolled loops, hardware-savvy C, etc.
- *version control*: Subversion, CVS, RCS.
- *issue tracking (bug reports, feature requests)*: Bugzilla, TrackWeb.
- *installer generation*: InstallAnywhere.
- *computer/network administration*: Microsoft Windows, Linux (Red Hat, Debian), UNIX (BSD, Solaris, etc.), MacOS, VxWorks, and pSOS operating systems on PC, Sun, Macintosh, Cray, SGI, VAX, and board-level computers; configuring multi-boot (selectable-OS) PCs; configuring and diagnosing TCP/IP-based wired and wireless LANs.
- *security*: SSH, PGP, Kerberos.
- *instrumentation control*: GPIB (IEEE-488 bus), custom serial port code.
- *process improvement, QA*: building seamless, automated master installers for configuring and integrating large suites of software development tools; basic CMMI initiatives; customization/programming of office and multimedia applications such as spreadsheets (MS Excel) and graphics/image processors (GIMP).
- *web-page construction*: Netscape Composer, raw HTML editing.
- *personnel and project management*: identifying, recruiting, supervising, coaching, and retaining top technical talent (including Ph.D. level); forecasting and tracking cost- and time-to-complete (in MS Project); seeking funding and resources from customers and senior management and presenting results to them.

## PUBLICATIONS

- M.C. Monks, D. Burton, C.M. Hostage, R.P. Kosman, and A.J. Silva, *Automated Sound System Design*, United States patent #7206415, 2007.
- A.J. Silva, *MetaMatrix Toolbox User's Guide, Reference Guide, Release Notes*, and marketing materials (brochure, press releases, sales policies, etc.), 1994.
- A.J. Silva, *High-Speed Low-Cost Signal Processor for Multi-Band IR Proximity Fuze Final Report*, submitted by Atlantic Aerospace Electronics Corp. to U.S. Navy under contract N60921-92-C-0149, 1993.
- A.J. Silva and S. Spoerri, *Acoustic Targeting Concept Development Final Report*, submitted by Atlantic Aerospace Electronics Corp. to U.S. DARPA under contract DAAH01-91-CR029, 1991.
- A.J. Silva, *Rapid, Near-Optimal Tapped Delay Line Filter Design*, Atlantic Aerospace Electronics Corp. technical report (classified), 1988.
- A.J. Silva and A.V. Oppenheim, *Reconstruction of Undersampled Periodic Signals*, IEEE ASSP Society Digital Signal Processing Workshop, Chatham, MA, 1986.
- A.J. Silva, *A Polyphonic Real-Time Music Synthesizer*, thesis at M.I.T. (advisor C.L. Searle), 1983.

## BACKGROUND AND INTERESTS

Member of IEEE and Sigma Xi. Enjoy weightlifting, bicycling, soccer, archery, hiking, and cross-country skiing. Other hobbies include digital videography and photography, home and auto repair, and computer-based sheetmusic typesetting and engraving. Active in local community affairs, such as conservation.