RESUME

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Immediate Employment Objective

I am available for projects where my background and interests can quickly benefit the customer with opportunities to expand my skills in additional or supporting efforts. I am interested in "conventional" software jobs: e.g., embedded, desktop or client/server work, preferably [robotic] hardware as well as software. I am also interested in Internet and Web application development and integration work where I could utilize my extensive experience with PHP, Python, JavaScript and MySQL.

I am interested in offsite/remote work, or an aerospace company assignment. I'm looking for "short term" contract or consulting jobs, but I *may* consider an FTE position with a <u>*particularly*</u> attractive combination of interesting work *in line with my long-term objectives*, and suitable compensation.

My most recent work includes test automation, secure O/S, Web and network system development, including ecommerce, GUI and CLI design using PHP, JavaScript (with and without jQuery), AJAX, HTML, CSS, and Python, MySQL and PostgreSQL interfaces in PHP, Python and C++ ('nix & Windows), C/C++ for Windows (desktop, CE), client/server (Windows/FreeBSD) development in C++ including protocol design, PHP, C/C++, and Perl CGI scripts, and hardware design; my diverse background also covers other languages and systems. My expertise and interests are in user-interface design, real-time systems, image processing, controls and robotics, hardware integration, diagnostics and debugging. I am experienced in start-to-finish system and software design: I built several programs from idea through completed software, including install and setup utilities, user manuals, and online Help; four active on the Internet. I have done Java and C# tutoring; and have installed, configured, and managed PC network systems.

Software Design Expertise

<u>Assembly Languages</u>: 80x86/Pentium, 8051, 8035, 8044, 8085, 6800, 6301, Z80/Z800/64180, Z8000, RT-11, PIC, ATmega, ARM

<u>High-Level Languages</u>: C/C++, PHP, HTML, CSS, Python, JavaScript, bash script, awk, SQL, Java, Perl, Ruby/Rails, CGI, XML, BASIC, PL/M-80/86, TECO, FORTRAN, PASCAL

<u>Development Packages</u>: Google Systrace, Catapult & Telemetry, Microsoft MFC, jQuery, WordPress, VisualStudio .NET, Windows Help compiler, Macromedia Flash, InstallShield, NSIS (open source installer), Notes C/C++ API, Greenleaf Comm++, zApp, CodeBase 5.0, Metagraphics MetaWINDOW, Magma Systems MEWEL, Phar Lap 286-DOS Extender

<u>Application Packages</u>: Ansible, Jira, Gerrit, git, Confluence, Slack, Google Suite, Apache httpd, nginx, SendMail, LetsEncrypt, Mercurial, svn, SourceSafe, MySQL, PaintShop Pro, Lotus 1-2-3, Microsoft Word, Qcad, PCBArtist, DesignCAD 3D, OrCAD, Caligari trueSpace, Corel Draw, FoxBASE+/dBase III, WordPerfect, Lotus (Manuscript, Notes, Magellan, Express)

<u>Operating Systems & Environments</u>: MS/PC-DOS through v.6.22, Windows 3.0-7 / CE (PocketPC 2002/2003), FreeBSD, Linux (including Ubuntu, Fedora, CentOS, RHEL), Android, OS/2 Warp, Lantastic, Tandy DeskMate, AmigaDOS, Macintosh, Novell (user), VAX/VMS (user)

Microprocessor Hardware Design Expertise

<u>Microprocessors</u>: Intel 8086/88/286/386, 8051, 8085, 8035, 8344, Microchip PIC16F88*, PIC32MX*, Motorola 6800, 68000, Hitachi 6301, 64180, National NSC-800, Zilog Z8, Z80, Z800, Z8000, Atmel ATmega

<u>Technologies</u>: Microprocessor system architecture, network controllers, ZigBee, USB, RS-232 communication system design, CMOS, TTL and ECL circuit design, memory system design, disk-, user-, and analog-interface techniques, in-circuit emulation and debugging, PC board design, layout and power distribution, system packaging, hardware integration

Employment History

<u>Note</u>: Most of my work history is in contract and consulting positions.

Crius Technology Group, Austin, TX. 11/2022 – 2/2024. *Software Engineer*. Remote role. Mobile Ad-hoc Mesh Network Development: Develop code to control and enhance an ad-hoc mesh network communicating via WiFi, Broadband over Power Lines (BPL) and 802.11ah. Develop and enhance multi-mode mesh network code for value-added self-healing control and self-optimizing network services for B.A.T.M.A.N. Develop and enhance installation and configuration systems, automated self-test tools and systems. Remote support for client acceptance tests. Developed code in GCC, Python and bash for Raspberry Pi running Raspian/PiOS, a Debian Linux derivative. Other tools included Microsoft Teams, Slack, GitHub, Bitbucket, Jira and Confluence.

L5 Condos, Plantation, FL. 10/2022 – Present. *Director*. Develop a system to sell reservations for condos in the colonies planned to be built at L5 with occupancy circa 2050. Initial Web site development and contract writing, real estate sales.

Magic Leap, Inc., Plantation, FL. 1/2019 – 8/2022. *Senior Software Engineer*. Triage embedded Android software system bugs (primarily C/C++ code), isolate first defect build through binary searches of the fault range's builds, identify required corrective code changes. Maintain, update 3 tier (developer, staging, production) automated software performance and reliability test system built with Python Flask using Ansible, custom shell and Python scripts for deployment. Develop continuous integration performance test automation systems for embedded software using bash shell scripting, Python, awk, systrace, catapult and telemetry. Jira, git and Gerrit used for project and bug tracking, Confluence Wiki maintenance. Attended Red Hat Ansible training workshop.

L5 Software Development, Wellsville, NY. 5/2018, 9/2018. *FOSS PHP developer*. **HumanMathTest** implements a math test 'bot deterrent PHP class for use in online forms. Published at *https://github.com/L5Software/HumanMathTest*

The Race To Space Project, Medford, MA, Wellsville, NY, Plantation, FL. 12/2017 – present. *Author, Web Developer*. A novel approach to popularizing the only long-term solution for the looming end-of-oil crisis. ___Race to Space___ merges predictive fiction with a solid development plan to entertain and educate the reader in an effective way. *("soon to be a major motion picture...")*
Web development using PHP, JavaScript with and without jQuery, HTML, CSS, AJAX, MariaDb (MySQL), Python and shell scripts. Fiction and non-fiction writing, research, financial modeling, graphics and artwork, storyboarding, investor and production relations, a PowerPoint **funding deck** is on the Investors page, direct access at *https://RaceToSpaceProject.com/media/RaceToSpace.ppsx*.

PHP Generic Sites, Medford, Wellsville, Plantation. 1/2016 – present. *Chief Cook and Bottle Washer*. Write a system to monetize a portfolio of undeveloped domain names. Currently offers domains possibly for sale, provides forms for visitors to request more info or to inquire about development arrangements or progress Once complete, the system will present relevant ads on each domain's landing page for revenue. System to also be sold to other Internet real estate investors. Project site includes Admin page screen shots, and lists domains driven by the system, with prices of those for sale. Some system tools written in Python and Perl.

Apperian, Inc., Boston, MA. 9/2014 – 8/2016. *Senior Software Engineer*. Architect, design and develop a secure Android tablet including DAR (Data At Rest), DIU (Data In Use) and DIM (Data In Motion) components. Chiefly responsible for design and implementation of the secure file system, selection of the AES/XTS library used for encryption. Wrote test and validation tools, documentation and support scripts in Python, Perl and bash. Debugging and support of app wrapping system. Agile development, mainly C and Java programming for Android (an embedded Linux system) in a Linux development environment in a Mac hosted VM.

Doble Engineering, Watertown, MA. 12/2013 – 8/2014. *PHP developer*. Convert a Java email preprocessor to a stand-alone PHP list mailer. Add features, Web interface and control pages. Object oriented PHP, HTML, AJAX, jQuery/JavaScript and CSS.

HelmetHub, Boston, MA. 9/2013 – 10/2013. *Python programmer*. Add missing embedded Python features to a bike helmet dispenser, direct (bare metal) hardware interface from embedded Linux application.

SpacePowerNow.org, Peabody, Medford, Wellsville, Plantation. 3/2013 – Present. *Evangelist*. A political, economic and educational organization to raise public awareness of the critical near future energy crisis where solar power satellites in Earth orbit are the only reasonable long-term solution. Through these efforts we aim to protect the future of civilization, and of humanity itself. Web design and development: content, tab-style page menu, CRUD customer data system, PayPal integration, automatic email messaging, Admin back end to maintain CRUD database, view log files, email customers. Mailings using custom Perl script.

MIT Sloan School of Management, Cambridge, MA. 3/2013 – 6/2013. *Web developer*. Rebuild school's home page during interview and as my first project: incorporate new design, object-oriented programming. Clean PHP notices, warnings to make `error_log` useful for debugging. Build Spring 2013 Alumni magazine Executive Education page. Build Big Idea 2013 site, convert hand coded HTML 2012 site to object-oriented PHP. Create prototypes & files to ease development, aid consistency, support OOP. Update about 180 pages' titles, `<meta>` tags for SEO. Update content per Web requests. Clean PHP and HTML to eliminate XHTML validation errors. Update Alumni Reunion 2013 pages with post-event info. Write a PHP code style guide. Create a system to upload files to production server cluster. Write procedures to update Media Highlights XML files to pass ampersands through several layers of XML parsing. Tutor re. PHP best practices and object oriented programming. Work on moving PHP-based sites to Ektron CMS.

The Original Prototype, Peabody, Medford, MA, Wellsville, NY, Plantation, FL. 10/2012 – Present. *Inventor*. Web design and development including content, password protected customer portals for distribution of project files, Admin section for site and database CRUD maintenance, system support tools in Python, PHP, Perl and shell scripts.
The Original Prototype is an engineering and design center for electronic, mechanical and electromechanical systems. Examples include hand-held devices, robotics, stereo vision equipment and miniature machines. We have expertise available to bring your concept into reality, potentially including support for short run production. See https://TheOriginalPrototype.com for more information.

- **Project:** Innovative electronic cigarette: Develop hardware and bare metal software for a novel electronic cigarette concept, including apps on Bluetooth or USB connected devices. Wrote and filed provisional patent application.
- **Project:** Participate in development of a meeting recording system using IP cameras. Develop DirectShow software components, hardware/software integration, develop packaging and accessory hardware.
- **Project:** Develop Arduino-based "Automatic Rocket Controller" to cut costs, enhance uniformity and accountability, and improve end user experience. Arduino software development, prototype shield hardware and bare metal software to interface customer equipment, debug Arduino dev tools. After development, design custom board for initial production.

Active Broadband Networks, Framingham, MA. 1/2010 – 5/2012. *Network system software developer*. Design, develop and optimize software major cable operators use to monitor & control resources for millions of subscribers. Major rewrite of mission-critical usage analysis system, design, implement data aggregation storing progressively less granular data for 2 months, major rewrite of analysis/reporting ETL system including plug-in architecture design and implementation, high-availability cluster configuration user interface, support replication between cluster primary and backup, major contributions writing LifeRay customer portal system, GUI controls for tiered/timed "sliding window" congestion management system, Python sys admin CLI command development, help design and implement a new prepaid service offering. Extensive Web GUI rewrite for more uniform user experience, JavaScript, CSS enhancements. Software test plan execution, updates. Source control using Mercurial. Back-end code primarily Python, PostgreSQL stored procedures, shell scripts, Perl, UI work in PHP, JavaScript, CSS, Java.

L5 Software Development, Beverly, Medford, Wellsville, Plantation. *Software Developer, Consultant*. 9/1995 - present. Web site design, production, Web application development, contract programming, hardware/software system design and development, commercial desktop software development, FreeBSD Web hosting, source control using Mercurial, svn, cvs and SourceSafe.

- **Web site design/coding:** I've been designing and building sites and components in LAMP environments ('L' is Linux and/or FreeBSD, 'A' is Apache, 'M' is primarily MySQL/MariaDb, also PostgreSQL, 'P' is primarily PHP, also Python or Perl) since 1996, using nearly every modern Web technology, including AJAX, CSS and XML, addressing browser compatibility, and development in languages including (X)HTML, JavaScript and jQuery, SQL, Java and Unix shell

scripting. Very familiar with ecommerce, I wrote three custom shopping carts for complex product and pricing, including Authorize.net and PayPal payment processing. I began with procedural PHP 3, now use object-oriented programming in PHP 5, currently upgrading to PHP 7. Building sites I used custom code, frameworks such as Ruby on Rails, and CMSs including WordPress, Drupal and Joomla, and I use PaintShop Pro extensively for graphic design work.

- **Web application development:** In addition to public-facing Web sites, I have worked on several "back-end" Web applications. This work included designing client/server communication protocols, building application servers in C/C++ for Linux/FreeBSD, interfacing Web services using SOAP and XML, and high throughput (400 million+ hits per month) server code, with a Ruby/Rails front end, to update Flash ads in real time with MySQL data and log user metrics.
- **Contract programming:** I worked on many projects, primarily using C/C++. The work included a WinCE device driver, updates for proprietary server applications, and serial communications code between custom hardware and PocketPC devices. I also worked on a video switcher application, both implementing a unique user interface and some video processing internals, and on Y2K date remediation. In addition, I worked on a Symbian multi-modal browser for use in cell phones, and contributed significant portions of the code for a high-security ID card printing system.
- **Hardware/software system design and development:** I was the primary contributor in two iterations of the hardware and software architecture definition and design of an intelligent thermostat system to contain heating costs in landlord-heated apartments. I did all of the hardware design, component selection, power supply design, schematic capture, PC board layout, software design, and made substantial contributions coding 8051 and 8- and 32-bit PIC microprocessors.
- **Commercial desktop software development:** I wrote several applications marketed with varying degrees of success on the Internet, including Web development tools, search spiders and media collecting robots. I also developed several "desktop-only" programs (no Internet code) including utilities for eliminating duplicate files, time logging, and calendars.
- **FreeBSD Web hosting:** I run an Apache-on-FreeBSD host service, giving me intimate knowledge of server operation, configuration & security including SSL, Kerberos, wrote custom shell and Perl scripts automating common tasks.

Clients:

- **DesignBlox**, Boston, MA. 7/2007 – 11/2008, **Adroit Interactive**, Boston, MA. 11/2008 – 1/2009. *Web app development.* Develop, optimize high traffic (400 million+ hits/mo) server code to update dynamic Flash ads in real time using MySQL data, LAMP environment (RHEL). Develop reporting PHP cron scripts. Develop system & user control admin tools in PHP and shell script. SSH, OpenSSL secure communication, database encoding; bug tracking with BugZilla, Redmine. Support Ruby/Rails MVC UI updates, enhancements. Address browser compatibility. Financial service development: credit scoring via SOAP XML, admin updates, credit report formatting, Social Security Administration rule SSN validation, monthly cron script table updates. Design, implement property management online rental application, customer login system with admin review, email notify, document upload, management, multi-level admin access. (Adroit split from DesignBlox Nov. 2008.)
- **Intelligent Building Controls**, Portland, ME. 2/2007 - 2/2009. *Development partnership.* Offsite (telecommute) work. Architect thermostat system to contain apartment costs; modules communicate via ZigBee capable of writing to USB drives (host protocol), ZigBee USB dongle with Windows and Linux device drivers (device, host protocols), portable ZigBee reader with docking station, ZigBee repeater modules. All hardware and power supply design, component selection, schematic capture, PCB layout, software design, code PIC processors and host computers (Windows, Linux), platform independent monitoring software, manufacturing database design, development, LAMP Web site development.
- **OuterLink Corporation**, Lowell, MA. 9/2006 - 1/2007. *WinCE driver development.* Remote role. WinCE 4.2 device driver implementing unidirectional serial loopback port, driver installation program. Also verified under WinCE 5.0.
- **Visual Venue**, Wayland, MA. 5/2005 - 9/2006. *Windows software development.* Telecommuting/offsite development. Develop a non-standard Windows GUI for a software-based video switcher using MFC for a .NET environment on Windows XP. DirectShow filter design, implementation. System architecture, code redesign. FireWire device control.
- **Agori LLC**, Cambridge, MA. 9/2003 - 5/2005. *Multiple development projects.* Telecommuting/offsite development. Debug, finish TCP/IP server ActiveX control, build Visual Basic demo. Optimize server playing proprietary video. Create Windows proprietary video viewer. Debug XRF tool to PocketPC 2003 PDA serial comm. Design, code win32 data download app from WinCE PDA. Update PocketPC app user interface, report generator. Convert PDA API to DLL. Support user DLL interface. Multi-platform (WinCE, Symbian) multimodal browser development: C++ OOD, ASR (automatic speech recognition) encapsulation, interface, state machine design, coding, handle custom hardware buttons, system event listener interface, system integration. Tech documentation, spec writing.
- **Computer Software Designs**, Westborough, MA. 4/2003-7/2003. *Development partnership.* Telecommute/offsite work. System-level, hardware and bare metal software design (intelligent thermostat), select components, draft schematics, PCB layout, order prototype parts, circuit assembly, Parallax Stamp PBASIC, Philips 80C552 (8051 core) assembler.
- **Agori LLC**, Cambridge, MA. 3/2003 - 4/2003. *Windows software development.* Telecommuting/offsite development. Design, develop a JPEG-to-AVI conversion system, integrate it into existing Web server. Design, build module development & verification test code. Investigate file formats. Visual C++ development/test for operation under w2K.
- **TF Software LLC**, Merrimack, NH. 5/1998 - 12/1998. *VAX/VMS software development.* Design, document, and develop multi-threaded, cross platform terminal intercept software module for real time date remediation in and validation of an encapsulation Y2K solution for VAX/VMS systems. Design, build test harnesses for module development, verification. Visual C++ development/test environment, targeted for Windows NT/95, ROM-based MS-DOS, and within a VAX driver.
- **Progress Software Corporation**, Bedford, MA. 3/1998 - 4/1998. *Software QA.* QA developer for multi-platform fourth-generation database language products. **I am not interested in further software QA assignments.**
- **Safety Net Solutions**, Salem, NH. 9/1995 - 1/1997, 4/1997 - 8/1997. *Windows software development.* Telecommute (offsite) job. Develop, implement & document major sections of multi-thread ID card printing system. Tasks included design & implement user interface; implement finite-state-machine; design & implement serial interface, diagnostics, protocol, state machine for hot roll laminator & Datacard printer (Greenleaf Comm++); interface digital I/O boards including install diagnostics; image compression, encoding; interface Windows Registry, change Registry key security

settings programmatically; optimize image merge code (~6x speed-up over previous Accusoft library calls); develop 2D barcode library wrapper class. Developed for Windows NT 3.51 and 4.0 using MFC and Visual C++ 2.2, 4.1, and 5.

Web site development (a few examples; I own about 400 domain names, some more developed than others)**:**

- **Photo By Fred**, https://PhotoByFred.com, 2004-present, photo art site, PHP cron script changes featured picture daily, includes slide show and calendar reviews, subscription program (in development) to update subscriber's desktop with latest daily image via custom client/server protocol, protocol also supports dynamically updating marketing messages in the client app, image manipulation tools to generate multiple resolution watermarked wallpapers;
- **Limited Edition Photo**, https://LimitedEditionPhoto.com, 2004-present, limited edition photo sales site (ecommerce) with catalog pictures automatically added each day by a PHP cron script, includes sample pictures at various locations on the site automatically changed on each page visit, full shopping cart implementation, including PayPal integration, offline order forms, auction sales (in development), prices increment based on a print's sales, full admin section;
- **L5 Development Group**, http://L5Development.com, 1997-present, a commercial (for profit), privately funded, space exploration and development program featuring an extensive icon-based navigation system with many custom graphics, an online newsletter, a MySQL database-driven space history newsletter automatically published and delivered to subscribers each day at 7 AM, banner swappers, a keyword access system, a MySQL database system for membership data, and online registration and feedback forms supported by internally developed PHP and Perl CGI scripts;
- **FKE Internet**, http://FKEinternet.com, 2001-present, Web hosting service with domain registration provided through integration with an ICANN-recognized registrar's affiliate program;
- **L5 Software Development**, http://L5Software.com, 1997-present, commercial software/shareware site, e-commerce support, PayPal card processing, online file download operations, online registration by PHP and Perl CGI scripts, MySQL customer and order records;
- **StudioLines.com**, http://StudioLines.com, 2000-2003, music site with RealServer streaming, member registration, song, admin forms, file up/download, custom shopping cart, Authorize.net credit card processing: purchase tracks (download or compilations), T-shirts, posters, etc., online message system, MySQL database, password protected admin tools: send emails, picture validation, database maintenance; online newsletter, banner swappers, keyword access, PHP, Perl, JavaScript, CGI, graphics including Flash, Windows music validator with remote database server, FTP file uploads/downloads, telnet commands, sends email; FreeBSD & Apache system/server setup, administration, secure server (OpenSSL), Sendmail, PHP, Perl, BIND, RealServer, and MySQL installation, upgrade and maintenance;
- **FredLines™ T-Shirts**, http://FredLines-TShirts.com, 1997-2003, online catalog with over 180 shirt designs and books using PerlShop (shopping-cart script) version customized by L5 Software Development, in conversion to PHP/MySQL;
- **L5Business.com**, http://L5Business.com, 2009-present, "*The* site for L5 business development", a WordPress-based site, shares installed code with a blog on wfredk.com;
- **wfredk.com**, http://wfredk.com, 2003-present, my personal page, blog shares WordPress code with L5Business.com;
- **CFO Rising**, http://www.dansmalltv.com/CFO/index.php, 3/2009-4/2009, implement access control system for a video on demand service, optimize Web code and presentation;
- **Changes Wellness and Nutrition Consulting**, http://ChangesWellness.com, 2004, diet/nutrition consulting site using PHP and MySQL, email response forms, database driven membership system, resource pages, picture swapper, PayPal e-commerce support, secure Admin control panel, graphic design;
- **Gifts From Brokers**, http://GiftsFromBrokers.com, 2004-2005, e-commerce site sells personalized gifts to real estate brokers, PHP and MySQL, secure credit card forms, Admin control panel, custom order information report download;
- **Juliablueyes**, http://Juliablueyes.com, 2005-2006, an adult site built using PHP and MySQL, with video clips, photo galleries, a daily journal, site tour, member-written tributes, phpBB discussion forums, e-commerce support through an offshore credit card processor, secure Admin control panel, graphic design;
- **Stop Highway Robbery**, http://StopHighwayRobbery.com, 1999-2008, political site to "end legalized highway robbery committed against the driving public," online discussion system and animated graphics;

Commercial software products:

- **ThmIndxr™**, creates HTML index pages & thumbnail images from GIF/JPEG image directories, Windows console app, Registry stored config, dialog-based config editors and launch application, online Help, User's Guide, InstallShield setup,
- **wCapLock™**, Windows message filter that makes the CapsLock key act like a typewriter,
- **TLog™ Time Logging Suite**, time logging software (written for multi-platform portability),
- **KillDupe™**, a Windows console program to search an network to find, report and eliminate duplicate files,
- **DozeCal™**, a dialog based, multi-view Windows calendar application,
- **KeywordGo™**, a CGI program written in C++, provides keyword access to popular pages for Web sites,
- **BannerAds™**, a CGI banner swapper written in C++, with complete online Help, a Windows dialog-based administration utility with many advanced user-interface enhancements, and an InstallShield setup,
- **GetGamae**, multi-threaded Internet robot to retrieve hourly pictures at predefined Web sites, thumbnail preview window, logging operations, remote license monitoring, usage reporting, updates desktop wallpaper, pseudo-random collection simulates human operator, turn off user interface for background operation, complete Help and InstallShield installation,
- **MCspider™**, a multi-threaded Internet application to search the Web to generate a list of unique email addresses meeting customer-specified criteria, includes complete Help and InstallShield installation systems,
- **SiteMapr™**, a tool for building a Web site map HTML page from its source files,
- **TodaysNews™**, a suite of C/C++ CGI programs and supporting files in development for creating, updating, and archiving "Today's News" pages on Web sites, with individual articles saved as XML files.

Melexis, Inc, Cambridge, Mass. *Manufacturing Technician.* 8/2009 - 9/2009. Program automotive camera module FPGAs. Epoxy fill access ports. Camera module testing. Debug test system. Support test data analysis.

Lotus Development Corporation, Cambridge, Mass. *Development Manager, CI*. 5/1999 - 12/1999. Analyze concept & requirements, design/develop multi-threaded NT console Lotus Notes C/C++ API data miner. Search profiles from Notes, search Web, newsgroup & Notes sources; linguistics analysis; generate hit reports, notifies profile owners via (Notes) email, network interface through WinInet & WinSock. Initial setup wizard, [re]configuration via a property-page dialog window admin utility with Help system. Dialog-based log viewer with Help; thread selection using a "tree" display control, the dialog also includes field selection and trace level filtration controls. approx. 39,000 lines of code by 12/31/1999.

Sensitech, Inc., Beverly, MA. *Program Architect*. 4/1994 - 9/1995. Full concept design to final code: GUI app interfacing via serial ports, display, store and print retrieved data as graphics and text, printer support, file format design, I/O code, export to external applications. Develop diagnostics for design lab. Developed for Windows using zApp, Greenleaf Comm++, Visual C++ with MFC. Design objectives include multiple versions (customer, distributor and in-house), and internationalization (early version sent to Japan for to NEC computer port, text translated to French). Rewrote Help as needed. Product label generation Manufacturing Department software enhancements.

KeySoft Corporation, Williamsville, NY. *Programmer*. 6/1993 - 4/1994. Full product development from customer design through finished code: Windows appointment calendar system using Windows SDK & Microsoft C/C++ with MFC, dBase compatible by CodeBase; porting to DOS using MEWEL & MetaWINDOW libraries & Phar Lap 286|DOS Extender. Advertising tools used by KeySoft and customers to personalize the program. Significant contributions to product design enhancements, wrote DOS and Windows install programs.

Lotus Development Corporation, Cambridge, Mass. *Programmer*. 5/1991 - 12/1991. 8086 assembler, C, Pascal: 1-2-3 for DeskMate, Lotus Works. Implement landscape printing and laser printers support for DeskMate, correct several bugs. Lotus Works included clipboard data system; user interface, file system debug and enhancement; fix spreadsheet code; directory window file viewer. Lotus Notes and Express user.

FKE, **Computer Software Designs**, Westborough, Mass. *Product development partnership*. 2/1991 - 5/1991. Design, implement TSR database for medical offices; supervise database development, verification; user manual; manufacture serialized/copy-discouraged distribution disks.

Lotus Development Corporation, Cambridge, Mass. *Programmer*. 6/1990 - 8/1990. Write design specifications to port Lotus 1-2-3 to the Amiga, adapting existing Macintosh 68000 code. C language prototype software programming in a multitasking environment.

Lotus Development Corporation, Cambridge, Mass. *Programmer*. 2/1989 - 10/1989. C and 8086 assembler programming to port Lotus 1-2-3 to Tandy's DeskMate operating environment (graphical window-based user interface). Development of internal CASE tools for the effort. Completed in time for finished program in Radio Shack stores for Christmas buying season, a primary objective.

FKE, Burlington, Boston, MA., Mt. Morris, NY, Londonderry, NH, Boston, Medford, MA, Wellsville, NY, Plantation, FL. *Consulting & product development work*. 11/1985 to present. Wrote well over 300,000 lines of code (primarily C, C++ and assembler) in this time, in addition to work done in full-time contract positions. DOS device driver for clock display and sound functions; DOS and Windows graphics image processing software; database tools and programs to support my Web and other businesses. My development work has also included:

Windows program development:
- *GIFPaint.exe*, Windows 3.1 compatible GIF image editing program (in development),

C and assembly programming, FKE-owned character mode MS-DOS software: FKE_Menu™ shell; SignOff™ system access control/email program; Makedoc™ doc generator; FoxBASE-to-C translator; MKDBFILS™ Essential B-Tree db code generator; software development (CASE) tools; GIF encoder/decoder library; painting/sketch pad program; character-mode window, menu, editfield, mouse interface libraries; embedded text editors; sound generation routines; DOS internals work, including support for TSR programs and applications; DeSmet object-file disassembler; C-ISAM database applications (Essential B-Tree, C/Database Toolchest);

FoxBASE applications development: customer tracking, billing systems; condo sale management; library database system;

Aclimé Hair Salon, Los Angeles, Calif.: design and implement a "supervisor" program to enable reviews and updates of Essential B-Tree (C-ISAM) customer and order tracking database;

Meta Optimization Systems, Brookline, Mass.: design, implement numerical processing engine installer, UI enhancements;

Information Management Systems, Grafton, Mass.: design and implement a program to add text to scanned form images, and print the merged documents on an HP LaserJet printer;

Auto Info Providers, Ft. Lauderdale, FL: design, implement customer tracking, billing, auto data entry, report systems. Began in FoxBASE, C rewrite to improve copy protection and user interface; network installation, operation & management, user support;

Digital Medicine Corporation, Cambridge, Mass.: design, implement HP-compatible serial communication for portable EKG (electrocardiogram) machine, text printer driver. Z80 assembler code for Hitachi 64180-based system. Initial development on DEC Rainbow under CP/M, completed on a PC clone, partially tested using simulation software running under QNIX;

Digital Automation Corporation, Peabody, Mass.: modify, develop Z-80 assembly language (diagnostics, communications, control functions), VAX/VMS C programming, user-interface software for robotic systems, solids and dynamic modeling programs (graphic display routines, functional models), port user-interface routines to MS-DOS, develop dynamic system models for motion analysis;

Discount Vehicle Leasing Corporation, Burlington, Mass.: PC network system design, installation and setup lease management office's Lantastic network (originally installed in Bedford, NH, supervised move to Burlington and re-installation); customer support and training for applications software; software installation;

Theta Technologies, Braintree, Mass.: hardware, software design and implementation of programmable pump controller, including PC board and silk-screen design, stepper motor driver, serial interface, and customer-supplied user-interface definition, system integration, PC pump controller written in C, designed the serial interface communication protocol;

Comtron International, East Boston, Mass.: redesign of coin-operated lottery advisement game, including user interface updates, power supply design, printer controller design and implementation, PC board design review and correction, accounting report definition and coding, RAM battery backup with detection of battery failure;

system design battery-powered 80C51 modem unit for an MIT researcher (hardware/software design);

system integration PC-compatible computers;

FKE SpaceBoard BBS, operation of a space-development information center (temporarily out of service).

General Instruments, Westwood, Mass. *Test Support Engineer*, 11/1986 to 12/1986. PL/M-86 and 8086 assembly programming, debugging multi-processor real-time SONAR signal processing system, interface to VAX running VMS, travel to Japan for shipboard testing.

Analogic/MEL, Inc., Danvers, Mass. *Programmer*, 8/1986 to 9/1986. 8344/8051 assembly medical system programming.

United Computers of New England, Boston, Mass. *Service Manager*, 6/1986. System integration, network configuration, installation, maintenance, fault analysis of customer microprocessor systems, design, develop and implement repair tracking system.

Ideas, Inc., Norfolk, Va. *System Engineer*, 5/1986. PL/M-86 iRMX code development, 80286 processor board.

Burroughs Corporation, Rochester, NY. *Software Engineer*, 4/1985 to 10/1985. 8051 assembly language programming. Design, implement, debug real-time, multi-tasking UI unit using prototype hardware and ICE-51. Design, implement RAM-based data recorder and report

generator microprocessor for product's software package. Design, implement inter-processor communication protocol. Software documentation, tech writing. Write production test software for system PC boards and components. Enhancements ISIS operating system including an Okidata printer interface (8085 assembly language). MDS-235 development system maintenance and installation. Install Winchester disk units in MDS systems.

General Railway Signal, Rochester, NY. *Test Engineer*, 6/1984 to 1/1985. 8085, 8086 assembly programming of real-time test code using VMS-based development tools, IBM PC/XT C programming, design microprocessor system test hardware, tech writing.

Moscom Corporation, E. Rochester, NY. *Programmer*, 5/1984. 6301 assembly programming, 68000 programming (C and assembly).

Xerox Corporation, Webster, NY. *Engineer*, 2/1983 to 1/1984. Engineering document scanner development, high-speed digital system design; digital, analog video design analysis and debugging; system debugging, analysis using ICE-85, ICE-86, Tektronix DAS-9100; documentation; examining timing constraints; PL/M, assembly programming of real-time user interface, machine control routines; computer-aided schematic drafting.

Geneseo Electronique, Geneseo, NY. *President, Chief of Research & Development*, 4/1982 to 1/1983. The company originally started to build arcade-style video games. During two partnership changes, the target was changed to a single-board computer, then to an inexpensive home computer. The home computer was breadboarded, during the "search for funding" stage, the company folded due to a lack of working capital.

> **Engineering functions**: microprocessor system design (hardware [Z8000, 8085] and software [assembler programming: bootstrap code, CP/M BIOS, device drivers, BASIC interpreter]), PCB layout, component specification/selection, schematic drafting, build breadboard.
>
> **Management functions**: advertising planning, negotiations with venture capital groups, banks and vendors, office supervision, financial projections, wrote business plans and policy manuals.
>
> **Other duties**: space planning for office and production facilities, office construction, stationery and logo design.

Xerox Corporation, Henrietta, NY. *System Design Analyst*, 11/1981 to 4/1982. Motorola 6800 disassembler, laser printer system design analysis, technical writing: manual with theory of operation, detailed operating instructions, future design recommendations.

Trio-Tech International, Burbank, Calif. *Software Engineer*, 3/1980 to 9/1980. Flow charts, 8085 assembly language programming, hardware debugging, Hewlett-Packard logic analyzer, reduced ROM requirements 33%, test procedures, technical writing.

Techtran Industries, Rochester, NY. *Junior Engineer*, 8/1979 to 3/1980. 8085 assembly programming, Tektronix emulator, digital design, select printer and design interface, breadboard A/D converter, RT-11 assembly programming, install and maintain PDP-11 hard disk, TECO programming: inspect and correct PC board artworks, schematic drafting, test technician in engineering and production.

W. H. Nichols Company, Waltham, Mass. *Relay Logic Designer*, 4/1979 to 6/1979. Design relay controls for automatic machine tools using ladder logic. First shift, concurrent with Applicon job below.

Applicon, Inc., Burlington, Mass. *Subassembly Test Technician*, 4/1979 to 6/1979. Test CAD system components. Second shift, concurrent with W. H. Nichols position above.

G & S Systems, Inc., N. Billerica, Mass. *Technician, Engineering Aide*, 8/1977 to 4/1979. Install, field service, troubleshoot, repair I/O boards, debug computer interface, AN/UYK-7 computer simulator, tech writing, wire and part list generation, electronic design, schematic drafting, wrote PC board design, manufacturing specs, breadboard construction and checking, inspect, correct PC board artwork, drawing and revision file maintenance, engineering-drafting department liaison, supervise equipment calibration, interfaced with vendors, rewrote quality control procedures.

Foxboro Corporation, Mansfield, Mass. *Senior Wiring Technician*, 5/1977 to 8/1977

DeLaval Separator Company, Hyde Park, Mass. *Expediter*, 2/1977 to 5/1977. Part and materials expediting during plant closing. All machines were shipped before the scheduled closing date.

Northrup Corporation, Norwood, Mass. *Assistant Production Control Manager*, 11/1976 to 2/1977.

Data Printer Corporation, Cambridge, Mass. *Mechanical Assembler*, 3/1976 to 10/1976.

Rochester Instrument Systems, Rochester, NY. *General Assembler*, 5/1975 to 9/1975.

MIT Space Propulsion Lab, Cambridge, Mass. *Research Assistant*, 9/1973 to 5/1974.

Education

Geneseo Central High School, Geneseo, NY. Graduated valedictorian 1973; studies included math, science, mechanical drawing, shop, typing, and programming

Massachusetts Institute of Technology, Cambridge, Mass. fall 1973 - winter 1975. Specified major: Aerospace Engineering. Studies included electronics, solid-state chemistry, programming

Shawsheen Valley Technical School, N. Billerica, Mass. 9/1978 - 5/1979 (nights), certificate in photography

Red Hat Ansible Workshop, online. 9/2019, certificate of completion

School of Experience, spring 1975 to present: I started as an electronic assembler in 1975, taught myself the industry, rising through the ranks to engineering, and got more into programming as employers requested my skills. I've been programming since before there were Computer Science degrees, I believe my real world programming experience is at least equal to a Computer Science degree. My businesses and other life experiences have given me a solid understanding of business operations, many potential problems that may arise, and an awareness of how to develop solutions to them. I constantly study, at work and in my spare time, to keep my knowledge current, and to stay informed about relevant issues.

References *available on request*

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