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OBJECTIVE

- **To seek software engineering position in exciting high technology field**
  - More than 20 years experience with embedded technologies, C programming and hardware-software interaction.

EXPERIENCE, EDUCATION, PROJECTS, CHRONOLOGICALLY PRESENTED: ***to explain all employment, education, educational gaps in work, odd jobs worked to pay for education, demonstrating a life time (if you read to the end) of dedicated commitment to employment and continued education. For project and course work details, please visit my web site or linked in. After 18+ years as an embedded C software engineer, and a Master's degree as well in Electrical Engineering and Computer Science, I took some time to be home with my young kids, take some online courses to expand my technical and humanity knowledge, and I am now looking to return to the full time work force on a permanent basis.***

- **FULL SPECTRUM SOFTWARE CONTRACTOR AT AMAZON ROBOTICS, Westboro, Massachusetts – 8/2017 – 10/2017**
  - **Senior Software Engineering Contractor:** Static Analysis and Unit Testing C code using the LDRA tool to pass 61508 safety standard for the vest badges that fulfillment center workers wear to tell the warehouse robots not to run them over, as well as for the new European warehouse robot's user interface code. Git and Jira were used for code management.

- **2017 JOBS (2 month full time software contract, and a part time position while doing course work):**
  - **June-Aug 2017:** Worked part time at Xfinity Center in Mansfield,MA
  - **Aug-Oct 2017:** Full Spectrum Software Test Contract at Amazon Robotics, for which I reviewed the course I had taken 2 years ago, Git and Git Hub from Udacity. Amazon actually uses Jira instead of GitHub.

- **2017, COURSE WORK:**
  - From the New York Institute of Finance, short courses on:
    - Understanding the Federal Reserve and
    - The Fundamentals of Market Structure
  - NovoEd's short course on the Zen of Saving
  - Cody Academy profiles web site built: http://karenshaywest.com

- **2016 JOBS (Part time positions while doing course work):**
  - **March-Dec. 2016:** Worked part time at Kohl's Department Store in Mansfield, MA, to support family during course work period
  - **Nov.-Dec. 2016:** Worked part time in Amazon's Warehouse in Stoughton,MA.

- **2016 COURSE WORK:**

- EdX and Hong Kong University of Science and Technology's (HKUST's) Systems View of Communications Part 3, using MATLAB and Wireshark, and covering the Physical Layer and Wireless Communications Theory, and also, Media Access Control, Network and Application Layers of communications.
- A Project (not the entire course as of yet) from Harvard and EdX's CS50 course, a web server in C
- NovoEd's Technical Entrepreneur Part 2
- Short Course on Udacity's Review of Advanced Operating Systems

- **2013-2016 AGILENT, KEY SIGHT TECHNOLOGIES and TEKTRONIX ONE DAY WORKSHOPS AND TUTORIALS OF THEIR EQUIPMENT:**
  - Attended numerous free Agilent, Keysight Technologies and Tektronix one day tutorials and workshops on their equipment for the Radio Frequency community.

- **2015 JOBS (1 month full time software contract, and a part time position while doing course work):**
  - **Sept-Oct 2015: Worked as Software Engineer contractor at Associated Environmental Systems, Ayer, Massachusetts:** Embedded C code using the FreeRTOS embedded OS: Designed a draft of a "profile engine" in C to control the temperature and humidity settings for a Watlow Test Chamber, to begin the transition from making these settings on the Watlow controller to instead be controlled by a web interface. Profiles would allow many different test scenarios for stressing client products with different levels and times for heat and humidity product testing. Protocols used for serial communications with hardware were: Modbus for the industrial temperature and humidity controller, SPI and I2C for flash memory.
  - **Sept. to Dec. 2015:** Also worked part time for extra money to support my family during this course work period as a holiday hire in computer and accessory sales at Best Buy (Mansfield, MA).

- **2015 COURSE WORK:**
  - NovoEd's Technical Entrepreneur Parts 1 and 2
  - Coursera and University of Maryland's Hardware Security
  - Coursera and Lund University in Sweden's European Union (EU) Business Law
  - EdX and UT Austin's Fundamentals of Data Analysis Using the R Language
  - Cornell and EdX's "Compute Technology for a Smart Phone": Hardware Design of the Applications Core of a Smart Phone and Firmware Using Jade Tool that runs in your browser
  - EdX and Hong Kong University of Science and Technology's (HKUST's) Systems View of Communications Part 2
  - Udacity's Git and GitHub with Collaboration

- **2014 COURSE WORK:**
  - EdX and UT Austin's Embedded Systems
  - EdX And Hong Kong University of Science and Technology's (HKUST's) A System's View of Communications Part 1 (Wireless Physical Layer using MATLAB)
  - Coursera and University of Maryland's Software Security
  - EdX and Yale's US Constitution
  - Coursera and UC Irvine's Macroeconomics
  - EdX and Université catholique de Louvain, (Belgian French and English) Speaking

University's International Human Rights
  - Coursera's Uillinois-Urbana-Champagne's Android Applications course (actually called "Creative, Serious and Playful Science of Android Applications")
  - UMinnesota and EdX's Spatial Computing, SQL, Maps and GPS (actually called "From GPS and Google Maps to Spatial Computing")
  - Coursera and Case Western's Beyond Silicon Valley: Growing Entrepreneurs in Transitioning Economies.

- **2013 COURSE WORK:**
  - EdX and UC Berkeley's Artificial Intelligence Course with Python applied to a PacMan Game
  - Class 2 Go (now part of Coursera I think) Stanford's Introduction to Databases course
  - EdX and UC Berkeley's Ruby on Rails Part 1 with Git and GitHub and Heroku to host files from web site
  - Harvard and EdX's Justice and Ethical Reasoning
  - Coursera and UC Irvine's Microeconomics
  - Coursera and Case Westerns's International Criminal Law

- **Oct. 2012 to Jan. 2013 COURSE WORK:**
  - EdX and MIT's Python programming Programming course
  - Class 2 Go (now perhaps part of Coursera online courses) Stanford's Network Protocols

- **Oct. 2011 to June 2012 SOCIETY OF WOMEN ENGINEERS TECHNICAL OUTREACH FOR KIDS:**
  - Almost every month, did outreach programs for the Society of Women Engineers, inspiring events for girls and sometimes boys too, to build projects to demonstrate the fun of working in the high tech field.

- **Jan. 2011 to Oct. 2012 WORKED ON MY OWN C PROJECTS TO GO INTO FURTHER DEPTH WITH C, LINUX and a PUZZLE:**
  - Worked on the C Shell Linux Command Interpreter using multiprocesses, pipes, and redirected I/O (completed first round but have plans to extend time permitting in the future)
  - A Puzzle in C that asked me to best cover a strawberry field with green houses within a given budget (not completed but have plans to do so in future)

- **Aug. 2009 to Dec. 2010 CAREER COACHING FOR JOB SEARCH:**
  - Used my unemployment pay to work with Career Coaches, resume writers, cover letter writers, reference writers, and follow up letter writers and found that the market was not receptive to my skill set at this time of bad economy. After this experience, I decided to take advantage of the free online courses to expand both my technical and humanity knowledge, while at the same time going into further depth with my skills from my 18 years of work experience in embedded C systems programming, as explained in detail above. My kids were very young at this time and by doing this for free from home, I was able to best support them during this period.

- **DRAPER LABS, Cambridge, Massachusetts - 4/2007 to 8/2009**
  - **Senior Technical Staff Member, Embedded Software, "Test Coordinator", Guidance, Navigation and Controls** - Spearheaded simulation and functional testing operations in the open and closed loop control systems simulators for the US Navy.

- **MOTOROLA, Lexington, Massachusetts - 1/2005 to 4/2007**
  - **Applications Integration Embedded Software Support Engineer** - Authored multiple sample C applications to debug interface between set-top-box firmware/vendor applications. 100% of set-top-boxes could download, and debugged firmware and applications.

- **OASIS SEMICONDUCTOR, Waltham, Massachusetts - 5/2002 to 12/2004**
  - **Embedded Firmware and Quality Assurance (QA) Software Engineer** - Designed and supported C code for printer and scanner software/firmware in addition to testing software/hardware for all-in-one printer, scanner, copier and fax machines. 25th employee at Oasis Semiconductor, working as an embedded software engineer in a start up environment.

- **MOTOROLA, Mansfield, Massachusetts - 8/2000 to 5/2002**
  - **Embedded Senior Software Engineer** - Wrote USB, Ethernet and HomeRF Wireless drivers in C for BSD UNIX operating system. Worked on Broadcom-based chipset and VxWorks embedded RTOS, used in Motorola's core gateway.

- **AMERICAN MEGATRENDS, INC (AMI), Norcross, Georgia – 11/1998 to 8/2000**
  - **Software Engineer:** worked on USB products to convert PC I/O devices with old style interfaces to go through a USB board that could plug into the new lap tops and dest tops coming out with only USB ports. Also converted some DOS C programs used to debug the BIOS to work in Microsoft Visual Studio using the C++ Foundation classes instead.

- **SCIENTIFIC-ATLANTA, Norcross, Georgia – 3/1998 to 11/1998**
  - Embedded Software Engineer: wrote embedded C code to support satellite TV group using the psos embedded operating system, bought out by Wind River. Also wrote some code to support interface command code for a DSP parallel instruction execution processor, requiring assembly level of debug.

- **TEXAS INSTRUMENTS, Dallas, Texas – 10/1997 to 2/1998**
  - ASIC Tool Support Engineer: Trained to learned to support their ASIC tool support processes on a short duration position.

- **QUANTUM, Shrewsbury, Massachusetts – 9/1997 to 10/1997**
  - Hardware Chip Design Engineer: Worked for one month on the Emerson chip to support the storage product line using Verilog Design Tool.

- **GEORGIA TECH RESEARCH INSTITUTE (GTRI), Atlanta, Georgia – 6/1997 to 8/1997**
  - Software Engineer: Worked on a GUI interface for radar communications

- **GEORGIA INSTITUTE OF TECHNOLOGY, MASTERS DEGREE, 1/1995 to 6/1997**
  - **Graduate Degree as an Electrical Engineering Major with a Minor in Computer Science: EE Domains were: Digital Electronics, Communication Systems, and Computer Architecture.** Projects were Multiscalar Computer Architecture Designs using Mentor Graphics VHDL tool programmed into a Xylinx FPGA, Floating Point Unit of a 32 bit CPU on a team of 8 people building the other sections to merge together, using the Mentor Graphics Layout and SPICE tools to build it up from the transistor level. Built an analog brained robot that simply moved forward until it bumped into something, then reversed in an arc manor, and then went forward again until the same thing happened, very

simple, which connected over the serial port to a PC, to display the path it took graphically. Minor areas of study were: Operating Systems, Databases, Graphics using OpenGL, and Human Computer Interaction (HCI).
    - **GEORGIA TECH RESEARCH INSTITUTE (GTRI), Atlanta, Georgia, 1/1995 to 12/1995:** worked on a Department of Transportation Database guided by GTRI's David Huggins, using Digital Equipment Corporation's Rally Fourth Generation Database Tool
    - **GEORGIA TECH COMPUTER SCIENCE DEPARTMENT, Atlanta, Georgia, 1/1996 to 5/1996, Professor Chris Atkinson:** worked with one of his Ph.D students to write C++ code to support a distributed database used in his robotics lab, using code I had written in C at Carnegie Mellon University a few years before.
    - **GEORGIA TECH COMPUTER SCIENCE DEPARTMENT, Professor Karsten Schwann, work done at remote GTRI location since the Summer 1996 Olympics were going on in Atlanta, with the campus converted to accommodate all the athletes, 6/1996 to 9/1996:** worked on timing how long system calls took for comparison purposes between the Mercury Operating System and the Solaris version of UNIX.

- **CDI CONTRACTOR AT WESTINGHOUSE, Pittsburgh, Pennsylvania, 5/1994 to 8/1994**
    - **Software Test Engineer:** tested the software that controlled a nuclear reactor

- **CARNEGIE MELLON UNIVERSITY, Graduate Course Work Completed without obtaining Master's Degree, 8/1992 to 12/1993: Major was Electrical and Computer Engineering and also took courses in Computer Science Department.** Completed projects in distributed systems (prior to the internet), a distributed database in C, using TCP/IP socket communications, RSA encrypted packets, and a commitment protocol for transactions, and logs to know how to undo them if there was a failure along the way, Software Engineering projects for an upside down pendulum problem. I also learned the C++ language in my operating systems course at CMU.
    - **CARNEGIE MELLON's ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT, Professor Jon Peha, 8/1992 to 12/1992:** Grader for his Communication Systems Course.
    - **CARNEGIE MELLON's COMPUTER SCIENCE DEPARTMENT, Professor "Satya" (Satyanararanan), 11/1992 to 5/1993:** worked on little projects which paid my tuition this semester to learn about his Coda File System, (a disconnected and weakly-connected operation, server replication) and also running DOS as a process on the MACH microkernel.
    - **CARNEGIE MELLON's COMPUTER SCIENCE DEPARTMENT, Professor Adam Beguelin's Parallel Virtual Machine Project (PVM) and Pablo (Output Graphing Code), 5/1993 to 8/1993, a summer job:** did performance and timing metrics by running this code on the Pittsburgh Supercomputer Center (PSC)'s labs of workstations connected by Ethernet.
    - **ENDED EDUCATIONAL LEAVE OF ABSENCE AT DEC (8/1992 to 12/1993): In December 1993, I told Digital Equipment Corporation that I would not be returning, and ended my 1.5 year educational leave of absence.** I began to look for a job in Pittsburgh in order to pay for the last 3 courses I needed to complete for my MS degree. I found the above mentioned contract job in May 1994, but when we suddenly had to move to Atlanta in August 1994, I gave up that contract, and never did complete my last 3 courses toward my MS degree at CMU, and instead repeated this degree with a slightly different focus at Georgia Institute of Technology.

- **DIGITAL EQUIPMENT CORPORATION (DEC), Littleton, Massachusetts, 7/1987 to 8/1992**
  - **Senior Software Engineer:** Wrote embedded C code for Ethernet, to run on an RTOS written by my group, designed using the Yourdon Code Documentation tool. Products was a Wiring Concentrator Hub. Wrote Hardware Diagnostic Code to test all hardware on an FDDI to DEC workstation adapter, winning a cash Recognition and Performance Award (RAP) for extra effort to meet a deadline. Wrote C code to test out the DECsim models of the physical layer chip (ELM, Encoding and Link Management) and the media access control layer chip (MAC, Media Access Control), before the hardware team was given permission to go to silicon. We then ran this code on prototype model boards once the chips came back, before moving on to build products for FDDI (Fiber Distributed Data Interface) for local area network products.
  - **Educational Leave of Absence, 8/1992 to 12/1993:** After applying to graduate schools in 1991 and 1992, and receiving numerous acceptances both years, and being told by DEC that others in my group were going to receive the GEEP (Graduate Engineering Education Program) funding (full salary, benefits, tuition, housing and moving fees for family members), I decided that after 5 years of committed time working for DEC, to take an educational leave of absence to obtain my Master's Degree.
  - **Took 5 courses after work total during my period at DEC:** 1 at Boston University in Network Topologies, and 4 at MIT 2 of the MIT courses were an exploration of the prerequisites that would have been required for pursuing a biomedical master's degree, which I decided not to do, Chemistry and Organic Chemistry. The other 2 were coding and computer architecture courses to prepare myself for going to Electrical and Computer Engineering graduate school.

- **IBM, Kingston, New York, 1/1986 to 8/1986**
  - **Co-op Electrical Engineer:** During my junior year of college at Boston University: Assisted an engineer named "Jimmy Hendricks" (not spelled like "Jimmy Hendrix", the famous guitarist) to debug his math co-processor netlists from his design. Assisted another engineer, Steven D. Wyatt, with some digital circuitry and Intel 8088 assembly code for the co-processor project.
  - **Course Work During Co-op:** In order to graduate from BU on time the following year, I took 3 courses and transferred them to BU at Union College in Albany (Signals and Systems), SUNY New Paltz (Philosophy) and Dutchess Community College, Poughkeepsie (Thermodynamics).

- **WORKED NUMEROUS ODD JOBS TO SAVE FOR COLLEGE DURING MY HIGH SCHOOL YEARS AND DURING COLLEGE TO HELP PAY MY WAY IN THE SUMMER AND FRESHMAN AND JUNIOR YEARS, DURING THE SCHOOL YEAR:** (waitressing, department stores, delis, doughnut shops, credit centers, and also at BU in the administrative offices, along with the above mentioned IBM co-op position).

- **SHOWED EARLY SIGNS FOR BUSINESS SUCCESS IN HIGH SCHOOL, WHILE SIMULTANEOUSLY WORKING TO PAY FOR MY EDUCATION, AS I HAVE CARRIED ON TO DO IN MY ADULT LIFE (except those that were free!):**
  - **Junior Achievement:** Vice-President of Sales and Marketing, while actually performing

every duty in our mock company. We made our products, sold them, and kept the books. I competed in the New York State "Executive Decision Making" contest and won, and traveled to Indiana to compete in the national level contest.

- **Future Business Leaders of America:** competed and won contests here as well.
- **Yearbook Co-Editor:** Our yearbook (although it looks ancient in today's world) won 2nd place in New York State my senior year of high school.
- **Acheived A average (94/100) while working 2 jobs throughout high school**, with a reputation of helping friends in need and going the "extra mile required to help" (ask for examples!), and also, after missing 2 months of school for a back operation, working hard to catch up on my own with my advanced math and science courses.

CONCLUSION: MY CHRONOLOGICAL RESUME DEMONSTRATES A LIFETIME OF DEDICATED COMMITMENT TO MY JOBS, WORK, AND PAYING MY WAY TO OBTAIN MY EDUCATION, WHILE NEVER NEGLECTING THOSE AROUND ME THAT NEEDED ME OR MY HELP ALONG THE WAY, MY YOUNG FAMILY TODAY, AND EARLY ON IN LIFE, FRIENDS.

REFERENCES AND RECOMMENDATIONS: Available upon request.

SOFTWARE LANGUAGES & SKILLS

- C/C++, Assembly, Python, Android with Java and XML, R, MATLAB, Ruby on Rails, SQL, HTML, CSS, GNU, Emacs, PSOS, VxWorks, Proprietary RTOSs, Microsoft Visual Studio.
- **Strong Embedded C Developer :** Experience with local area networks and communications, satellite TV, USB products, core home gateways, all-in-one printer/scanner/copier fax machines, multimedia infotainment systems, and US Navy missile defense systems. Experience with product test and development in safety critical environments. Worked on set-top box programming to support multimedia apps and gaming. C-shell Linux command interpreter with I/O redirection and pipe-based IPC. Web server development in C.
- **Leadership Skills**
  - Led team to test code and documentation for successful US Navy government inspections.
- **Code Management and Code Document Design**
  - Git, Github, ClearCase, CVS, Source Safe, Gliffy Diagrams.
- **Hardware and Software Debug**
  - SoC registers specifications, Keil for Windows for ARM, Logic Analyzers, Oscilloscopes, Sniffers, Debuggers, Emulators, Jade hardware design.
- **General**
  - UNIX/Linux, Windows, Microsoft Office Suite or Linux Open Office Suite,DOORS
- **Technical Skills From Courses and Working**
  - Eclipse, Android Studio, Blue J, PWM, ADC, DAC, UARTs, LCD controller, UARTs, MathWorks MATLAB, Vmware Player, Oracle Virtual Box, and KVM's QEMU, all running Linux, Enthought's Canopy, Mentor Graphics Tools and Spice to design CPUs, I2C, SPI, Modbus, Rstudio, SQL, Software Security (buffer overflows, breaking web sites, tools to detect issues), Hardware Security (design vulnerabilities, Intellectual Property (IP), physical attacks, modular exponen., side channel attacks, hardware trojans, physical unclonable func.

FORMAL EDUCATION SUMMARY

- **Georgia Institute of Technology, Atlanta, Georgia, Master of Science, 1997**
  - Electrical/Computer Engineering & Computer Science: courses and projects in computer

architecture, computer science, networking. Worked short-term at GTRI, GT, Quantum, TI, and Scientific-Atlanta.

- **Carnegie Mellon University, Pittsburgh, Pennsylvania, 1992-1993 MS course work**
  - Electrical Engineering & Computer Science – networks, operating systems, distributed systems, software for real-time. Worked short-term at CMU, Pittsburgh Supercomputer Center, and CDI/Westinghouse.

- **Boston University, Boston, Massachusetts, Bachelor of Science, 1987**
  - Electrical Engineering. Worked short-term as an IBM co-op.

2017: Currently working on part time until I find full time employment, and at a slower pace once I find the right full time job for the long term:

- ***Code Academy Full Stack Tutorial***, which includes: HTML, CSS, Sass, JavaScript, jQuery, AngularJS1.X, Command Line, Ruby on Rails, Ruby on Rails Authentication, Git, and some of these I have already learned and used elsewhere, but it goes into further depth.

- ***Udacity's Android Basics: User Input, Multiple App Screens, Networking and Data Storage***. This is a review of what I did a few years ago on Coursera, but I am reviewing it before doing the next level Android Applications course on Udacity.

- ***Zenva Academy Agile Project Management Course***--Agile Estimation, Manifesto Principles, Managing Agile Projects, Planning Agile Projects, Scrum and XP Methods, Team Formation, Soft Skills and Leadership, Stakeholder Engagement, Quality and Earned Value, Problem Detection, PMI Code of Conduct, Continual Improvement, Communication in Agile Projects.

- ***Solving Complex Problems: Professional Group Decision Making Support In Highly Complex Situations, from Delft University in Holland and EdX***

- ***Wiretapping, Surveillance and Big Data, from Cornell and EdX***

- ***Linux Foundation Certified System Administrator Course*** for the LFCS exam.

- ***Linux Foundation Certified Engineer Course*** for the LFCE exam.

- ***A Programming Course from EdX (CS50) that reviews projects in C, Python, SQL, Javascript, CSS and HTML inspired by real-world domains*** of biology, cryptography, finance, forensics, and gaming. The final project involves a board with a server on it that communicates to a web browser.

- ***Arduino Course and Internet of Things from Instructables, background for expanding the C Shell Linux Command Interpreter and Web Server to interface to the internet of things***

- ***Solving a puzzle with a program***--finishing an old project where I was asked to cover a field of strawberries with a given budget of greenhouses for the best cost.

- ***Hardware and Software Interface projects***, course I never completed, from Uwashington Seattle and EdX.