Todd Peterson
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U.S. Citizen with Active Secret Clearance

Education and Credentials

Master of Science Computer Science and Engineering from the University of Texas at Arlington.

Bachelor of Science Aeronautical Engineering from Embry-Riddle Aeronautical University. Prescott Arizona.

Ph.D. ECE in progress at the University of Arizona.

Patent 9,816,877, Method system and apparatus to prevent arc faults in electrical connectivity.
Patent 9,464,046, Method system and apparatus to prevent arc faults in electrical conduits.
Patent 20,170,350,788 Apparatus For Distance And Location Of A Stress Attack On An Entity.
Patent 20,160,099,126 Method, System, And Apparatus To Prevent Arc Faults In Electrical Conduits.
Patent20140231637 Apparatus For Distance Measurement Using Inductive Means.

Electronics Technician Association and MIL-STD-2042B certified fiber optic installer.
IEEE continuing education courses and credits.
Private pilot. Instrument training.

Experience

2022 to Present
Senior Principal Embedded Software Engineer at Raytheon Missiles and Defense, Tucson AZ.

- Design and implementation of embedded software.
- Secure boot and Board Support Package (BSP) on Xilinx Ultrascale+.
- Embedded systems laboratory development using Xilinx Zynq Ultrascale+ processors and interfacing with advanced sensors. Support of 3 Linux RHEL8 workstations and ten Xilinx ZCU102 development boards.
- Agile development using git and Jira.

2007 to 2022
Chief Embedded Systems Engineer at Management Sciences, Inc. Albuquerque NM.

- Principal Investigator on several Small Business Innovative Research projects.
- Successful full life cycle development of many different embedded systems for monitoring and control of a variety of vehicles and other systems. This development includes requirements, design, code, test and support.
- Use of a wide variety of ARM microprocessors, including ARM9, Cortex A8/A9/A53 and Cortex M0-M7. These microprocessors include NXP LPC3180 and FRDM-K64F, Texas Instruments DM3730, AM335X, CC3200 and CC2640R2; Cypress programmable system on a chips (PSoCs), Nordic nRF series, Xilinx Zynq UltraScale+ and Spartan 6 FPGA, Microsemi Smart Fusion, National Instruments cRIO.
- Use of peripherals such as universal asynchronous receiver transmitter (UART), serial peripheral interface (SPI), inter-integrated circuit (I2C), analog to digital converters (ADC), digital to analog converters (DAC), universal serial bus (USB), controller area network (CAN), secure digital (SD) cards, EEPROM, NAND flash, Ethernet, Zigbee, Bluetooth, Digimesh, Wifi, cellular modems, 1-wire, RS-232, RS-485, Arinc 429 and MIL-STD-1553.

- Cryptographic design and programming of secure FPGA chips to protect from vulnerability using a level 1 hypervisor (OKL4) on the UltraScale+.
- Develop interfaces to external systems and sensors. Sensors include GPS, accelerometers, gyros, pressure sensors, temperature sensors, corrosion sensors, water sensors, fluid quality sensors and more.
- Board support package (BSP) design and implementation. Low-level driver development. Software development using C, C++, Java, Python, Arduino and bash. Deployment operating systems include QNX real-time operating system (RTOS), Linux, Android and Microsoft Windows.
- Web page development using HTML, Javascript, Cascading Style Sheets and PHP. Interface with web services such as dweet.io, freeboard.io, AT&T Flow and M2X Internet of Things (IoT) Platform and PubNub.
- Network programming using TCP and UDP sockets, secure sockets and mesh networking. Tunneling of unclassified data over a classified network. Database development with Oracle, Postgresql and MySQL.
- Use of many software tools such as Eclipse Integrated Development Environment (IDE), Netbeans IDE, Code Composer Studio, Cypress PSoC Creator and PSoC Designer, Segger JLink, Matlab, National Instruments Labview and various FPGA tools. Graphical User Interface (GUI) design and programming using Qt on an Android device.
- Software debugging using gdb, IDEs and JTAG. Troubleshooting of hardware using digital multi-meter, oscilloscope and logic analyzer. Configuration management using Subversion, Mercurial and Git.
- Flight qualification of a system for the Marine Corps EA-6B Prowler. Management of system development by coordination of systems, electrical, software and structural engineering.
- Preparation of proposals. Estimation and scheduling of tasks.
- Patent for an arc fault prevention system (patent number 9.464.946).
- Schematic analysis and design. Computer-aided design of various components using Solidworks. 3D printing of these components.
- Mentoring of interns and new graduates.

2006 to 2007
Software Engineer, under contract to Lifetouch Portrait Studios, Reno, NV.

Development of database applications using Microsoft SQL Server and Java. GUI design and coding using Java Swing for custom database application.

2004 to 2006
Software Engineer, under contract to Honeywell Defense Avionics Systems, Albuquerque, NM.

Object-oriented development using C++ and Java on a Linux platform. Formal requirements documentation using DOORS. Embedded requirement IDs in the Rational Rose models and wrote software to perform traceability between the requirements and the design models. GUI design and programming using Qt to interface to vehicle health monitoring application running on Linux.

2001 to 2004
Senior Software Engineer, the National Center for Genome Resources, Santa Fe, NM.

Genomic research software development for analysis of micro-array gene expression data using Java and Oracle. GUI design and coding using Java for analysis tools running on Windows.

1999 to 2001
Principal Software Engineer, Honeywell Defense Avionics Systems, Albuquerque, NM.

Flight control systems design using MatrixX. Object-oriented design using Rational Rose. Auto generation of Ada code. Received numerous awards for innovation, problem solving and teamwork. Requirements capture using RDD-100. Development using C, C++, Ada and Java.

1996 to 1999
Principal Software Engineer, Honeywell Commercial Aeronautical Systems, Phoenix, AZ.

Certified software to DO-178B Level A, including requirements, design, code and test. MCDC code coverage using LDRA. Lead for development of real-time scheduling software and table building tool. Development using C, C++ and Java.

1992 to 1996
Structural design engineer, under contract to Lockheed-Martin, Fort Worth, TX.

Structural design of aircraft primary structure using CATIA CAD software.