

TIMOTHY L. SCHERR

KEY QUALIFICATIONS

- Senior Electrical Engineer with 25+ years of experience in design, research, and development including hardware and software design, proposal writing, presentation, training, and administration.
- Master's Degree in Electrical Engineering. National Merit Scholar. Mensa Member.
- Expertise in design, construction, and testing of digital control, digital signal processing, and communication systems including legacy telephony, VoIP, cable TV, and wireless systems.
- Self-motivated and creative analytical thinker; able to apply innovative solutions to complex problems.
- Project leader who brings intelligence, integrity and insight to work every day, as reported in performance evaluations by team members. Formerly held SECRET EBI clearance.

EXPERIENCE

University of Colorado Boulder, CO.

July 2015 to present

Senior Instructor/Professor of Engineering Practice

Associate Faculty Director, Embedded Systems Engineering Professional Master's Program

As a Senior Instructor, created, implemented, and taught two graduate electrical engineering courses: Mastering Embedded Systems Architecture and Programmable Logic Embedded Systems Design, which helped launch the Professional Master's Program in Embedded Systems Engineering at CU. Developed all course materials including lectures, homework problems and solutions, project guides, and laboratory exercises; supervised TA's for these courses. Also instructed courses in Real-Time Embedded Systems, Low Power Embedded System Design and IoT Embedded Firmware. Developed an online course, "FPGA Design for Embedded Systems", launched on the Coursera platform in September 2017, serving thousands of learners to date with an overall rating of 4.5 out 5 and 97% likes. Launched another MOOC in November 2019, "Hardware Description Languages for Logic Design" which has also been well received. Completed the FPGA Specialization by adding 2 more courses in August 2020 – "FPGA Softcore Processors" and "FPGA Capstone: Building FPGA Projects." As Associate Faculty Director, helped determine the ESE Master's degree course plan, and helped recruit Adjunct Professors for the program. Identified and procured laboratory space at the onset of the program, and obtained donations of development kits for use in the laboratory.

Arrow Electronics, Inc. Westminster, CO.

May 2011 to July 2015

Applications/Systems Engineer

Provided engineering design services to a wide variety of customers across North America, including those in Military, Medical, Telecommunications, and Industrial Control Markets. Authored dozens of papers known as Application Solution Packets for customer delivery. Created and directed a nationwide seminar series featuring Microsemi SoC FPGAs, including hands-on laboratories. Developed additional seminar content for internal training for nationwide network of Field Application Engineers. Participated in supplier trainings in the latest technology at Freescale, Texas Instruments, Lattice Semiconductor, and Microsemi locations. Responsible for customer support and problem resolution on new products, including debugging of embedded systems hardware and software. Using Matlab Simulink and Altera DSP Builder, created hardware solutions for customers based on the Altera Cyclone V SoC device.

Spirax Sarco, Inc. Longmont, CO.

September 2008 to May 2011

Engineering Team Leader

Directed engineering team in the development of new flowmeter products. Defined specifications based on marketing requirements, established new engineering processes, removed technical roadblocks, and provided project planning. Supervised electrical, firmware, reliability, and mechanical engineers. Delivered the first new meter product, the MTMP, in the first year after previous leadership had spent 3 years without success. Sales of this product exceeded first year target by over 60%. Contracted and directed design efforts of embedded systems hardware and software contractors and contracting firms on the next 3 concurrent projects. Responsible for customer support and problem resolution on new products.

Wescha Engineering, Erie, CO.

June 2008 to September 2008

Chief Engineer

Provided design services in the design of new single board computers.

Vesta Technology, Inc., Wheat Ridge, CO.

April 2004 to June 2008

Director of Engineering

Responsible for managing all engineering projects and determining the technology direction of the company. Provided technical sales leadership, writing proposal and securing several engineering projects which led to products with over \$500,000 in annual sales revenue. Supervised embedded engineers and manufacturing quality control inspectors.

Resolved manufacturing problems with contract manufacturers including issues with quality control, conformal coating, and ROHS compliance. Designed peripheral devices embedded in Actel and Lattice FPGAs.

Project Engineer

Responsible for complete product lifecycle and development of a line of single board computers and autopilots. Authored several successful project proposals for custom engineering work on instrumentation and industrial control systems leading to over \$150,000 in sales in the first year. Designed a single board computer based on the Philips ARM7 processor with multiple networking interfaces including Ethernet and USB, incorporating an Actel FPGA.

AirCell, Inc., Louisville, CO.

August 2003 to April 2004

Senior Electrical Engineer

Designed system architecture for a Wireless Commercial Aviation PBX phone system, including interfaces to proprietary RF transceivers and 4-wire handsets, and SIP server hardware. Selected vendors for single board computers used in the system, custom VoIP Gateway reference design, and media processing VoIP software. Negotiated contracts for all these custom designs. Installed and tested VOCAL SIP server using a Linux-based embedded SBC. Designed portions of the system architecture for a Wireless General Aviation PBX phone system, including interfaces to Iridium satellite receivers and WIFI SIP handsets and selection of VoIP FXO to SIP gateway.

Wescha Engineering, Erie, CO

May 2003 to August 2003

Senior Design Engineer

As an Independent Contractor, performed a feasibility study of a high-speed digital demodulator for a 2.4 GHz or 900 MHz radio modem. Created a system model in MATLAB, evaluated several architectures to optimize the hardware/software tradeoff. Completed the system design, including parts selection.

Boulder Technology Labs, LLC, Boulder, CO.

February 2003 to May 2003

Senior Design Engineer

Designed and developed hardware and software platform for demonstrating a proprietary networking time synchronization system. Engineering tasks completed on time and within budget included:

- Designed a prototype system using two NIOS evaluation boards and a Linux PC. Designed the FPGA for the board, using an Altera APEX 20KE200 incorporating the NIOS softcore processor.
- Developed the software for the evaluation system, using the GNU C compiler and debugger for the NIOS softcore. This included a control console and interface to a UDP/IP stack and Ethernet driver.

Aztek Engineering, Inc., Boulder, CO.

November 1997 to January 2003

Senior Electrical Engineer

Performed consulting and design engineering with emphasis on Telecommunications system development. As cognizant engineer on most projects, managed vendor performance and customer relationships. In particular:

- Designed a digital subscriber loop pairgain DSL modem, including complete GR-1089 lightning protection, achieving 50% cost reduction over previous model.
- Modified and tested an Echo Suppressor and Echo Canceller for a VoIP system by adding Voice Activity Detection and Comfort Noise Generation, a performance improvement that significantly increased sales.
- Designed a V.29/V.34 Modem Concentrator for use in a quick-connect Point of Sales (POS) system using a PCI card with 12 TI TMS320C5420 DSP processors. Completed and debugged firmware for the Modem Concentrator including the T1 interface and 110 pages of C code in less than 4 months.

Bell Industries, Inc., Westminster, CO.

November 1993 to November 1997

Field Applications Engineer

Provided technical support to a broad range of high technology customers in Colorado and Utah. Organized and presented seminars for major suppliers. Completed training in all supplier lines, and in the process scoring first in the nation in the Microchip distribution FAE examination.

Regal Technologies, Ltd., Englewood, CO.

September 1990 to November 1993

Design Engineer

Worked on a development team designing a new communication and control system for cable TV systems. Designed and tested an FSK transmitter embedded microcomputer. Assisted in system design, including link budgets.

South Dakota School of Mines and Technology, Rapid City, SD.

August 1986 to August 1990

Assistant Professor

Taught courses in Electrical Engineering, including Electrical Networks, Electronics, Control Systems, and Microprocessor System Design. Responsible for lectures, examinations, and laboratory design. Introduced Programmable Logic Devices (PLDs) to the curriculum and laboratories in both undergraduate and graduate Microprocessor System Design courses.

EDUCATION

UNIVERSITY OF UTAH, Salt Lake City, Utah
Master of Science in Electrical Engineering

WASHINGTON UNIVERSITY, St. Louis, Missouri
Bachelor of Science in Electrical Engineering

TECHNICAL SKILLS

- Proficient in VHDL, Verilog, C, BASIC, and Assembly language programming. Hardware designer and software programmer of microprocessor-based systems using the 68000, MPC860, 80186, PIC16F877, TMS320C5420, ADSP-2181, LPC2292(ARM7), KL25Z128(ARM M0+), AM3358(ARM A8) and NIOS II softcore.
- Skilled in use of hardware design tools, including oscilloscopes; logic analyzers; spectrum analyzers; network analyzers; Sage, Abacus, PCM4, TIMS, and Phoenix telecom analyzers. Proficient in use of Mathcad, Excel, and MATLAB/Simulink for system simulation; Pspice for circuit simulation; Synplicity Synplify, Altera/Intel Quartus, Microsemi Libero and Lattice Diamond for FPGA and CPLD synthesis; ModelSim for PLD Simulation; PCAD, Altium, and Orcad for Schematic Capture; and various compilers, assemblers, emulators, and debuggers for software development.