

Rodney S Burchell
1812 Bay St.
Santa Cruz, CA 95060
(831) 334-1297
rsbdesigns@sbcglobal.net

Summary

Senior Embedded Systems Design Engineer with over 20 years of experience in the design of low to medium scale embedded system products. Held various titles: Senior Design Engineer, Firmware Engineer, Consultant/Contractor, Acting Director of Engineering. Have fairly broad experience in multiple phases of a product's life cycle: product definition, specifications, hardware and software design, hardware and software verification, system validation and production.

Professional Experience

RSB Electronic Design, Santa Cruz, CA (11/2009 – present)

Firmware Engineer Consultant /Contractor

- Member of team developing firmware for IR thermal imaging cameras.
- Drafted firmware for physical therapy device with ARM7 micro.
- Designed, coded, tested firmware for new Fitness Entertainment Industry product spin.

Nova Controls, Watsonville, CA (7/2008 – 10/2009)

Firmware/Hardware Engineer

- Performed Project Engineer role for the Total Eclipse Program - a chemical dispensing controller for the laundry industry. This product features a 64x128 monochrome graphics LCD display, multilingual capability and USB flash drive connectivity. Assessed legacy design: Atmel ARM7 microcontroller, USB hardware and product software. Oversaw the completion and production release of the legacy design. Redesigned hardware, (now Atmel AVR32 based), assisted with new specifications, performed schematic capture, pcb layout and assisted with the porting over of the software. Designed, coded and tested software for various new features. Oversaw pre-production units for field trials. Oversaw the related PC application software.
- Designed PHY portion of Ethernet hardware.
- Designed coded and tested software upgrades for various legacy products.
- Other activities included but are not limited to: production test design, production support, validation testing, production training, procedure writing, first article verification, failure analysis, hardware and software bring up.

RSB Electronic Design, Santa Cruz, CA (12/2001 – 6/2008)

Electronic Design Consultant /Contractor

- Telecom Industry: Designed simple telecom relay tester

- Fitness Entertainment Industry: Designed hardware and software for second generation fitness entertainment equipment (digital TV remote control, wireless audio, iPod interface, FM Radio...)
- Performed numerous pcb layouts as well as custom pcb panelizations
- Fitness Entertainment Industry: FM Radio/MP3 Player/TV controller(s) with wireless audio reception and companion wireless audio transmitter(s). Designed the digital portion, 8-bit microcontroller (PIC) based. Wrote specifications for, designed, coded and tested the software. Performed the engineering bring up of the hardware and software. Wrote and released production testing documents. Performed production training. Evaluated First Articles and performed First Article inspections.
- Wireless Audio Industry: Designed hardware and software for an all digital (I2S based) stereo Transmitter and Receiver (Nordic wireless ICs) with a USB interface for downloading MP3 songs from a PC. Included a custom, on-board MP3 player, stereo AtoD and DtoA.
- Test/Development Fixture: Performed the hardware design for a microcontroller based, general purpose test/development fixture. Included keypad, LCD, analog, I2C and SPI interfaces with multiple power supplies.
- Encrypted Keyless Entry: Designed hardware for a RF controlled door opener – transmitter and receiver.
- Digital Audio: Designed digital portion of a 24 bit AtoD and DtoA audio card with I2S, performed pcb layout
- Drone Aircraft Antenna Controller: Designed microcontroller based aircraft antenna azimuth and elevation controller. This included the communication interface, technical specifications, hardware design, software design, verification testing and validation testing.
- Thermal Printer Driver Board: Designed microcontroller based compact thermal printer driver module. This included specifications, software design, hardware design, verification testing, validation testing.
- PCB Assembly Test Fixtures: Designed electronics for multiple pcb assembly production test fixtures, some microcontroller based.
- Medical - Basal Temperature Taking Device: Oversaw R&D program of a high speed, high accuracy basal temperature monitor. Evaluated and modified the PID controller software design
- Medical - Pulse Oximeter: Evaluated the software and hardware performance of a pulse oximeter.
- Other activities included performing accelerated environmental testing on an electronic device, Risk/Hazards Analysis for Medical Device, manufacturing engineering for a Medical Device, testing of different Bit Synch Transmitter and Receivers with phase lock loop, clock recovery, scrambler and descrambler, numerous pcb designs and layouts.

PALCO Labs, Santa Cruz, CA (5/1989 - 10/2001)

Acting Director of Engineering (98-01)

Staff Engineer, Design Engineer, Firmware Engineer (89-98)

- Provided management and leadership for the Electronic Products Division
 - Reviewed/evaluated electronic product programs

- Model 310/320 (pulse oximeter, handheld, battery-powered, embedded system platform) - Lead Electronic Design Engineer. Wrote Engineering Specification. Directed the design and oversaw Mechanical and Software Engineers. Designed the hardware. Generated Design Control documents. Designed, developed and tested several modules of the software.
- Infrared Data Converter - (IrDA to RS232, battery powered accessory) - Lead Electronic Design Engineer. Wrote Engineering Specifications, designed the hardware, verified the hardware and validated the system. Obtained FDA approval. Product was brought to market.
- OxySoft (Windows software application) - Project Leader. Wrote Engineering Specification for, directed the design, oversaw development, and performed Verification and Validation testing of a Visual Basic application software for a medical device. Obtained FDA approval. Product was brought to market.
- Participated in QA and ISO 9000 activities.
- Assisted in resolving technical road blocks and employee conflicts
- Was responsible for communications with departments outside of Engineering

Skills and Aptitudes

- Firmware, C for embedded systems
- Hardware, design of microcontroller based products from product definition through production and support.
- Schematic capture and PCB layout: - Altium Designer, PCAD
- Digital state machine, PLD and digital designs.
- Various vendors, tools... (Micrium, Eclipse, TI DaVinci, Code Composer Studio, Bugzilla, uC-OSII, IAR Embedded Workbench, AVR32, ARM7, PIC, 8051, NEC, HI-TECH, Tasking, MPLAB, USB, Ethernet, RS-232, RS-485, I2C, I2S, SPI, IrDA, Visual Basic, Track+, Subversion, Visual Studio.....)

Education

- UCSC Extension 2010/2011 – Embedded Systems Certificate (Embedded Linux, Objective C, C++...)
- Santa Clara University - 1/3 completion towards Masters in Engineering
- California Polytechnic State University, B.S. Electronic Engineering

References Available upon request