

# JOSEPH F. BAKER

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## OBJECTIVE:

Seeking to design embedded hardware and firmware in a lean team

## SUMMARY:

Senior engineer experienced in the design of embedded hardware and firmware.  
Driven to achieve project success enabling others to meet their goals.

## EXPERTISE:

Embedded Controller Design	Digital, Mixed Signal and A/D
Microprocessor based design	DC to DC point-of-load power
Video, Telecom & Datacom	Orcad & Altium Schematic Capture
Real-time, multi-tasking c Firmware	Microchip, Atmel, Freescale & NXP

## PROFESSIONAL HISTORY:

### RLA Engineering

Portland, OR

2014 – Now

- Engineering lead / hardware design of a Bluetooth personal emergency device.
  - Intel Curie SoC with Dual Path power and a separate Battery Charger
  - First pass success, on time, with only limited documentation for the Curie
  - Managed layout, purchasing and assembly of electronics & custom enclosure
  - Recruited and mentored junior SW engineer to develop the application
  - Technical interface to customers, contract manufacturing and other vendors
- Hardware & firmware design of a kAmp-hr sensor retrofit of plating tanks
  - Oversampled 19 bit ADC word from Instrumentation Amp with SW Charge Pump
  - AVR processor user interface through 7-seg LED driver & key switches
  - Real time / interrupt based code despite Arduino IDE & framework
- FW & digital HW design for a beverage maker in a dual PIC MX795 architecture
  - Discrete PID control loop
  - Prioritized, pre-emptive scheduler
  - Stepper & linear motor drivers
  - State machines, queues and stacks
- Firmware design for multiple optical sensor diagnostic devices with PIC MX440
  - Services / Drivers / ISRs using DMA for:
    - QVGA & WVGA Touch Screen
    - D2A, A2D, SPI, I2C, UART, Parallel bus
    - USB-HID
    - SD Card

**Radio System Engineering Consulting** **Portland, OR** **2008 - 2013**

- Designed after-market HW mods to increase radio power & frequency performance
- Designed microwave & mobile radio *systems* using EDX, ComStudy and Pathloss

Family Leave Coos Bay, OR 2006 – 2007  
 I paused my career for my (former) spouse' teaching career in Coastal/Central Oregon

**Rosen Aviation Displays** **Eugene, OR** **2005 - 2006**

- Root cause identification of failure modes and reliability concerns
- Provided insight and assistance resolving production issues
- Collaborated with VP Eng. on "Best Practices" manual for future designs
- Mentored and trained an intern who was hired as the hardware engineer

**Georgia Department of Education** **Atlanta, GA** **2003 - 2004**

- Certified High School Math Teacher – Class of 2003 's "Most Dedicated Teacher"

**Intelligent Optical Amplifiers** **San Jose, CA** **2001 - 2002**

- Designed embedded MPC855T and MPC8260 with SDRAM, FLASH, DSP
- Verilog RTL in Altera FPGA's distributed logic of 19 bit multiply and signed addition
- All layout, purchasing and manufacturing support for prototype assembly and test

**VINA Technologies** **San Jose, CA** **1998 – 2001**

- Designed Freescale MPC860 based hardware for a voice/data E1 aggregator
- Designed Freescale MPC8260 based hardware with FLASH, SDRAM, and L2-Cache
- Altera & Xilinx CPLDs for Bus Arbitration, Null Pointer Detection and Chip Selects

**Previously** **Atlanta, GA** **1990 - 1998**

HW design of very high volume home analog & digital TV receiver product lines:

- Resolved clock jitter bug by designing a transport stream buffer in Altera RTL Verilog
- Video digital to analog conversion & timing for multiple international video formats
- Designed one NXP 8051 firmware and hardware to drive multiple front panel UIs:
  - Rack-mount: Key matrix, character LCD, PWM contrast, downloadable font
  - Consumer: IR receiver, four 7 segment LEDs, I2C interface
- HW & FW design of a PIC18-based replacement for I2C LCD during production
- Design of a PLD to replace a timing IC that had been discontinued during production
- LNA power supply with variable output, modulated & active short-circuit protection
- Designed In-Circuit-Emulator for secure microcontroller that had not taped-out
- Created necessary production documentation for efficient HVM handoff.

**EDUCATION:**

Georgia Institute of Technology	BSEE
East Tennessee State University	BA in Music Education