JOE BAKER

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OBJECTIVE:

A fast-paced embedded hardware / firmware design position

SUMMARY:

Senior embedded engineer who gets designs to market on time within budget. Driven to achieve project success by helping others succeed.

EXPERTISE:

Embedded Controller design	DC to DC conversion
Real-time, multi-tasking c code	Stepper Motor Control
Driver / Service / API Design	Digital & Mixed Signal HW
PIC32MX / ARM Cortex-M	Altium Schematic / Layout

HISTORY:

Stanley Infrastructure **Portland, OR** **2018**

- ARM Cortex Hardware & Firmware design and prototyping of motor control design:
  - Real-time open-loop control of brushless DC motor H-Bridge in c for ARM Cortex
  - HW design for microcontroller, high-side power path and battery monitor

Mobile Technologies, Inc. **Portland, OR** **2017 - 2018**

- ARM Cortex Hardware & Firmware design of smart kiosk stand for tablets:
  - USB HID device - SPECK encryption - high current battery charging
  - Schematic & Layout in Altium with Subversion - git/github for FW
  - Prototypes in 5 weeks; DFM & DFT skills got design into off-shore pilot production

RLA Engineering **Portland, OR** **2014 – 2017**

- Bluetooth personal emergency device using Intel Curie SoC:
  - Ultra low-power HW circuit design - Dual-path battery charger
  - Managed BOM, Procurement & Proto - FW task supervisor in Zephyr
  - Schematic & Layout in Altium - BOM, Procurement and Proto Build
- Bluetooth, Digital, Mixed-Signal, Power and Firmware for specialty coffee maker
  - Bluetooth SoC with PCB antenna - Schematic & Layout in Altium
  - Wrote custom RTOS for PIC32MX - Prioritized task scheduler
  - Discrete PID control loop - Stepper & linear motor drivers
- Firmware design for tester of optical sensors with PIC32MX
  - Messaging based inter-process, multitasking services, drivers & ISRs for:
    - USB HID & MSD class device
    - D2A, A2D, SPI, I2C, UART, DMA, Parallel
    - SD Card
    - TFT Display & Touch Screen

- Hardware & firmware design of a kAmp-hr sensor/accumulator for plating tanks
  - Real time / interrupt based firmware despite Arduino IDE & framework
  - HW design of Instrumentation Amp interfacing to an over-sampled 10-bit ADC
  - SW Charge Pump control - 7-seg LED driver / key switches

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

- Designed microwave & mobile radio *systems* using EDX, ComStudy and Pathloss
- Designed after-market HW to improve TX power; improved selectivity of radio

Family Leave **Coos Bay, OR** **2006 – 2007**

I paused my career to relocate to rural Oregon in support of spouse's teaching career

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

- Root cause identification & resolution of field failures and reliability concerns
- Collaborated with VP Eng. on "Best Practices" manual for his future designs
- Mentored and trained an OIT intern who was hired as their hardware engineer

Previously **Atlanta, GA and in SF Bay**

HW design of ultra-high volume broadcast receiver products & displays:

- 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
- PIC18-based replacement for end-of-life I2C LCD discontinued during production
- Freescale MPC8260 based hardware with FLASH, SDRAM, and L2-Cache
- Freescale microcontroller based telephony interface & firmware modem

- Video digital to analog conversion & timing for international video formats
- Video overlay generator firmware, hardware and FPGA design
- LNA power supply with variable output, modulated & active short-circuit protection
- Designed In-Circuit-Emulator for secure microcontroller that had not taped-out

- FPGA Verilog RTL in *distributed* logic of 19 bit multiply and signed addition
- FPGA Altera RTL removed clock jitter bug with an MPEG transport stream buffer
- CPLDs Altera/Xilinx for Bus Arbitration, Null Pointer Detection and Chip Selects
- CPLD design to replace a timing IC that had been discontinued during production

EDUCATION:

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