Justin Reina

justinmreina@gmail.com
justinreina.com/portfolio (LinkedIn)

11809 Nevers Rd
Snohomish, WA 98290
(425)760-7291

THESIS

Seeking full-time employment in embedded firmware development and related activities.

EDUCATION

University of Washington Seattle, WA — *Cumulative GPA: 3.52*
M.S. Electrical Engineering (*VLSI*) (*hired before completion*) *100/117 cr*

B.S. Electrical Engineering (*Embedded Design, Control Systems, Analog Design)* — *Cumulative GPA: 3.30*
B.S. Mechanical Engineering (*System Dynamics*) Dec 2009

Everett Community College (EVCC) Everett, WA — *Cumulative GPA: 3.37*
Jun 2006

WORK EXPERIENCE

Intel Labs (*Firmware Engineer, Research Scientist*) *Jun '11 to Sep '16*

Sole firmware engineer for a battery-powered RFID tag for government vehicle tolling in Brazil. Device supports a 3-year battery life and has been deployed in high volumes to the Brazilian government.

Generated a derivative version of the RFID tag supporting a new Intel MCU architecture (D1000), building successfully Intel's first product on the D1000 architecture. Additionally hand-built the IDE tooling (Eclipse) for D1000 development which then became used in the first product release as well.

Both tags featured full physical-layer and protocol implementations on-the-metal, and were certified for ISO-18000:6C, Siniav and Artesp protocol compliance.

Intel Labs Seattle (*Firmware Engineer, Research Scientist*) *Sep '10 to Jun '11*

Successful porting and generation of Passive RFID firmware (WISP) into Active RFID framework for generation of the Brazil Tolling Tag.

Intermec Technologies (*RF Test Automation Engineer*) *Summer 2008*

Task

- Design of RF test system
- 802.11/RF competency
- Hardware Interfacing

Results

- Near 100% automation of labor-intensive RF tests
- Reduced test time from 16 Hours to 25 Minutes
- Automatically generated results within 5 minutes

PROCESSOR EXPERIENCE

Core

- **[TI ARM-Cortex]** Tiva TM4C
- **[TI 16-bit] MSP430** - 2-Series, 5-Series

Suppl

- **[TI ARM-Cortex]** CC3200, CC2650
- **[Silicon Labs]** EFM8, EFM32
- **[Atmel]** AVR ATmega
- **[Microchip]** PIC32MX

LANGUAGES

Core

- C, Assembly (ARM, MSP430, PIC)
- JAVA

Experience With

- C++
- Linux / Bash
- LabVIEW / MATLAB
- Swift / HTML

TOPICS OF FIRMWARE EXPERIENCE

Central Skill & Passion

- Deterministic, high-reliability firmware
- Low-latency interrupt response
- Firmware power consumption optimization
- Detailed & descriptive firmware
  - Clear & clean architecture
  - Complete documentation
- Strong firmware testing, design and report
  - Clear and detailed
  - Maximal automation and regression

Primary Skill

- Firmware development with high portability and description
  - Clear, detailed and complete firmware architecture and documentation
  - Strong & uniform, repeatable firmware architecture and coding
- Communication protocol conformance and compliance
- Energy harvesting & battery-powered firmware architecture
- Assembly, C-Assembly co-existence

Topics of Prep (low-latency ramp)

- RTOS
  - uCos-II
  - TI-RTOS

Deterministic Peripheral Usage

- GPIO, ADC
- Timers, PWM
- XTAL, DCO, External Clocks
- Flash

Communication Peripherals

- Core
  - SPI
  - UART (DB9)
  - RFID (18000-6C)
- Experience
  - Wi-Fi
  - Bluetooth
  - LAN
- Minimal Extension
  - USB
  - ZigBee

Light Experience

- Embedded Linux

TOPICS OF DESIGN EXPERIENCE

Core Topics of Work Experience

- Manual communication protocol generation
- Protocol & Regulations Compliance
    - FIPS, ISO, SINIAV
- Firmware mapping, timing and floorplan
- Low-Power firmware
- Deterministic ISRs
- Lowest power paths to firmware task solution
- Low-power external peripheral usage

Design Topics of Strong Experience

- Problem specification and solution architecture identification
- Prototyping and proving proposed new embedded system concepts
- PDRD & PRD generation
- Automated protocol test systems

Circuit Design & Fabrication Experience

- PCB design (Circuit & layout)
- PCB manufacture, assembly, validation
- Experience with multiple design software packages
    - (Curr) Active Eagle experience, circuit design and board design
    - (2014) Prior Cadence experience
    - (2012) Prior Altium experience

Firmware Test & Measurement

- Protocol compliance (protocol peripherals, automation, report generation)
- Firmware inspection, short-term & long-term test
    - USB DAQ, PCI-DAQ, NI PXIe-DAQ systems
    - LabVIEW interfaces, JAVA, CLI

Experience With

- Architecture specification & design (System, firmware & hardware)
- Full lifecycle firmware operations (boot cycle to last cycle, knowledge and planning)
    - Failure analysis & mitigation (Design, test & validation)
- Mechatronics embedded-system design and implementation