# Justin Reina

justinmreina@gmail.com (LinkedIn)

## THESIS

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

## WORK EXPERIENCE

**BrickRed Systems** *Mar ’20 to Aug ‘20*

Senior firmware engineer working for support of Microsoft Research & Development, supporting solutions architecture operations and design for test & validation.

**Contract Work** *Mar ’19 to Mar ’20*

Consideration for new venture in biomedical healthcare electronics (Motusi) serving as chief architect. Lead of engineering operations, established system requirements, identified customer needs, performed hardware selection and specified system performance. Also participated in design work for test & validation apparatus of medical cooling systems (Intellectual Ventures), establishing a successful system architecture that met new needs in remote market and implementing the target solution for customer display.

**Ergsense** (*Design Architect*) *Jun '18 to Mar ‘19*

System architect and design lead for new IIOT smart-pumping systems solution, minimizing bearing fatigue and optimizing performance. Responsible for system definition, design specification, hardware architecture selection, proof-of-concept firmware, product documentation and test.

This work helped deliver a new product concept to a client with Ergsense, securing the idea and beginning operations to continue this work. Participated as a lead for all phases of this transfer, generating the design and working with team from proof-of-concept through path to production. This body of work was successful, transferring Ergsense’s PoC design from concept into production for a global 500 company. Ergsense was asked for continued participation after our efforts, taking a leadership role for market delivery next.

The design was battery powered, including environmental sensors (pressure, temperature, vibration & chemical), two ARM Cortex-M processors and support for Bluetooth & RS-485 interfaces

**Intel Labs** (*Firmware Engineer, Research Scientist*) *Sep ‘10 to Sep ’16*

Transfer of academic firmware publications (WISP) into Active RFID framework, securing a product opportunity leading to high-volume, cryptographic product placement in remote markets.

Firmware engineer on a battery-powered RFID tag in this work, for government vehicle tolling in Brazil. Device supports a 3-year battery life and 5 million units were deployed to the Brazilian government, for secure vehicle operations.

Served 2 years helping generate derivative RFID tag version of supporting a new Intel MCU architecture (D1000), helping the system architect identify performance requirements, the software development team with toolchain and apparatus, and establishing product placement for the new design building Intel’s first product on the D1000 architecture. Additionally, built the IDE tooling (Eclipse) for D1000 development, distributed with the first product release.

Both tags featured full physical-layer and protocol implementations on-the-metal. Each tag was certified for ISO-18000:6C, Siniav and Artesp protocol compliance, where I served as the lead for external CM relations and representative for remote market certification.

## DESIGN EXPERIENCE

- Design identification & specification
- Prototype regression & test
- Contract-Manufacture design & validation transfer
- Product certification & support through release

## EMBEDDED DESIGN EXPERIENCE

- Deterministic, low-power, high-reliability firmware
- Battery-powered, bare-metal communications development
- FreeRTOS (TI-RTOS & µC/OS-II practice)
- GCC & GBD automation & use
- Revision control (Git, GitHub, SVN)
- Firmware regression design and report
- Communications experience with BLE, BT Mesh & SPI/I2C

## LANGUAGES

*Core*

- C/C++ [10 yr]
- Assembly (ARM, MSP430, PIC) [6 yr]
- JAVA [6 yr]
- LabVIEW [10 yr]

*Experience With*

- MATLAB [10 yr]
- Swift [2 yr]

## HARDWARE EXPERIENCE

- Circuit Design (SPICE & MATLAB)
- PCB design (EAGLE, Altium & Cadence, 2-4 layer)

## PROCESSOR EXPERIENCE

- **[ST-Micro 32-bit] STM32F0**
- **[TI 16-bit] MSP430** (2-Series, 5-Series)
- **[TI ARM-Cortex] Tiva TM4C**
- **[Atmel 8-bit] AVR Atmega**
- **[Intel] Quark D1000**

## EDUCATION

**University of Washington** Seattle, WA
M.S. Electrical Engineering (*VLSI*) *Jan '10 – Aug '11*

B.S. Electrical Engineering (*Embedded Design, Control Systems, Analog Design)* *Sep '06 – Dec '09*
B.S. Mechanical Engineering (*System Dynamics*)

**Everett Community College (EVCC)** Everett, WA *Sep '04 – Jun '06*

## LEADERSHIP & ACTIVITIES

*LabVIEW Teacher & Community Member (CLAD Certified)* *Sep '09 - Jun '11*
Started quarterly LabVIEW certification course at the UW. Evolved into two weekly sections with 10-20 students per section. Passing students of course received complimentary USB-6009 DAQ from NI, and a free attempt towards CLAD certification.

Class expanded for one quarter to externally and paid, on-site at Fluke Electronics in Everett, WA. Also actively participated in local LabVIEW user group.

*Propulsion Team Lead and Team President* *Aug '04 - Jul '06*
Helped initiate the Human-Powered Submarine Project at EVCC. Designed and built two different submarines, leading the propulsion and electronics teams both years. Designed and machined controllable pitch propeller, and drive-train system.
Held role of president in second year, designing and building new, fully custom fiberglass solution for the submarine, using custom offsite facilities and operations when present facilities were found non-compliant. Solution was successful, well-designed and well-built, maintaining team operations and development since that time, still remaining in operation today