

THESIS

Seeking full time employment for embedded electrical engineering or related activities.

WORK EXPERIENCE

Runner Delivers (*Mobile Software Engineer*)

Oct '20 to Feb '21

Engineering support for mobile, food delivery prototype to in-house MVP development and use. Solution included mobile applications for the drivers and for customers, back-end database support and real-time web interfaces for customer review and edits.

BrickRed Systems (*Firmware Engineer*)

Mar '20 to Aug '20

Senior firmware engineer supporting Microsoft Research & Development, supporting solutions architecture and design for test & validation. Led selection & development for a new high-speed, Bluetooth 5 interface in test systems development.

Contract Work (*System Architect*)

Mar '19 to Mar '20

Chief architect in new venture for biomedical healthcare electronics at Motusi. Lead of engineering operations, establishing requirements to generate system specification & hardware selection. Also participated in design work for test & validation apparatus of medical cooling systems with S5 Solutions, establishing a successful system architecture satisfying needs in a remote market, implementing 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.

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. Additionally, built the IDE tooling (Eclipse) for D1000 development, distributed with the first product release.

FULL LIFECYCLE SUPPORT

- Full lifecycle experience for embedded products, from PoC through release and support
- Experience wearing multiple hats with ownership for success
- Revision control leadership & release for design, manufacture & release (git, svn)

DISPLAY OF OWNERSHIP & DELIVERY OF RESULTS

- Architect leadership & success for new ventures (Intel RFID, Ergsense)
- Design identification & specification
- Design description & documentation (PDRD, Design Document & Test)
- Full-cycle prototype generation
- Contract-Manufacture design & validation (Flextronics São Paulo)
- Product certification & support through release

NEW PRODUCT EXPERIENCE

- Experience in IP generation from ideation through MVP
- Experience in development and release for embedded products
- Experience in design for manufacture

EMBEDDED DESIGN EXPERIENCE

- RISC & ARM Cortex experience (M0, M4)
- Free-RTOS experience for intelligent industrial monitoring (STM32)
- Deterministic, low power, high reliability firmware (MSP430)
- Battery powered, bare metal communications development
- Communications experience with RFID, BLE, BT Mesh, RS-485 & SPI/I2C
- Schematic & board design experience (EAGLE & Altium, practice with Allegro)

CIRCUIT EXPERIENCE

- Circuit design (OrCAD, EAGLE, LTSPICE)
- PCB design (Altium, EAGLE, OrCAD)
- Fabrication & assembly (Intel, Ergsense)
- Low power circuit design (Intel)
- Multi board design (Ergsense)

RAPID PROTOTYPING

- 3D print lead & operator (2 yrs. @ Intel, Stratasys 768)
- SolidWorks, Cura & ANSYS
- 3D Printing experience (Intel: Stratasys, Home: Prusa, Dev: Shapeways)
- CNC lathe & mill (Academic)

R&D EXPERIENCE

- New processor design selection
Help with generation & release of Intel Quark D1000
- Demonstrating idea to secure product roadmap
Generation of prototype RFID unit, supporting preliminary protocol specification (SINIAV) and securing OEM relationship & work
- MVP Roadmap demonstration to secure client
Ergsense prototype Xtag design description & proof-of-concept demo, transferred to client establishing product definition

LAB EXPERIENCE

- *Conventional*
Experience with Agilent/HP/R&S oscilloscopes, logic analyzers, function generators, power supplies & spectrum analyzers
- *Test & Measurement*
Use of LabVIEW to establish & deliver successful debug, test & evaluation for product development work. Practice with USB DAQs, High-speed AIO/DIO DAQs & PXI-Chassis systems. Also have spherical RF Test Chamber experience with LabVIEW automation
- *Apparatus Development*
Identification, creation & performance of product qualification, certification & regression components at Intel for RFID tag
- *Procedure & Practice*
Experience with regression validation for product generation, served as certification representative for Intel product release

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.

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*)
B.S. Mechanical Engineering (*System Dynamics*)

Sep '06 – Dec '09