

SUMMARY

Passionate about architecting and delivering advanced sensing solutions that provide meaningful benefit to human beings. Experienced in constructing optimized embedded sensing stacks—especially for atypically-constrained systems—by leveraging a multi-disciplinary background designing and executing firmware, digital hardware, and platform specifications.

OVERVIEW OF TECHNICAL SKILLS

Embedded System Architecture: translation of feature requirements into system design, full-stack modeling, protocol design, custom silicon specification, silicon development-cycle support

Firmware (C, ASM; ARM (Cortex-A & M), Picoblaze, AVR...): core system infrastructure, sensor interface architecture, signal processing, power optimization, high-speed communication

Software (C, Python, Bash, Make...): build-system architecture, simulation framework infrastructure, interprocessor communications, hardware abstraction

Digital Design for FPGAs (VHDL, Verilog; Lattice, Altera & Xilinx parts): high-speed/high-bandwidth hardware interfaces, real-time signal processing, intelligent clock routing, soft-processors

SELECTED PROFESSIONAL EXPERIENCE

Apple — July 2013–Present

Responsible for architecture design, functional specification, behavioral modeling, and spearheading team delivery of new embedded sensing stack solutions. Deliverables include scalable firmware infrastructure design and implementation, custom silicon specification, and system architecture definition.

Lincoln Lab VI-A Fellowship — June–August 2011, January 2012–June 2013

Designed and built a high-speed channel emulator for airborne communication networks to complete an M.Eng. fellowship degree in June, 2013. Architected a solution that interfaced FPGAs with high-bandwidth analog hardware and applied real-time algorithms to the signal stream. Constructed a full-stack framework for emulating environmental effects on wireless signals and modeled Doppler shifting.

MITRE Corp. Internship Program — June–August 2010

Prototyped hardware encryption concept and demonstrated it to funding authorities. Built test infrastructure for an aerial communications module. Built FPGA test framework for a GPS hardware device.

BAE Systems Internship Program — June–August 2009

Designed and implemented FPGA algorithms for sensor defect image correction and data corruption detection in military night vision goggle. Modeled and simulated to prove correctness and tested implementation on physical hardware.

MIT Course Staff — 2009–2012

Lab staff for MIT courses 6.01, 6.004, 6.091, and 6.111.

EDUCATION

Massachusetts Institute of Technology (Cambridge, MA)

2012: B.S. VI-2 (EE & CS)

2013: M.Eng. VI-A (High-Speed Channel Emulation)

PATENTS

Wireless charging systems with multiple power receiving devices, U.S. Patent 10,110,030 (2018)

Methods and apparatus for rapid switching of hardware configurations with a speed limited bus, U.S. Patent 101,021,76 (2018)

Dynamic adjustment of a sampling rate for an optical encoder, U.S. Patent 9,651,405 (2017)
February 23, 2019