

Nathan Fettinger

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Boston Scientific:
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Summary

Senior Software Engineer with 10 years of embedded working experience. Over 5 years of experience in medical firmware developing capital equipment with a focus on image processing, patient safety, and cross divisional platforms. Additional 5 years of experience in aviation developing mission critical solutions with a focus on cross platform kernels as well as robust and scalable operating systems. Master's degree in computer engineering.

Experience

- | | | |
|--|--|----------------------|
| Boston Scientific | Senior Software Engineer - Firmware | Arden Hills, MN |
| Cardiac Rhythm Management | | April 2017 - Present |
| <ul style="list-style-type: none">• Support hardware software integration through platform selection and Kernel & Operating System design• Porting existing application code to a new Linux based OS• Creation of a Maintenance Test Interface tool to support Engineering, manufacturing, and service teams• Hardware bring-up and integration of several Espressif ESP 32 peripherals | | |
| Steward of the Global System Design Electrical Medical Equipment Community of Practice | | |
| <ul style="list-style-type: none">• Over 150 members in various areas of engineering, standards, regulatory, quality, conformance, etc.• Presentations of best practices, lessons learned, knowledge sharing documents, CAPA, design and development reuse, etc• Standards and Regulatory changes: including request for industry feedback, and discussion/analysis of upcoming revisions, impact to global and regional bodies, corporate compliance, employee work instruction documents and training, corporate quality/reliability/servicing pillars, etc. | | |
| Urology | | |
| <ul style="list-style-type: none">• Design a multiplatform software architecture, including scalability, portability, and secure software upgradability.• Intensive embedded image processing design including demonstrations, automatic lighting control, calibration, and patent pending IP• Integrated support for manufacturing and servicing tools to interface and securely boot on the platform• Multiple rendering platforms including QT, Intel FPGA embedded pixel blit and video processing design suite• Support for a team starting with 2 people that grew to over 15 by the end of the project.• Aid electrical design with board bring-up, stress testing, and software patches for issues between board spins• Extensive peripheral support including SPI/I2C/UART/PCIe/Ethernet/DisplayPort• Leadership in both automated and manual testing for government compliance and SOUP validation• Security and validation baked into design to prevent unauthorized reproduction or reuse• Extensive use and design around the OmniVision 426 bridge chip• Managed and created an automated service tool that booted off of a flash drive and re-calibrated internal sensors for periodic maintenance requirement compliance• Patent Pending: 63060885 Methods and Devices for Gamma Correction• Patent Drafting/Under Review: Algorithm for Dynamic Lighting Control in Endoscopy | | |
| Garmin International | Software Engineer - Aviation | Olathe, KS |
| Aviation Panel Mount Displays | | June 2012 - 2017 |
| <ul style="list-style-type: none">• Planned and managed new technology verification and certification effort with 10+ interns• Prototyped, designed, reviewed, and certified new software modules and technologies• Balanced and prioritized issues based on failure conditions and FAA Design Assurance Levels• Tested design and implementation of all individual changes, reviewed changes and tests made by others | | |
| Simulator and Demonstration Mode - Primary Component Owner | | |
| <ul style="list-style-type: none">• Developed and maintain regression tests as well as benchmarks• Supported and improve PC driven cockpit simulators• Performed project management for intern driven development; including creating well defined sub tasks, assigning prioritization, time estimations, balancing work loads, etc.• Created and maintained documentation on how to configure, develop, and debug the component and simulators | | |

Garmin International

continued

Olathe, KS
June 2012 - 2017

Kernel Library - Component Owner

- Supervised, change control, and road map planning of the Operating System shared across all aviation product lines and remote offices
- Balanced software performance, robustness, scalability, and maintainability
- Added support for new hardware, provided design recommendations, debugged layout and electrical issues
- Updated the boot loader to support project dependent memory channels & sizes, and a recovery kernel to support remote software loading, allowing developers to recover a bricked unit without a JTAG debugger
- Managed compatibility with multiple concurrent hardware platforms

Social Committee

Education

Michigan Technological University

Houghton, MI

M.S. in Computer Engineering

2012

- *Relevant Courses:* Embedded Sensor Networks, Distributed Embedded Control Systems, Computer Networks, Distribution System Emergency, Artificial Intelligence, GPU and Multicore Programming, Graph Theory and Optimization, Detection & Estimation Theory, Advanced Computer Architecture, MSP430 Design

B.S. Double Major in Electrical and Computer Engineering

2010

- Study Abroad: University of Malta
- Internship: Skyweb Networks (Local Internet Service Provider)

2009

2008

Master's Thesis

Electric Vehicle Charge Scheduling and Optimization

Problem: Charging the batteries of electric vehicles will increase the residential electricity demand by approximately 40% per household. If unscheduled, this aggregated demand will threaten grid stability during peak usage hours, which can sustain only a marginal increase.

Proposed Solution: Implement a primary distribution controller to collect Location Marginal Pricing (LMP) predictions, time constraints, and charger constraints in order to schedule the charging and discharging of participating vehicles in the distribution system. Under the right electricity pricing plans, this can even reduce the current aggregated peak household usage.

Projected Outcome: This scheduling would optimize power usage through increased base loads with little to no increase in the peak demand. Scheduling could also improve power quality and minimize utility operating costs.

Teaching Experience

Michigan Technological University

Houghton, MI

Graduate Teaching Assistant - Outstanding Teaching Award

2011

- 7 semesters of teaching Electrical Engineering labs

Learning Center Coach (Undergraduate)

- 2 years in Electrical Engineering and an additional 2 years in Computer Engineering

Skills

See my personal website for a full list