Ryan Sturmer

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Overview

I am an accomplished engineering generalist with specialty experience in analog/mixed-signal design, embedded systems, and software. I have worked in a variety of engineering environments and disciplines, with varying amounts of project management and leadership experience. I am looking for an opportunity to work on interesting products where my creative and collaborative skills can be put to good use.

Experience

DIRECTOR OF ENGINEERING, SHOPBOT TOOLS, INC. – 2016-PRESENT

Responsible for tasks at all levels of business, from diagnosing and developing solutions for production, to setting high level company direction and communicating mission/vision to employees. Hands-on leader and lead engineer.

- Refreshed CNC product line with ground-up redesign of electronics and software platform.
- Contributed to MRP/ERP system implementation by writing custom software integrating ERP and shop-floor processes.
- Lead engineering team to develop and improve a number of successful CNC products as well as internal processes with initiatives spanning electrical, software, mechanical, and production engineering.
- Implemented new processes for PDM/PLM to reduce product development cost and shorten release timelines.

OWNER, FERING TECHNICAL SOLUTIONS – 2013-2016

Acted as contract designer/engineer focused on novel electronic, electromechanical, and software solutions, mostly for biotech companies with projects that included:

- A robotic surgical system
- A nanoparticle-based microarray system (fluidics)
- Several interesting “IoT” products
- A Flow-cytometry instrument
- A fluorescence quantitation and fluorescence spectroscopy system for molecular diagnostics
- A portable CNC platform

Additionally, provided engineering consulting in the following areas:

- Engineering team building (hiring strategies and candidate interviews)
- Feasibility/project scoping

PRINCIPAL ENGINEER, ADVANCED LIQUID LOGIC, INC. – 2005-2013

Started as eighth employee in a company that grew to over fifty before being acquired in 2013. Electrical and software engineer with broad responsibilities that are described below:

- Developed novel high voltage (up to 300V) analog and mixed signal circuits for electrostatic manipulation of liquid droplets on a microfluidic platform.
- Invented novel techniques for performing electrical measurements on liquid droplets.
- Developed above into working core features of a diagnostic product.
- Developed and laboratory measurement products with a broad range of functionality:
- Mechanical/electromechanical: solenoid, stepper motor, DC and servo motor systems
- Optical: Photomultiplier (PMT), photodiode, and LED-based fluorimetric systems
- Thermal: Thermal control via resistive heating, peltier heating/cooling
- Embedded: Microcontroller systems with a broad range of control/measurement functionality
- Designed novel inter-operating embedded firmware/PC software architecture for executing laboratory protocols in a microfluidic platform.
- Developed scripting library for scheduling droplet operations on a microfluidic platform.
- Developed numerous software tools for internal applications such as data management, automated and interactive testing, data analysis and process simulation
- Interacted with multiple contract manufacturers to bring designs into production.
- Managed IT infrastructure for up to 30 employees, using Windows Server 2008, Microsoft Exchange, Active Directory
- Managed the hand-off of IT operations to external IT contractor as company grew. Remained as point of contact and assisted with specifying hardware, purchasing, and defining requirements for infrastructure growth. Eventually managed to transfer 100% of responsibility to IT contractor and administrative staff. (whew!)
- Set up and maintained a (windows) development server for a team of dozens of scientists and engineers, based on open-source productivity and configuration management tools, including SVN, phpBB, TRAC, Apache, PostgreSQL - as well as a number of internally-developed tools for laboratory information management, inventory, and software licensing.

ENGINEER, GLAXOSMITHKLINE - PROTEIN CRYSTALLOGRAPHY – 2005

Worked on a small research team developing and maintaining systems for high-throughput automated protein crystallography with an external collaborator.

- Developed automation solutions for microscope in automated immunoassay platform including:
- Autofocus and waypoint control: Automated traversal of platform for imaging
- Fluorescence Imaging : Epi-fluor imaging with high resolution CCD camera. Image processing to provide quantitative fluorescent measurements over multiplexed assay
- Maintained automated protein crystallography platform:
- Diagnosed and resolved control problems with environmental chamber regulation
- Made changes to software to improve work-flow
- Designed and built prototype imaging system

ENGINEERING INTERN – GLAXOSMITHKLINE : TEAM MICRO (2001-2004)

Worked on a team of engineers and scientists developing automated microfluidic solutions for performing highly sensitive enzymatic assays, as well as in a support role for other teams developing comparable research systems.

- Built custom automation hardware using off-the-shelf and custom machined motion stages, motor systems and sensors. Machined parts from various plastics and metals. (ABS, delrin, COC, COP, aluminum brass, copper)
- Developed circuits for measurement and control in a variety of common research applications, including resistive heaters, peltier TECs, UV light sources, stepper and servo motor systems, automated positive pressure pumps and micro-valves, syringe pumps and HPLC equipment
- Developed software solutions in Java for protein micro-array analysis.
- Developed software solutions using LabView for a variety of research tasks
- **Imaging:** Microscope auto-focus, particle counting, flow-cytometry, micro-array analysis, bar-coding
- **Robotic control:** Automated microscope (filter wheel, objective turret, illumination, XY stage, focus motor) fluid sampler, microplate handler, 6-axis gripper, automated micromachining and UV- curing station, various common laboratory robots, as well as several custom-built ones.

Education

North Carolina State University

- BS Electrical Engineering
- BS Computer Science
- BS Computer Engineering

Skills and Competencies

- Electronic design, particularly mixed signal, and microcontroller systems
- Schematic entry and PCB layout
- Electrical simulation w/ SPICE and similar tools
- Physical simulation with electrical/magnetic/thermal finite-element model
- Comfortable with prototype electronic assembly and rework, SMT components including SOIC, TSSOP, QFN, discretes down to 0201 sizes
- Skilled with electronic test equipment: Oscilloscope, spectrum analyzer, function generators etc.
- Intermediate machine-shop skills. Extensive experience with a variety of rapid-prototyping and CNC technologies.
- Mechanical design experience with 2D and 3D CAD/CAM
- Software development at all levels, from web-frontend and high level native application development down to assembly in embedded systems.
- Configuration management, version control, issue tracking, automated testing and documentation generation
- Programming for the web and IoT, management of cloud infrastructure

Programming, Tools and Software

- **EDA/Simulation:** Altium Designer, KiCAD, Cadsoft EAGLE, GEDA, LTSPICE (SwitcherCAD III), FEMM, TINA-TI
- **Embedded Hardware Platforms:** ARM7, ARM9, ARM Cortex-M3, Atmel AVR, AVR32, AD Blackfin, TI CC13xx, TI AM335x, NXP iMX6
- **Embedded Operating Systems:** Various “embedded editions” of popular linux distributions, Yocto, Buildroot, TI-RTOS (SYSBIOS), ChibiOS, FreeRTOS
- **CAD/CAM:** AutoCAD, LibreCAD, Solidworks
- **Programming:** C, C++, Python, Javascript/ECMAScript/NodeJS, Various shell scripting and application specific languages.
- **Configuration Management:** Git,Github,Jira,Mercurial,SVN