

Alexander Farley

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[Github/asfarley](#)

Skills

C, C#, ruby, Python, MATLAB

State estimation and multi-object tracking

Neural network design (Theano, DNN, CNN)

PCB layout and firmware design

FPGA development (Simulink, LabVIEW)

Web development (Rails, Javascript)

Professional Experience

Tangent Design Services _____ Feb 2017 - Current

Position: Contract firmware/IoT developer

Firmware development in C on ARM Cortex microcontroller. Board bring-up, submodule debugging and integration. Development and tuning of PID controls, sensor calibration mappings, BLDC, stepper motor and valve control, Bluetooth communications, logging, and remote control and other peripheral system functions.

Integrated precision sensor system with internet-of-things (IoT) data collection platform. Developed visualizations using HTML and javascript for live measurement streams/timeseries.

Analyzed firmware performance using system logs to characterize parameters like control-loop response time and stability, and sensor drift due to environmental conditions.

Was responsible as the sole developer for issue management, diagnosis and debugging of system software including firmware, edge data transmission and central aggregation/display. Cooperated with project engineers to verify, demonstrate and improve system capabilities including accuracy and cost.

Frobot _____ Aug 2016 - Feb 2017

Position: Lead Developer

Developed soft-serve/frozen yogurt vending machine system architecture including serving automation, payment processing and remote management functionality.

Design, development and debugging of linear actuator and load cell control electronics. Managed manufacturing runs of small PCB quantities in Shenzhen. Integrated system management software with electromechanical sub-modules, payment-processing gateway and HTML UI.

Developed centralized management server and associated responsive/mobile app for remote kiosk system configuration and status monitoring.

Contributed to business decisions on feature-set, prioritization and work estimates.

ProLucid Technologies _____ Jan 2015 - Jul 2016

Position: System Integrator

Developed FPGA components in LabVIEW for ultrasonic/electromagnetic non-destructive examination (NDE) equipment. Implemented sensory input and signal conditioning routines. Provided on-site debugging support for system testing. Developed closed-loop motor controls, sensor calibration procedures and other subsystems.

Developed closed-loop control for microfluidic sample flow. Developed Linux device driver for linear actuator control. Diagnosed and fixed issues in multiple-object tracking system. Improved system stability by implementing corrections for nonlinear regions in system model. Developed tooling to aid in system diagnostics (live GigE video sniffing application).

Aversan _____ Jan 2012 - Jan 2015

Position: Embedded Systems/Test Engineer

DO-178B systems testing. Requirements analysis and automated test development. Root cause analysis and fix verification. Integration lab maintenance. Some experience with Serena Dimensions configuration management.

Developed automated tests for ADCs, linear actuator and temperature feedback controls, fault response and reconfiguration, communications protocols, memory, system configuration, signal conditioning and related components. Maintained test execution tooling scripts in Python.

Contract work _____ Aug 2010 - Jan 2015

Industrial machine vision & control system development for Daqota Systems. Experience with Visual Studio 2010, Teledyne Dalsa computer vision libraries, soft real-time blob detection, image segmentation and classification.

Linear actuator PID control firmware programming (C, AVR Studio 5) & PCB layout (Eagle V5) for Precision Microdrives. Designed test jig circuit schematic and firmware. Laid out PCB, assembled prototype, initial PCB bring-up.

Developed AES-encrypted bootloader port (C, assembly, AVR Studio 5) for Dragon Link Labs.

Developed image-based cell counting/hemocytometry script in MATLAB.

SKF Magnetic Bearings _____ May 2008 - Sept 2009

Position: Electrical Engineering Intern

PCB layout for analog oscillator source board. C# Windows GUI programming, analog/digital hardware troubleshooting. Neutron chopper system diagram illustrations. BOM maintenance. Automated PCB testing.

Education

University of Calgary _____ Sept 2005 - May 2010

BSc Electrical Engineering