

Kyle R. Hess

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Professional Experience

09/2017-Present | Electrical Engineer | Gladiator Technologies & LKD Aerospace

Hardware, Firmware & Software

- Develop and debug firmware for 32-bit ARM processors in IMUs and Inertial Navigation Systems (INS)
 - Support new product development innovations as well as existing and deployed firmware
 - Prototype new hardware, sensors and embedded algorithms to advance our product performance
- Create and manage electrical schematics and circuit board layouts with OrCAD
- Rewrote our entire data reduction system using Python to replace old Excel macros
- Helped write, test and integrate a new Extended Kalman Filter into a legacy INS/GPS design

Product Development & Quality

- Oversee new product development at every stage from concept, qualification and release
 - Track all product development progress through phase-gates per AS9100D quality management system
 - Write work instructions ranging from low-level device assembly to end-item testing procedures
- Support our automated production test software (custom Windows applications)
 - Maintain legacy product testing capabilities, implement bug fixes and merge innovations

Data Analysis & Simulation

- Perform data analysis with MATLAB & Python for evaluating performance characteristics and statistics
- Helped create and use tools for simulating IMU/INS algorithm changes in a post-processing environment

Sales Support & Documentation

- Support customers with application engineering challenges both remotely and directly
- Handle all software maintenance for our existing Windows SDK package

06/2016 - 09/2016 | Intern | BCE Engineers Inc.

- Revised building electrical plans to NEC specifications using AutoCAD
- Designed indoor/outdoor lighting layouts in accordance with IES standards

Skills & Abilities

Electronics:

Experience with SPI, UART, RS-485, I2C, & USB interfaces, schematic design, schematic capture, PCB layout, CAD/EDA library management and soldering (SMT & THT)

Lab Equipment:

Oscilloscopes, DMMs, function generators, power supplies and spectrum analyzers

Software:

KiCAD, Visual Studio, Git, OrCAD, Autodesk Eagle, LTSpice, NI Multisim, AutoCAD

Programming:

C (Embedded), C++, Python, MATLAB, C#, Arduino and System Verilog

Personal Projects

DC Motor Drive - Field-Oriented Control (01/2021-Present)

Efficient servo driver for a 3-phase brushless DC motor. Utilizes phase current sensing and incremental encoder feedback to optimally control the 3-phase current for maximum rotor torque. Cascaded PI controllers allow for precise speed and position control with an encoder resolution of 0.26 mrad.

Racing drone flight controller (12/2019)

A custom controller built around an ARM Cortex M-4. Utilizes an IMU, barometer, and GPS receiver. A PID loop running at 1 kHz controls four motors for stabilization and flight control.

Education

University of Washington, Seattle, WA | Bachelor of Science in Electrical Engineering (2017)

Concentrations: Power Electronics, Motor Drives, Large-Scale Power Systems

Olympic College, Bremerton, WA | Associate of Science (2015)