# Kyle R. Hess

Bellevue, WA 98004 | kyleRhess.github.io | hessk2@uw.edu

## 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 evaulating 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)**