Christian Malherbe

4th Year Engineering Physics
Christian.david.malherbe@gmail.com
www.christianmalherbe.com

Education

The University of British Columbia   **September 2018 – May 2023 (expected)**
Engineering Physics, BASC   3rd Year Average: 85.5%

Skills

Electrical   Altium Schematic and PCB design, Digital communication protocols, LT Spice, Microcontrollers, NI Multisim, VHDL for FPGAs, Oscilloscope, Function generator, Spectrum analyzer, SMT soldering and reworking

Computer   Python, C, C++, Java, Git, GitHub, MATLAB, Linux, ROS

Technical Work Experience

Electrical Engineering COOP
Auris Health (subsidiary of Johnson and Johnson), Santa Clara   May 2021 – Present

- Designed, tested and debugged electronics used in and for the development of a six arm surgical robot.
- Used Altium Designer to design schematics and layouts for PCBs used in product and test fixtures, such as a 4 layer in-rush limiter board and a 4 layer LED display board with RS-422 communication
- Conducted formal internal engineering reports to bring up and assess functionality of designs involving eFuses, voltage regulators, MCUs, I2C, CAN and EtherCAT communication, motor drivers, and more using industry standard lab equipment.
- Investigated issues surrounding conducted and emitted radiation using RF current clamp and 10 meter scans in an RF chamber and implemented design changes accordingly.
- In development of a test jig to study capacity, state of health, state of charge, and understand life time degradation of batteries used in CAN controlled UPS system for robot.

Instrumentation Engineer COOP
Precision Nano-Systems, Vancouver   January – May 2020

- Designed a PC operated jig for automating the process of testing liquid pump load capacity. Sourcing and assembly of mechanical and electrical components such as sensors and fluid lines, as well as generating CAD models and 3D printing components. Wrote a robust Python script with an in-depth UI for communicating with pumps over RS-485 serial communication, and for collecting, analyzing and displaying pressure data.
- Sourced, calibrated, and embedded sensors into a heated fluid line to understand and model temperature of flow. Analyzed data in Excel and Python to generate a solution for maintaining fluid temperature.

Technical Project Experience

GaN High Power Induction Heater – UBC, Vancouver   September-Present

- In the process of designing a 1MHz 650V optical-fiber-driven high-side-isolated H-bridge for an induction heater using GaN devices for a university capstone project.
- Schematics and PCB layouts created using Altium Designer. Circuit to be simulated using PSIM.

Engineering Physics Robotics Competition – UBC, Vancouver   July – August 2020

- Designed and built a fully autonomous robot which used sonar, infrared detection and light reflectance sensing to locate and retrieve cans for recycling
- Electrical system included H-bridge motor driver, IR detection and filtering circuit, power conditioning and voltage regulation for sensors, motors and other loads. Mechanical design involved a four bar linkage mechanism for raising and tilting a platform. Software in C++ on an STM32 "Blue Pill" board used PID control and interpreted data from multiple sensors for guiding robot.
- Robot placed 4th overall out of 16 teams competing.