Christian Malherbe

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Education

The University of British Columbia **September 2018 – May 2024**
Engineering Physics, BASC
ETH Zürich (Semester Abroad) **February 2023 – August 2023**
Information Technology and Electrical Engineering

Skills

Electrical Altium Schematic and PCB design, Digital Communication, LT Spice, PSim, 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 Intern
Tesla Energy, Palo Alto **May 2022 – Dec 2022**

- Designed, manufactured and tested multiple PCBAs for the Tesla Supercharging and Industrial Energy Storage team.
- Personally redesigned two 4 layer HV controller PCBs to improve reliability on safety critical circuits, such as HV bus discharge and fault communication to other parts of systems. Let both boards through full cycle of simulation in LTSpice, bench testing and calculations, Altium design of schematic and PCB, manufacturing, bring-up and release.
- Redesigned multiple PCBs based on unavailability of components due to parts shortage, simulated new components and saw boards through to release and manufacture.
- Designed a test PCB for characterizing a novel concept of signaling through biasing of CAN signal lines.
- Tested and measured signal integrity, power converter efficiency, board temperature and numerous other characteristics for bring up of many other boards.

Electrical Engineering Intern
Auris Health (subsidiary of Johnson and Johnson), Santa Clara **May 2021 – Dec 2021**

- 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.
- Developed a test jig to study capacity, state of health, state of charge, and understand life time degradation of batteries used in CAN controlled BMS system for robot UPS.

Technical Project Experience

GaN High Power Induction Heater – UBC, Vancouver **September 2021- April 2022**

- Designed a double pulse tester for characterizing GaN FETs for use in a 1MHz 650V optical-fiber-driven high-side-isolated H-bridge as part of a university capstone project.
- Schematics and PCB layouts created using Altium Designer, simulations in 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 built from scratch included H-bridge motor driver, IR detection and filtering circuit, power conditioning and voltage regulation for sensors, motors and more.
- Robot placed 4th overall out of 16 teams competing.