Lance Bantoto

lancebantoto@icloud.com
lancebantoto.com/portfolio

Experience

Apple (Beats by Dre) – Electrical Engineering Intern, Platform Architecture and Sensing — Jan 2022 – Present

Tesla Motors – Electrical Engineering Intern — May 2021 – Dec 2021
- Component selection, design calculations, schematic capture, and PCB layout for low voltage PCBs
  - Oil pump controller (all vehicles): BLDC motor controller simulation, schematic capture, and PCB layout
  - Cybertruck development board: brushed DC motor drivers, audio amplifiers, BLDC motor drivers, new silicon…

Tesla Motors – Systems Integration Engineering Intern — Jan 2021 – Apr 2021
- Validation and verification of low voltage lithium-ion battery for Model S Plaid vehicles

Auris Surgical Robotics – Electrical Engineering Intern — Mar 2020 – Aug 2020
- Designed rigid and rigid-flex PCBs for next-generation surgical robotic platform

Gecko Robotics – Electrical Engineering Intern — Jan 2019 – Aug 2019
- Designed water pump control PCB for wall-climbing robot that interfaced with flow sensors, pressure sensors, LCD, solid-state relays, solenoids, and 1kW AC pump motor
- Created firmware validation and accelerated life test platform with 4 PCBs that controlled dynamometers, emulated I/O, and sensed temperature, current, and voltage

RightHand Robotics – Electrical Engineering Intern — Sept 2017 – Dec 2017
- Designed PCB for ReFlex 1 5-DOF robotic hand used for grasping research: youtube.com/watch?v=eAf3FzncU8M

Bendix Commercial Vehicle Systems (Knorr-Bremse) – Mechatronics Engineering Intern — May 2016 – Apr 2017
Raven Telemetry – Mechanical Engineering Intern — Sept 2015 – Dec 2015
Olon Industries – Manufacturing Engineering Intern — Jan 2015 – Apr 2015
Colm Engineering – Electrical Engineering Intern — Jan 2014 – Sept 2014

Student Design Teams

University of Waterloo Robotics Team – Electrical Technical Lead — Jan 2020 – Present
- Leading a team of 10 students to design electrical system for Mars Rover robot consisting of 10+ custom PCBs for motor control, battery management, embedded compute, power distribution, and robot localization
- Specifying sensors and actuators across system; optimizing for mass, heat, and performance

University of Waterloo Aerial Robotics Group – Electrical Technical Lead — May 2021 – Present
- Leading a team of 5 students to develop autonomous aircraft avionics and ground station equipment

Open Source Projects

VolksEEG – EEG-based Bispectral Index Monitor for Anesthesia Research — July 2021 – Present
Ribbit – Crowdsourced Network of Low-cost, CO2 Gas Detection Sensors — July 2021 – Present

Skills

- **Hardware:** Analog and Digital Design, Power Electronics, Schematic Capture, PCB Design, Board Bringup and Validation
- **Lab Experience:** DMM, Oscilloscope, Logic Analyzer, Electronic Load, VNA, Function Generator, Temperature Chamber
- **Tools:** Altium, Cadence Allegro, OrCAD, KiCad, EAGLE, LTspice, HyperLynx, TINA-TI, SolidWorks
- **Communication Protocols:** I2C, SPI, UART, RS-422/485, USB, CAN, LIN, Ethernet/EtherCAT, I2S, A2B
- **Software:** C, C++, Python, Rust, MATLAB, Robot Operating System (ROS)

Education

University of Waterloo – BASc in Mechatronics Engineering
- Academic exchange at TU Delft in the Netherlands: Aerospace Engineering