Lance Bantoto

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Skills

Hardware: Analog/Digital Circuit Design, Schematic Capture, PCB Design, Board Bring Up and Validation
Tools: Altium, DxDesigner, PADS Layout, LTspice, SolidWorks
Lab Equipment: Oscilloscope, Function Generator, Logic Analyzer, DMM, Vector Network Analyzer, Electronic Load, LCR Meter
Programming: C, C++, Python, MATLAB, ROS, experience with SPI, I2C, UART, CAN, Ethernet protocols

Experience

Electrical Engineering Intern – Auris Health – Redwood City, CA — Mar 2020 – Present
- Designing electronics for next-generation surgical robots

Electrical Engineering Intern – Gecko Robotics – Pittsburgh, PA — Jan 2019 – Aug 2019
- Designed water pump control system for wall-climbing industrial inspection robot
  - Designed PCB that interfaced with LCD display, flow sensors, pressure sensors, SSRs, solenoids, and AC pump motor
  - Wrote embedded C code for on-board STM32 to monitor sensors, control actuators, and communicate to LCD display
  - Conducted lab and in-field testing in rugged environments, found root causes of issues, and developed workarounds
- Architected modular test platform for firmware validation and accelerated life testing of robot
  - Designed 4 PCBs for temperature sensing, current sensing, voltage sensing, and I/O emulation
  - Integrated dynamometers and encoders for BLDC motor testing
- Collaborated with mechanical engineers to design machine for assembling/disassembling rare-earth magnetic wheels
  - Designed and programmed PCB that interfaced with stepper motor driver, limit switches, and buttons
- Redesigned Ethernet connector board to improve noise immunity and signal integrity (via fences, differential pair, impedance control, and length matching)

Electrical Engineering Intern – RightHand Robotics – Somerville, MA — Sept 2017 – Dec 2017
- Designed, tested, and released production PCB for ReFlex 1 robotic gripper
  - Implemented 12V-7.4V asynchronous buck converter circuit to power 3 Dynamixel servo motors
  - Routed 4 layer PCB, including impedance controlled differential USB 2.0 lines
- Wrote firmware (C), drivers (C++), and ROS application software (Python) for ReFlex TakkTile robotic gripper

Hardware Design Engineering Intern – Bendix Commercial Vehicle Systems – Elyria, OH — Jan 2017 – Apr 2017
- Designed and validated custom 4 layer NFC PCB trace antenna using VNA
- Prototyped single and double-layer boards in-house using LPKF PCB mill

Competitive Teams

Electrical Technical Advisor – Waterloo Mars Rover Robotics Team — July 2019 – Present
- Architected NVIDIA Jetson-based distributed system comprised of 5 custom PCBs communicating over 2 CAN buses

Electrical Team Member – Waterloo Formula Electric – FSAE — Jan 2015 – Aug 2018
- Schematic capture, layout, and PDN analysis of 4 layer power distribution PCB capable of delivering 40A to LV systems
- Built a hardware-in-the-loop test bench for vehicle electronics
- Designed 555 timer-based tractive system active light PCB
- Placed 1st at 2015 Formula Hybrid SAE international competition

FIRST Robotics Competition Mentor – Team 3683, Team 120 — Jan 2016 – Apr 2017
- Mentored various high school students on robot prototyping, design, and manufacturing under strict timelines
- Advanced to world championships in 2016 and 2017

Education

University of Waterloo – Bachelor's of Applied Science in Mechatronics Engineering — Expected 2021