Jerome Villapando

3B Mechatronics Engineering | Class of 2021

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Key Skills

Hardware:	Analog/Digital Circuit Design, Schematic Capture/PCB Layout, Board Bring up/Validation
Firmware:	MCU Programming, RTOS Environment, Protocols (UART, SPI, I2C), Debugging/Verification
Equipment:	Logic Analyzer, Oscilloscope, Function Generators, Spectrum Analyzer, DMM, Soldering
Tools:	OrCAD, KiCAD, EAGLE, PADS, LTSpice, MATLAB, Solidworks, Git, Jira, VSCode
Software:	C, C++, Python, VBA, Javascript, MATLAB

Experience

Swift Labs Inc. Kitchener, Ontario
Hardware Design Co-op Sep 2019 | Dec 2019

- Debugged an issue with the Battery Charger IC by writing firmware to interact with its registers
- Performed most Verification efforts regarding Battery charge/discharge and GPS/LTE Validation
- Python automation to control power supplies, DMMs, Load testers, and temperature chambers
- Expanded the symbol and footprint database in OrCAD to improve PCB design process for the team

NERv Technologies Inc. Waterloo, Ontario
Prototyping Engineering Co-op May 2019 | Jan 2020

- Designed and assembled a battery powered PCB in KiCAD to interface NERv sensors to a tablet via BLE
- Implemented timers, SPI and BLE drivers in C, and debugging using a logic analyzer and JTAG interface
- Iterated through 3 prototypes from design, assembly (Reflow Soldering), to validation (Firmware/Electrical)
- Wrote a driver in C to interface the sensor data and BLE protocol to the onboard SD card

UW Robot Racing Team Waterloo, Ontario
Hardware Team Mentor Sep 2018 | Present

- Wrote firmware for a Cortex-M4 in C using an RTOS and used a logic analyzer/JTAG for debugging
- Designed a PSU PCB in EAGLE to monitor, regulate, and distribute the robot's power supplies

Bendix Commercial Vehicle Systems Elyria, Ohio
Mechatronics Engineering Co-op Sep 2018 | Dec 2018

- Developed an op-amp filter circuit from simulations (LTSpice/Multisim) to a physical PCB (PADS Pro)
- Created a VBA script with the Microsoft Visio/Excel API to automate a data workflow for KAIZEN

Nicoya Lifesciences Kitchener, Ontario
Instrument Engineering Co-op Jan 2018 | Apr 2018

- Designed EAGLE schematics/layout for a circuit that reduced the noise of the final product by 25%
- Created Python scripts to automate sensor data parsing from a DMM to a PC using UART
- SMT component soldering using microscope hand-soldering or solder paste reflow soldering

Side Projects

Two Axis Machine Embedded Software Development *Keil uVision, C*

- Wrote firmware for a STM32 ARM Cortex-M4 MCU to utilize limit switches and motor drivers.

ASTEROIDS RTOS Game *C, Keil RTX RTOS, LPC1768 Microcontroller*

- Remastered the classic game using C, RTOS, IO input mapping, and graphics APIs on Keil uVision

Education

National University of Singapore (Exchange) Singapore
Currently off campus, therefore CECA will limit me to Phone/Video Interviews Jan 2020 - Present

University of Waterloo Waterloo, ON
Candidate for BAsc. in Mechatronics Engineering, AI Option (GPA: 3.60/4.0) Sep 2016 - May 2021

Extracurriculars/Interest Areas

Robotics, Volleyball, Basketball, Biking, Ping pong, Reading