Jerome Villapando

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Education

University of Waterloo — Waterloo, ON
BAsc. Mechatronics Engineering *GPA: 3.62/4.0* (Top 12 in Class) — Sep 2016 - May 2021
Relevant Coursework:
Real Time Operating Systems (32 bit microcontroller: LPC1768), Sensors and Instrumentation (Circuit Design), Microprocessors and Digital Logic (Assembly code and PLCs), Data Structures and Algorithms, Structure and Properties of Materials

Experience

Bendix Commercial Vehicle Systems — Elyria, Ohio
Mechatronics Product Development Intern — Sep 2018 | Dec 2018

- Developed a filter circuit using LTSpice/Multisim simulations to enhance the PLC4TRUCKS transmission rate, improving tractor-trailer communication
- Created a VBA script to improve a commonly used workflow to easily import large amounts of data into flowchart shapes, saving hundreds of potential work hours
- Reinforced schematic capture/board layout skills using PADS/KiCAD/Multisim by creating transmission circuits that send data bits over a truck's powerline
- Designed a user-friendly Arduino solution for Knorr-Bremse Hungary to communicate with their HCU Intellipark Tractor Parking switch
- Performed product durability testing, electrical testing, and Gage R & R testing.

Nicoya Lifesciences — Kitchener, ON
Instrument Engineering Intern — Jan 2018 | Apr 2018

- Made progress on their newest SPR to be used for drug research in a 3 person engineering team
- Designed a PCB schematic/layout for a module to reduce the noise of the OpenSPR by 25%
- Implemented a FFT algorithm to characterize the signal of a piezoelectric sensor through I2C/SPI
- Created tools for the company in Python to improve data parsing from a DMM using UART

University of Waterloo — Waterloo, ON
Circuit Board Manufacturing Intern — Apr 2017 | Aug 2017

- Manufactured circuit boards for consumers using LPKF rapid prototyping machines
- Optimized customer's PCB designs using Eagle CAD before assembly for efficient printing

UW Mars Rover Design Team — Waterloo, ON
Hardware Developer — Sep 2017 | Dec 2017

- Built a Mars Rover that placed 15th worldwide at the International Rover Challenge 2017
- Tested circuits using Diptrace/Eagle CAD schematics to be implemented in the robotic arm

Projects

ASTEROIDS RTOS Game *C, Keil RTX RTOS, LPC1768 Microcontroller*
Remastered the game in an embedded environment using task syncs to handle the input and physics.

Musical Robot Competition *Arduino, Solidworks, C++*
Utilized a 3-wheel drive robot design to process sensor data on a physical track into music
Used greyscale sensors, photo-resistors, and build a R2R DAC to control audio frequency

Autonomous Sorter Robot *C++, RobotC, AutoCAD*
Built a robot to sort items using encoders, proximity sensors, way-finding and collision avoidance

Encoder Disk Caliper *C++, Arduino, AutoCAD, Laser Cutter*
Designed a rotary arm based caliper using photo-resistors to send measurement signals to an Arduino

Skills

Mechanical:	Solidworks, Fusion 360, AutoCAD, Laser Cutting (Epilog Mini), 3D Printing
Software:	C, C++, Python, VBA, Javascript, Assembly, MATLAB, Git
Hardware:	Arduino, Eagle CAD, PADS, KiCAD, NI Multisim, LTspice

Interest Areas

Robotics, Intramurals Basketball, Language Learning, Biking, PC Gaming