Oswin Rodrigues

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Tools

- C · C++ · Python · Ladder Logic · JavaScript · MATLAB · Assembly · VHDL
- Circuit Design · Arduino · Soldering Iron · Upverter · EAGLE · Oscilloscope · Multimeter

Education

Mechatronics Engineering, Honors, Candidate for BASc — 2013 – Present
University of Waterloo, Waterloo, ON — Class of 2018

Experience

EDA/CAD Engineer Intern — May – Aug 2015
Upverter Inc. — Toronto, ON
Enhancing PCB CAD tool features in software (JavaScript, Python) and hardware avenues.

- Created and verified symbols and footprints for 150+ electronic components.
- Implemented component-tagging feature, using pin names to deduce functionality.
- Adjusted prioritization of design rules in layout constraint manager.
- Fixed incorrect drawing and positioning of constraint violation layout bodies.
- Refactored click event-listening logic in schematic net-drawing tool.
- Corrected book-keeping errors in pin manager for tracking connection mappings.
- Facilitated BGA footprint generator's omitting specific letters during row enumeration.

Neuro-Robotics Lab Research Assistant — Feb – Apr 2014
University of Waterloo — Waterloo, ON
Using ROS-run Turtlebot for social navigation research purposes.

- Wrote C++ and Python nodes to implement basic navigation stack on Turtlebot.
- Published sensor, odometry and transform messages to mobile base.
- Tweaked existing open-source code for advanced algorithms: person-detection, SLAM navigation.

Mechanical Design Co-op — Sep – Dec 2014
Prodomax Automation Inc. — Barrie, ON
Designing jigs and fixtures in Solidworks for automotive part-assembly stations.

- Modeled custom tooling in two stations for assembling a vehicle's seat track mechanism.
- One station inserted an anti-collapse spacer and the other stamp-pressed a bushing.
- Detailed and ballooned numerous part and assembly drawings extensively.

Projects

UW Robotics Team & WAVE[1] Lab — Jan – Apr 2015, Sep 2015 – Present
[1] *Waterloo Autonomous Vehicles*

- Modified EAGLE schematics and layouts for Arduino motor shield.
- Soldered different SMT and THT components onto multiple bare shields.
- Currently designing and implementing a wireless (RF) e-stop mechanism for racing robot.
- Currently revamping and parts-sourcing a Mars Rover's electrical box.

Tilt-Sensitive LED Matrix Panel Personal Project, Ongoing

'Moving' a single lit LED on the panel by physically tilting it. This uses:

- Arduino microcontroller for handling the 'smarts and magic'.
- ADXL335 accelerometer for controlling the tilt functionality.
- 74HC595N shift register (SIPO) for I/O expansion on the Arduino board.

Hackathons Various

- Pebble-facilitated dosage notification service - *SmartMeds*; used C. Hack the North, 2015
- IMU-based instructor - *Yoga Yoda*; developed business case. PCH Hardware Hackathon, 2015
- Myo-controlled air drum kit - *DruMyo*; used C++. hackWaterloo, 2014
- Myo-enabled Solidworks controller; used Lua. Hack the North, 2014

Courses

- Circuits 93%
- Sensors & Instrumentation —
- Data Structures & Algorithms 94%
- Microprocessors & Digital Logic 78%
- Computer Structures & Real-Time Systems —

Non-Technical

- East Coast Swing
- Guitar & Drums
- Rap & Poetry
- Basketball
- Outdoors (Camping, Discovery Walks, etc.)