

Oswin Rodrigues

🔧 2B Mechatronics Engineering

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🔧 TOOLS

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

📈 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 for functionality.
- Adjusted prioritization of design rules in layout constraint manager.
- Refactored event-listening logic for drawing nets in schematic editor.
- Corrected pin manager's oversight in tracking connection mappings.
- Enabled efficient BGA row enumeration during footprint generation.

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.

🏠 PROJECTS

UW Robotics Team & Waterloo Autonomous Vehicles Lab

Jan 2015 – Present

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

Tilt-Sensitive LED Matrix Panel

Personal Project, Ongoing

'Moving' a single lit LED on 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-run 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

🎓 EDUCATION

Mechatronics Engineering

Candidate for BSc

2013 – Present

Class of 2018

University of Waterloo, Waterloo, ON

📖 COURSES

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