

# Oswin Rodrigues

Hardware · Embedded Software

✉ orodrigues@uwaterloo.ca · ☎ +1 226 606 6220 · in oswinrodrigues

## 🏆 GOALS

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- Micro: to excel in the design of hardware and embedded software technologies.
- Macro: to belong to a team passionate about problems that matter and solutions that revolutionize.

## 🔧 TOOLS

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- Schematics & Layouts · Soldering & Rework · Multimeter & Oscilloscope · Arduino & Raspberry Pi ⚡
- C · C++ · Python · Linux · ROS · FPGA Programming · MATLAB · PLC Ladder Logic · JavaScript </>

## 📈 INTERNSHIPS

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### Hardware Engineer

Summer 2017

#### Nuvation Energy

Waterloo, ON

*Fulfilling Integrated Design-to-Manufacturing (IDM) needs for released products.*

- Executed Altium layout updates, team design reviews and fabbed board inspections.
- Investigated isoSPI bug by sniffing traffic with oscilloscope and consulting IC datasheet.
- Reworked boards extensively, being trained to even solder small 0402 SMT packages.
- Designed and built hipot test fixtures that comply with national safety regulations.
- Served in various other IDM-related avenues as needed, such as: building assemblies and cables, creating wiring diagrams in Visio, running in-house production tests, documenting developments in detail, facilitating environmental certification process.

### Mechatronics Engineer

Fall 2016

#### KitchenMate Inc.

Toronto, ON

*Building electrical and software sub-systems in automated home-cooker.*

- Designed custom linear encoder sensor with photo-interrupter pair and Python driver.
- Sensed heat modes on cooker with hack involving opto-isolator and ADC combination.
- Received abundant exposure and insight on the business side of startup operations.

### AI & Robotics Engineer

Winter 2016

#### Kindred Systems Inc.

Toronto, ON

*Robot-wrangling with Python over distributed communication architecture system.*

- Soldered robots' power boards and executed safety bringup.
- Sourced and integrated components into system with custom-coded drivers.
- Coded behaviour patterns of robots using Finite State Machines (FSMs) in Python.

### EDA & CAD Engineer

Summer 2015

#### Upverter Inc.

Toronto, ON

*Creating 150+ components' symbols and footprints; enhancing CAD features using JavaScript.*

### Junior Mechanical Designer

Fall 2014

#### Prodomax Automation Inc.

Barrie, ON

*Designing in Solidworks two stations in assembly line for vehicle's seat track mechanism.*

### Neuro-Robotics Lab Research Assistant

Winter 2014

#### University of Waterloo

Waterloo, ON

*Implementing C++ and Python nodes on ROS-run Turtlebot for navigation research.*

## PROJECTS

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### Guitar Instructor: Capstone Design Project

Fall 2017 - Winter 2018

- Built, as a team, an automated device to interactively teach chords on a guitar.
- Led the team with proven system integration and task co-ordination skills.
- Developed, personally, main controller circuit and algorithm for overall integration.

### UW Robotics Team & Waterloo Autonomous Vehicles Lab

Various

- Designed and reviewed schematics, layouts and components in EAGLE and DipTrace for motor shields.
- Spec-ed and sourced sensors for soil-analysis, given engineering and science constraints.
- Soldered SMT and THT parts onto bare PCBs and probed subsequently for bringup.

### Tilt-Sensitive LED Matrix Panel

Winter 2016

- Wrote LED matrix panel driver, with two 74HC595N shift registers for I/O expansion.
- Wrote IMU driver for ADXL335 and MPU6050, with filter to integrate gyro and accelerometer.

## COURSES

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### Hardware

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|---------------------------------|------|
| • Integrated Analog Electronics | 100% |
| • Sensors & Instrumentation     | 80%  |
| • Circuits                      | 93%  |

### Embedded Software

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|---|-----|
| • Algorithm Design & Analysis             | 90% |
| • Microprocessor Systems & Interfacing    | 95% |
| • Computer Structures & Real-Time Systems | 91% |
| • Data Structures & Algorithms            | 94% |

## EDUCATION

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### Mechatronics Engineering, Honors, BAsC.

Class of 2018

### University of Waterloo

Waterloo, ON

*Graduated with distinction, having a cumulative GPA of 88.23%*