Oswin Rodrigues

Hardware · Embedded Software
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Goals

- 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

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

Internships

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

Guitar Instructor: Capstone Design Project Summer 2017 - Winter 2018

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

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

Hardware

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

Embedded Software

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

Education

Mechatronics Engineering, Honors, BASc. Class of 2018

University of Waterloo Waterloo, ON

Graduated with distinction, having a cumulative GPA of 88.23%