Morgan Yeung
Mechatronics Engineering
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in MorganYeung
○ MorganYeung

Aspiring Hardware Engineer
interested in automation
and robotics

Skills

HARDWARE

Microcontrollers

PLCs

Raspberry Pi

Data Acquisition
Devices (NI and
Phidgets)

Sensors (Vision,
Temperature, Light,
Current, etc.)

Actuators (Pneumatic
and Electric)

Gantry Systems

SOFTWARE

Python

C++

C

Labview

Matlab

HTML/CSS

JS

MECHANICAL

Solidworks

AutoCAD

3D Printers

Laser Cutters

Water Jets

Mills

Saws

ELECTRICAL

Schematic and PCB
layout (Altium and
Diptrace)

Precision Soldering

Oscilloscope

EDUCATION

Candidate for BASc in
Mechatronics
Engineering 2021

Employment

Formlabs — Somerville, MA
Hardware Systems Manufacturing Engineering Intern — Jan. 2018 to Aug. 2018

Development of testers and jigs for Form2, Form Wash, Form Cure and R&D purposes:

- **Heat Sealing Jigs**: PID controlled hot-bar and impulse heat system to seal candidate films onto tanks for 3-D printing R&D.
- **Galvanometer Tester**: Using printer hardware, galvanometers were tested and calibrated manually after assembly at the factory. Automatic testing and calibration was added, increasing efficiency by 4x.
- **Laser Attenuation Tester**: Raspberry pi with a Kivy GUI allows an operator to test laser modules for optical power and optical surfaces for attenuation using a photodiode sensor.
- **Heated Lifetime Tester**: Raspberry pi and Arduino system logged current data from a difference amplifier. Used in the lifetime validation of new components for cost reduction and investigation of functionality improvements to Form Cure.
- **Glue Curing Station**: Arduino system to control the glue curing process of lenses in R&D laser module and custom vacuum hand-held device for lens insertion. Contract manufacturer to adapt this design for production lines.
- **Consumable Programmers**: Resin Tank and Cartridge Programmers built with Form2 parts altered for optimized insertion and programmed using 1 wire via Beaglebone.

Form Wash and Form Cure Programming:

- **Python scripts:** Generate and validate new serial names with new rules implemented.
- **Custom firmware** for lifetime testing and validation of new components for both products to reduce overall cost.

Scientific investigations:

- Compatibility of a new poly-carbonate blend in the tank material: Using Form2 hardware, the new tank material was tested for level sense of resins and lifetime durability testing. Outcome of the tests were successful and the new tank material was validated.
- Failure analysis of components at high temperature: Investigation of Form Cure failures, inducing stress-tests on system and recording temperature response. New components were selected that could withstand the maximum recorded temperature.

Flex — Markham, Ontario
Test Systems Engineering Intern — Sept. 2016 to Dec. 2016, May 2017 to Aug. 2017

Development of testers for automotive modules:

- **Overhead Console Bench Tester**: Arduino system with a custom pcb for LIN communication, and a physical user interface. This increased profits of the project by $1500 per tester.
- **Overhead Console Automated Tester**: Turntable, LIN communication and Vision system for final inspection of module.
- **Lighting Module Bench Tester**: Arduino system with difference amplifier circuit for current measurements and handheld iridescence measurements.
- **Lighting Module Automated Tester**: Gantry System with current and iridescence measurements of lighting modules.

Projects

Bedside Media System: https://github.com/MorganYeung/RpiDorm — Current

- Raspberry Pi and Arduino system with a Kivy GUI to display alarm clock, music and led control functionality.

Funicular Spectacular: https://github.com/MorganYeung/FunicularSpectacular — Aug. 2018

- 600 cubic mm FDM 3D printer made of aluminum extrusion, wood, acrylic and 3D printed parts. Features: Raspberry Pi running Octoprint connected to Azteeg X5 running Smoothieware to control stepper motors and extruder.

Speech101: https://devpost.com/software/speech101 — Jan. 2017

- Android application that records your speech and uses a speech to text api to analyse for filler words. The user receives a count of filler word use as well as their other top 3 used words, words per minute and volume.

Green Tips: https://greentip.github.io/GreenTips.github.io — Nov. 2016

- Amazon Echo Alexa app to deliver a daily environmentally friendly tip bundled with an LCD display polling from a SQL database of green tips to help the environment.