Morgan Yeung

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Aspiring Mechatronics Engineer interested in automation and robotics

Skills

Hardware

Microcontrollers
PLCs
Raspberry Pi
Data Acquisition Devices (NI and Phidgets)
Sensors (Vision, Temperature, Light, Current and Voltage)
Actuators (Pneumatic and Electric)
Gantry Systems

Software

Python
C++
C
Labview
Matlab
HTML/CSS
JavaScript
Git

Mechanical

SolidWorks (with PDM)
AutoCAD
3D Printers
Laser Cutters
Water Jets

Electrical

Schematic and PCB layout (Altium and Diptrace)
Precision Soldering
Oscilloscope
Signal Conditioning Circuits with op amps

Education

Candidate for BASc in Mechatronics Engineering 2021

Employment

Formlabs Somerville, Massachusetts
Hardware Manufacturing Engineering Intern Jan. 2018 to Aug. 2018

Design and development of testers and jigs for Form2, Form Cure and R&D purposes:

- **Heat Sealing Jig**: System and mechanical design of a PID controlled hot-bar heat sealer to seal candidate films onto tanks for 3-D printing R&D.
- **Glue Curing Station:** Hardware and software design of Arduino system to control glue curing of lenses in R&D laser module and vacuum hand-held device for lens insertion. Demoed to contract manufacturer and adapted for production line.
- **Laser Attenuation Tester:** System and software design of tester with Raspberry Pi. Through a Kivy GUI, an operator can test lasers and optical surfaces using a photodiode sensor.
- **Galvanometer Tester**: Mechanical design of a manual galvanometer tester. Automated testing and calibration was added, increasing efficiency by 400%.
- **Heated Lifetime Tester:** System and electrical design of tester with differential amplifier to measure voltage. Used in validation of new components for cost reduction to Form Cure.
- **Load Cell Tester**: System design and programming of PLC controls for machine with pneumatic actuator to stress load cells to measure creep, fatigue and accuracy.

Form Wash and Form Cure Programming:

- **Python scripts:** Generated and validated new serial names with additional security protocols.
- **C Firmware:** Modified firmware for Form Cure in validation of new components.

Scientific investigations:

- **Polycarbonate Investigation:** Successfully validated new polycarbonate tank material for level sense of resins using Form2 hardware.
- **High Temperature Failure Analysis:** Investigation of failures through induced stress tests on system and recording temperature response. New components were selected that could withstand the maximum recorded temperature.

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

Development of testers for automotive modules:

- **Overhead Console Bench Tester**: Hardware and software design of 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**: System design of tester with turntable, LIN communication and vision system for final inspection of module.
- **Lighting Module Bench Tester**: Hardware and software design of Arduino system with differential amplifier circuit for current measurements and handheld iridescence measurements.
- **Lighting Module Automated Tester**: System design of gantry system with current and iridescence measurements of lighting modules.

Projects

Bedside Media System:https://github.com/MorganYeung/BMS 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/FS Aug. 2018

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