Morgan Yeung

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Skills

Languages

C/C++

Python 2/3

Matlab

Java

LabVIEW

SQL

HTML5/CSS3

Hardware

ATmega/ ARM-based MCUs

Serial (USART, I2C, etc) Communication

CAN, LIN Communcation

Actuators

Sensors

Technologies

Git

JIRA

Solidworks

Altium

3D printers

Education

University of Waterloo

B.Asc. Honours Mechatronics Engineering (2021)

Personal Website

morganyeung.github.io

Interests & Activities

Climbing

Photography

Fitness

Professional Experience

Embedded Software Developer **Helpwear (Sep 2019 - Current)**

- Developed Heartwatch firmware in **C/C++** for an external ADC, automatic gain control of analog measurements, accelerometer, button and haptic motor
- Performed digital signal processing in **C**, **Python** and **Matlab** for ECG signal detection, scaling and diagnosis
- Expanded functionality of an internal Android app controlling the Heartwatch device and displaying ECG datastream
- Implemented factory test firmware to test all functionality of PCB via **UART**
- Researched the implementation of a new microcontroller, ADC and several new sensors for next generation of Heartwatch

Calibration Software Developer **Formlabs (Jan 2019 - Apr 2019)**

- Programmed calibration routines in **Python** for the Form3 to ensure high-quality printer assembly, with smart workflows using sensor inputs to reduce cognitive load, user error and cycle times
- Measured and recorded the tilt about the Z axis in the Form3 tower to apply offsets while printing to ensure quality prints across the build volume
- Measured critical printer dimensions that defined the build plane then created and validated a workflow to rework printers to meet specifications
- Oversaw the iqc of printers by collaborating with several teams to corroborate specifications and calibrations for print quality, resulting in reduced precision errors.
- Developed **Python** scripts to pull data from SQL database to compare and analyze calibrations between printers using various jigs

Hardware Manufacturing Engineering **Formlabs (Jan 2018 - Aug 2018)**

- Designed, built and programmed machines, testers and calibration fixtures and jigs for the Form2, Form3 3D printer and other auxiliary devices
- Designed an **Atmega 328P** pneumatic tester to detect improperly sealed resin cartridges. Used in factories with **100%** failure detection and false positive verification
- Designed a **Raspberry Pi** laser tester to ensure safety of Form2/Form3 cosmetic parts. The tester was also used to verify laser power and transmittance on optical surfaces

Test Systems Engineering **Flex (May 2017 - Aug 2017) (Sept 2016 - Dec 2016)**

- Designed and developed bench testers for automotive modules using custom prototyping boards
- Full system design of ATmega2560 system with LIN communication and a physical user interface for operators. This solution lowered the BoM cost by **75%.**
- Researched and experimented with machine vision and gantry systems for automating production line testers using **Labview** and **LabWindows C**

Projects

Personal Media System **Raspberry Pi/Arduino/Spotify API/Kivy GUI**

- Created a **Python** application to enhance dorm apartments
- Through a Kivy GUI, the Spotify API, GPIO, and serial communication with Arduino controled LEDs and music