# Morgan Yeung

416-560-1111 | m26yeung@uwaterloo.ca | MorganYeung | morganyeung

## Skills

**Software**

C/C++

Python

Matlab

Java

LabVIEW

SQL

**Hardware**

ATmega/ ARM-based MCUs

Serial (USART, I2C, etc) Communication

CAN, LIN Communcation

Actuators

Sensors

**Tools**

Git

JIRA

AWS

**CAD**

Solidworks

Altium

3D printers

## Education

**University of Waterloo**

B.Asc. Honours Mechatronics Engineering (2021)

## Personal Website

morganyeung.github.io

## Interests

Climbing & Fitness

Photography

## Professional Experience

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

- Developed firmware in **C/C++** for an ADC, automatic gain control of programmable gain amplifier for analog measurements, accelerometer, button and haptic motor
- Performed digital signal processing in **C**, **Python** and **Matlab** for ECG and IMU datasets
- Expanded functionality of an internal Android app in **Java** which controlled the medical device and displayed the ECG data stream
- Implemented an multi-threaded internal tool in **Python** that can access all hardware functionality and test performance of device over Bluetooth
- Research and development of medical device with a new microcontroller, multi-channel ADC with several new sensors

### 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
- 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

### SymSense **Fourth Year Design Project**

- Created a **Python** application to interface with a camera and other peripherals to ensure COVID-19 protocols are followed properly
- Implemented **Machine Learning** models to detect whether or not a face mask is worn and if it is worn properly