

# Morgan Yeung

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👤 MorganYeung

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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 Communication

Actuators

Sensors

### Technologies

Git

JIRA

Solidworks

Altium

3D printers

## Education

### University of Waterloo

B.Asc. Honours Mechatronics  
Engineering (2021)

## Personal Website

[morganyeung.github.io](https://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 data stream
- 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 controlled LEDs and music