Morgan Yeung

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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
- Research and development of medical device companion device to connect using **BLE** and stream collected data over **LTE** to the cloud

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 critical printer dimensions that define the build plane such as tilt about the Z axis in the tower to apply offsets while printing to ensure quality prints
- 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 users. 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