Ellie T. Xu

- Portfolio –

Summary of Skills

Mechanical

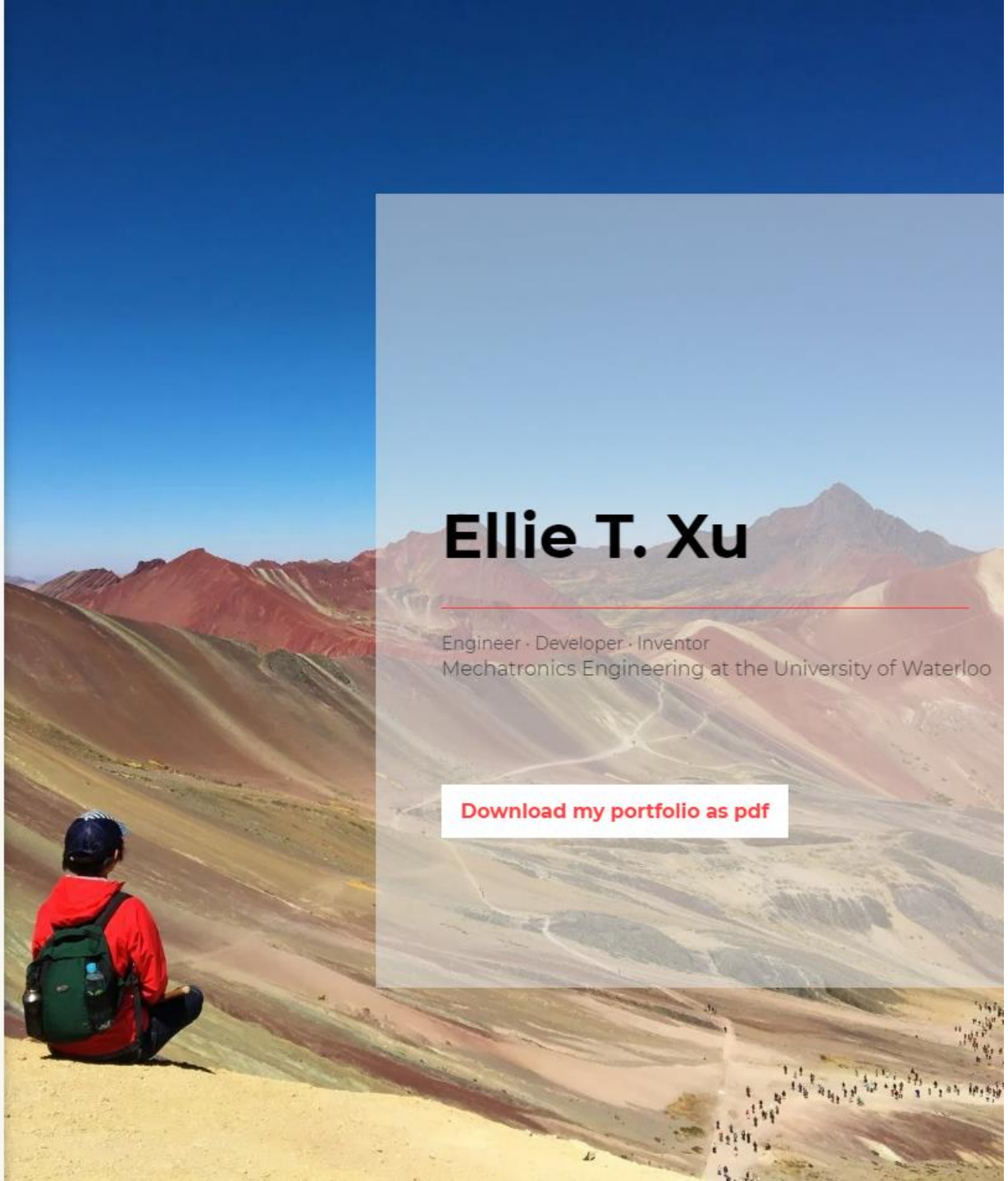
- SolidWorks
- Inventor
- AutoCAD
- GD&T
- 3D Printing
- Revit
- Shop tools: lathe, CNC, laser cutter

Software

- Python
- JavaScript
- Java
- C++
- Unity
- C#
- HTML/CSS
- Firebase
- Git
- Bash
- Visual Studio

Electrical

- Schematic layout design
- PCB layout design
- KiCAD
- Frizting
- AVR Microcontrollers
- Arduino
- Raspberry Pi
- Soldering
- Firmware development



JavaScript, CSS, HTML

elliexu.com

2020

My personal website created with JavaScript, HTML and CSS

Check it out on desktop and mobile

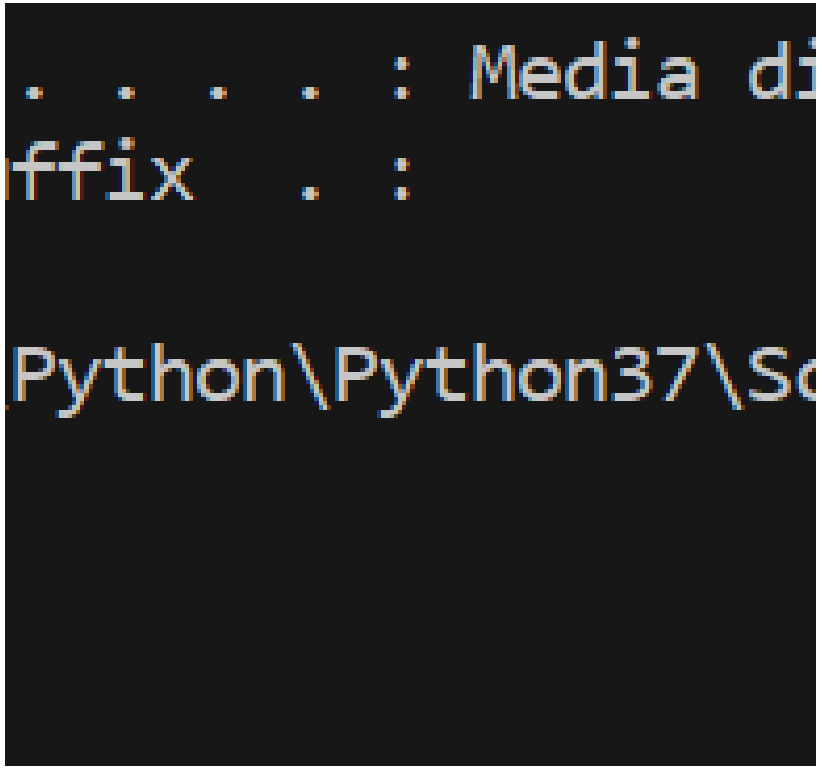
COMING SOON

JavaScript, Firebase, Python, HTML, CSS

Full Stack Software Engineer at Stealth Startup

Oct. 2020 - Present

- Created chrome extension in **JavaScript** (with jQuery), **HTML**, & **CSS** with login authentication using **Firebase authentication** that collects certain user data and configured its connection to **Firebase Firestore**.
- Wrote the back-end **Python** script that computes results from the pulled **Firebase** data and pushes the outputs back.
- Migrated services from **Firebase** to **MongoDB**.
- Used **Git** & **agile** to collaborate with the team.



Ontario
MINISTRY OF HEALTH

	A	B
1	Data Set 1	Data Set 2
2	205	262
3	262	291
4	261	698
5	291	193
6	961	961
7	799	924
8	956	956

Software Developer at the Ministry of Health

Python, Visual Basic

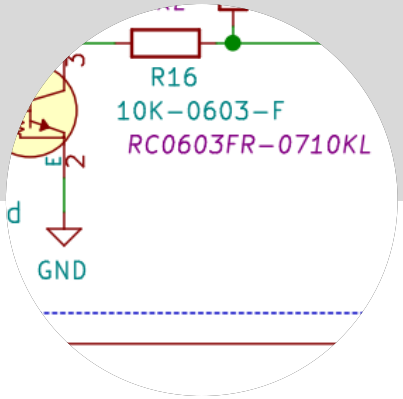
Sept. 2020 - Present

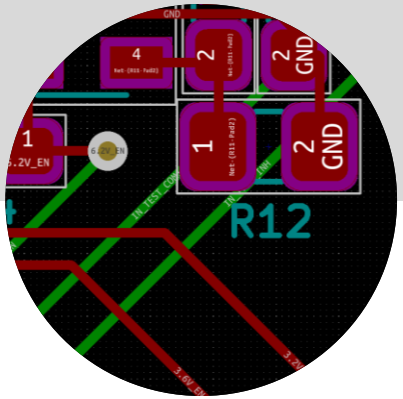
- Automated multiple official excel formatting standards in **Python** with Openpyxl and TKinter GUI.
- Researching 2-factor authentication for scripts located on SAS server with Microsoft Authenticator.

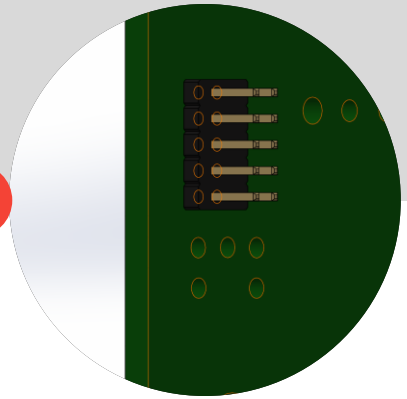
PCB & Schematic, Python, C++, SolidWorks

Hardware Engineer at AOMS Technologies

Jan. 2020 – Apr. 2020







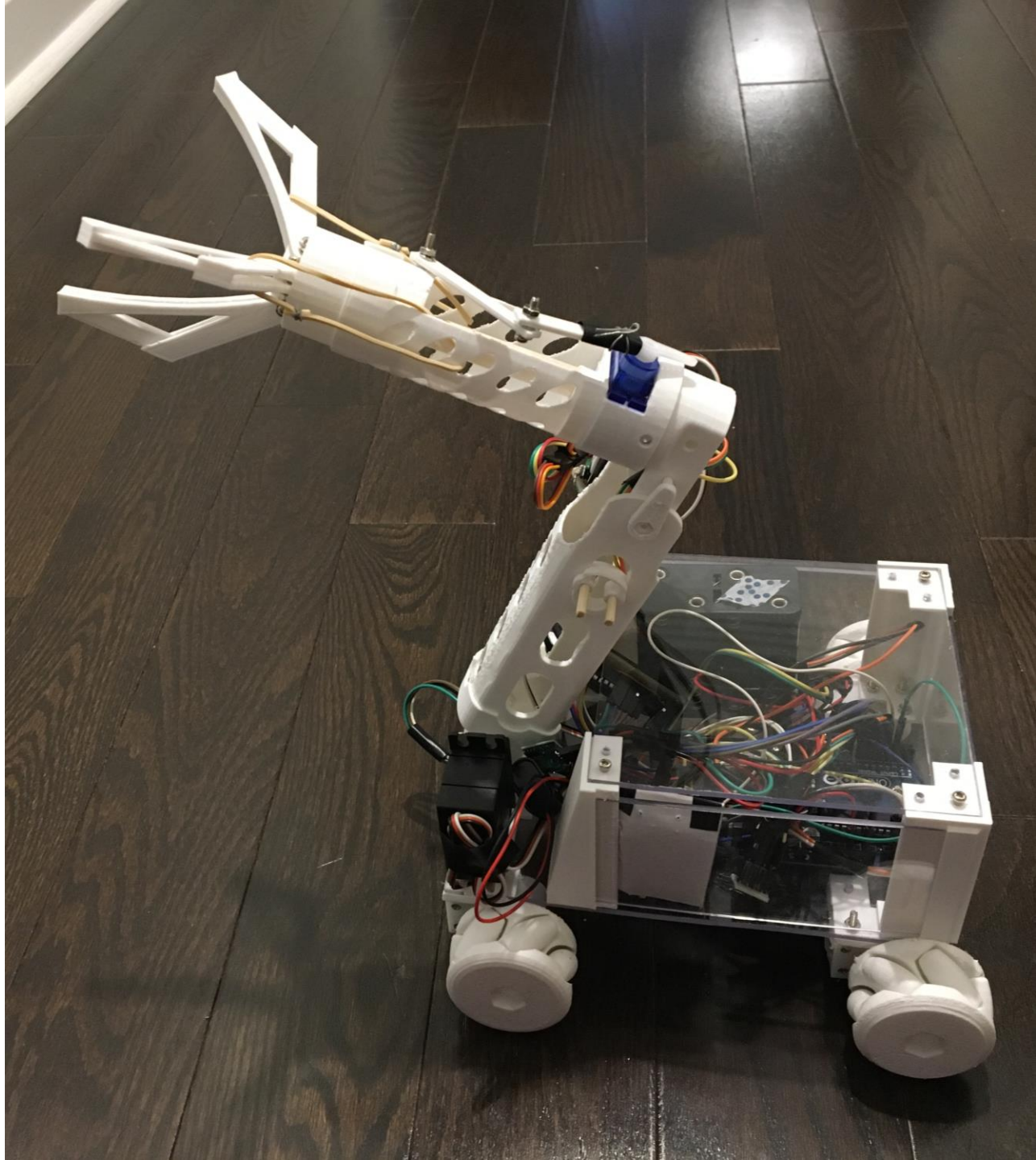
- Projects included LoRa GPS mapping device, non-intrusive current measurement sensor, lightning sensor, test jigs, and more.
- Wrote analysis\mapping **Python** program (e.g. Matplotlib, Rasterio, GeoPandas) for LoRaWAN-GPS mapper for product insights (e.g. gateways).
- Edited **C++** firmware and created **schematics & PCBs** in **KiCad** for LoRaWAN-GPS mapper with frequency bands for EU\USA.
- Designed 2 test jigs: maintained **C++** firmware for their **AVR microcontrollers**, created middle-man **Python** scripts between firmware and user, **KiCad schematics \& PCBs**, and **SolidWorks** models; involving UPDI, SPI, AVRDUDE, UART, ATtiny, and Atmel Ice and flashed firmware and error checked 100+ cards.
- Researched, prototyped on **Arduino**, and created **KiCad schematics & PCBs** for working CT sensor and lightning sensor.
- Used **Git** and **Agile** tools to collaborate with the team.
- Conducted experiments on humidity sensors, worked with potting, 3D printing, and product assembly.

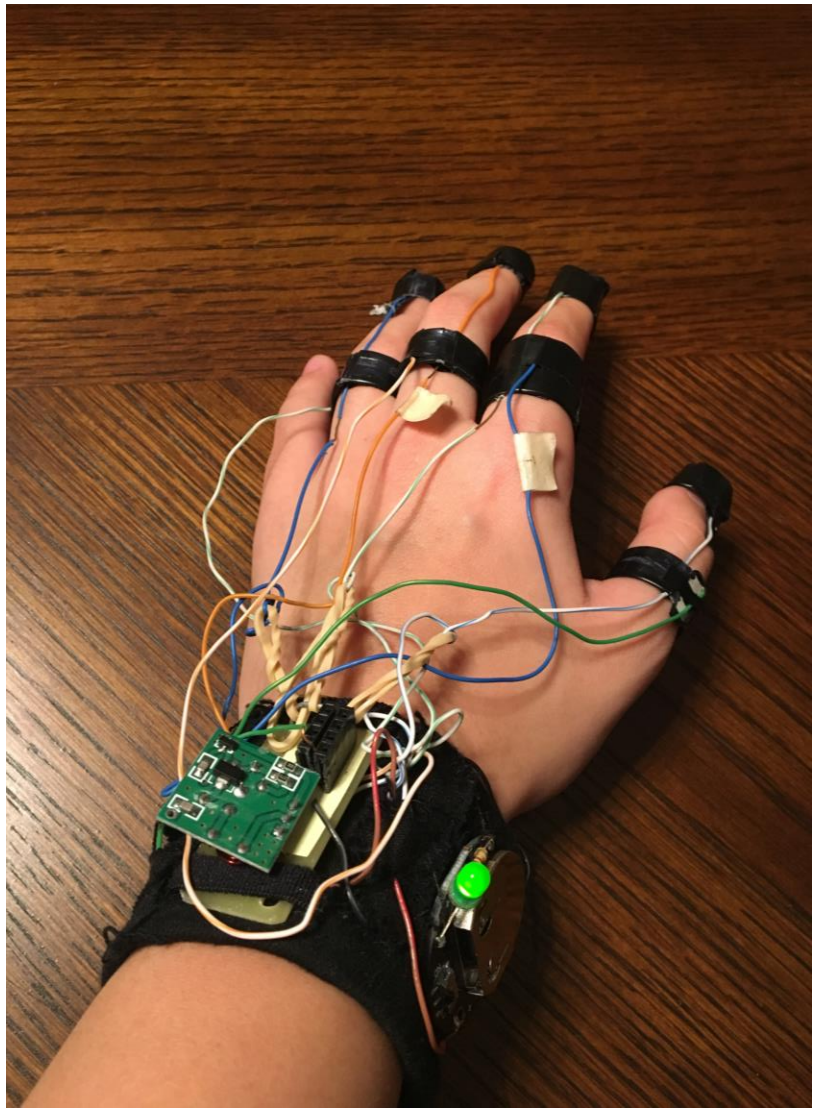
SolidWorks/Inventor, 3D printing,
Arduino, PCB & Schematic Design

CODIA

2019

- Built an **Arduino** based modulated robot with an alterable configuration designed to adapt to perform various tasks.
- User interface through an original and low-cost wireless hand-gesture controller.
- Designed to act as an artificial assistant.





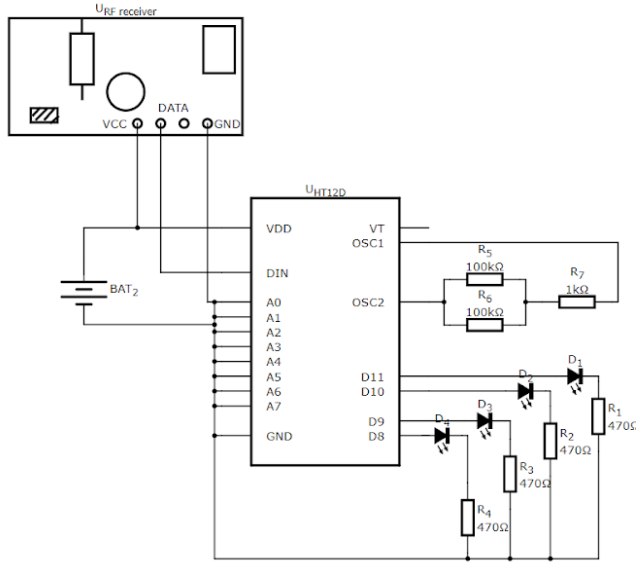
CODIA

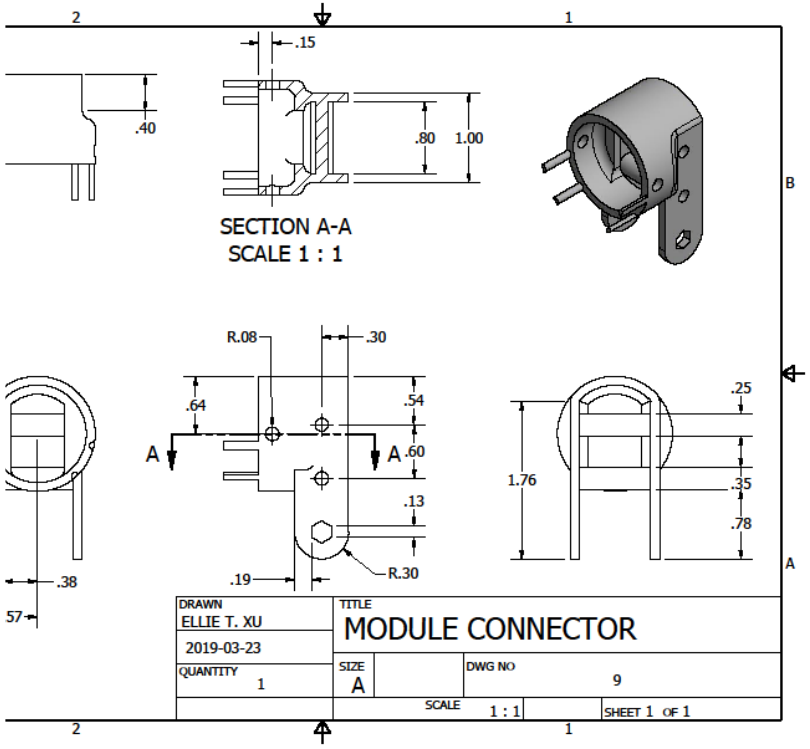
(continued)

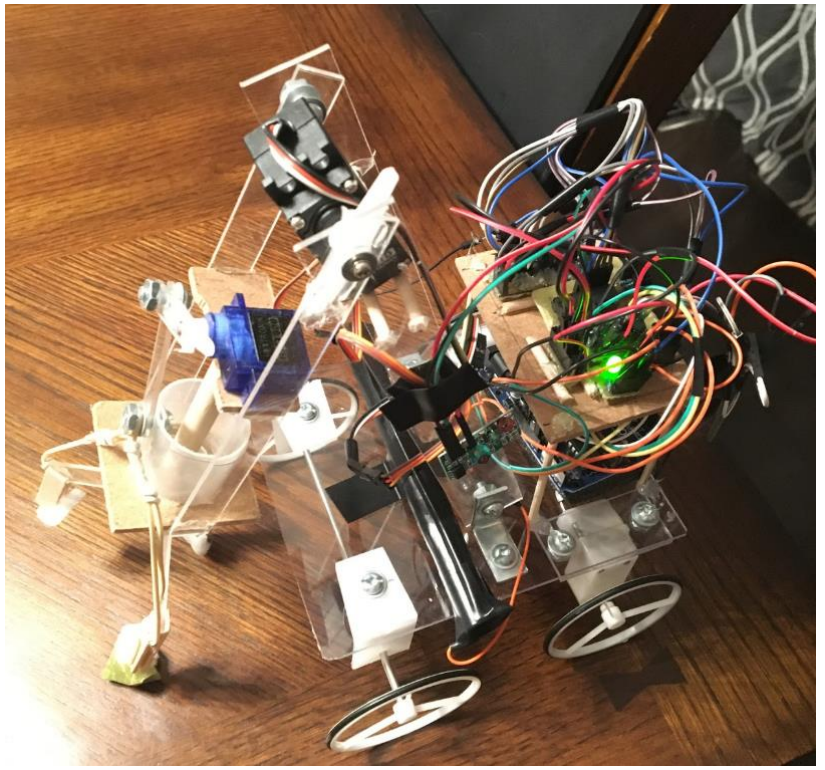
Developed an original low cost wireless hand-gesture controlled communication system using radio frequency.

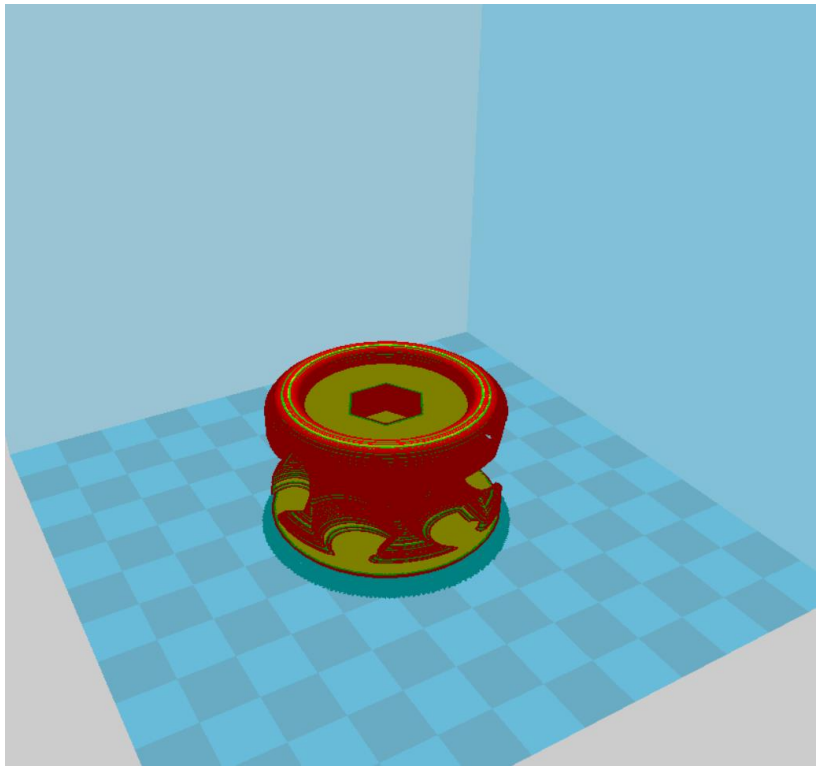
Designed, prototyped, and made all **schematics and PCBs** from drivers to automatic configuration recognition and soldered them.

- Prototyped them on breadboards first, then moved to PCB and soldered them.









Mechanical Design

Solidworks/Inventor

- Researched and 3D modelled mechanisms such as the chassis, electro-mechanical interfaces, and mecanum wheels on **Inventor**.
- Developed drawings to help the manufacturing process.

Prototype

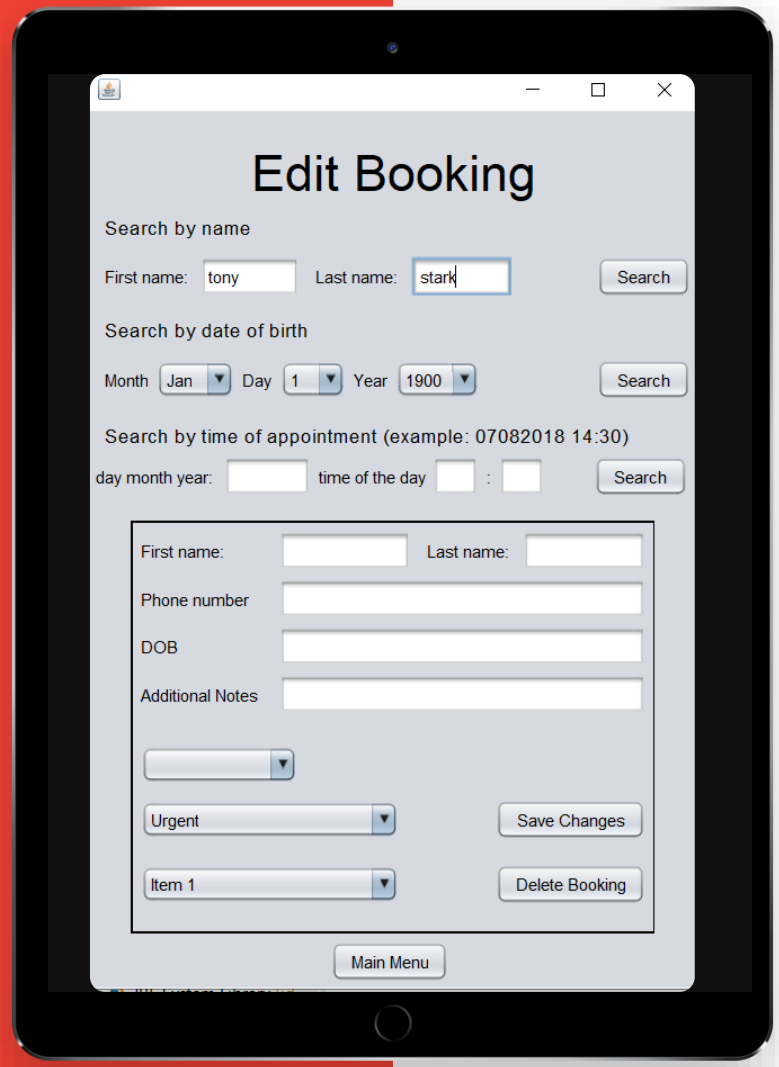
Shop Tools

- Prototyped designs with wood and acrylic models before 3D printing the final.

3D Printing

3D Printing.

- **3D printed** complex parts with PLA plastic to increase structural integrity, precision, and functionality.



Java

Booking Program

2018

- Initiated and programmed a patient booking software on **Java** as an alternative to paper bookings at my co-op placement.
- Integrated a GUI with JFrame and ensured multi-device access by creating an XML database.

AutoCAD, Inventor, Manufacturing,

Core Mechanical Engineer

FIRST Robotics team

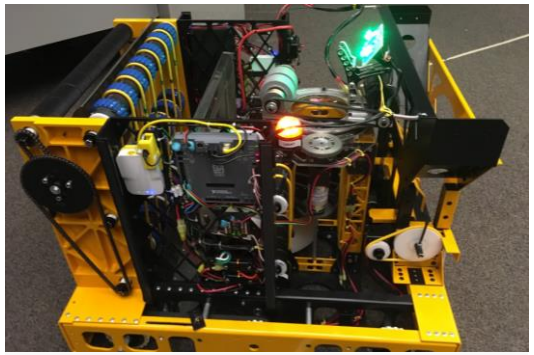
- Produced 2D, 3D, and sheet metal models on **AutoCAD & Inventor** along with drawings that applied GD&T principles.
- Performed virtual **stress simulations** on models before production using Inventor.
- Manufactured prototypes and mechanisms with the plasma cutter, CNC, lathe, and other tools.

Core Mechanical Engineer

FIRST Robotics

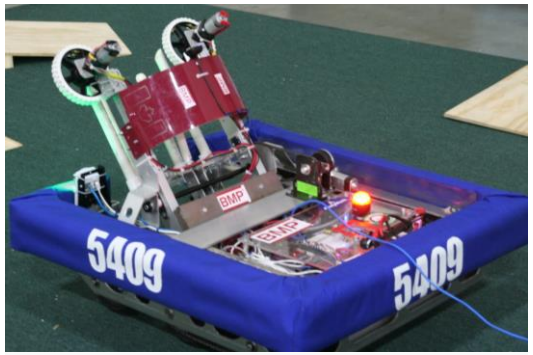
Power Up - 2018

Mechanism of focus: scissor Lift.



Steamworks - 2017

Mechanism of focus: climbing/intake mechanism.

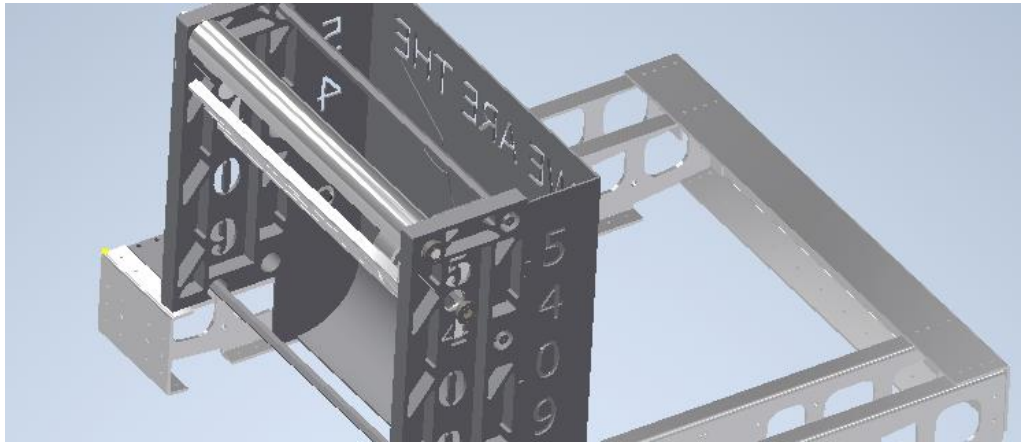


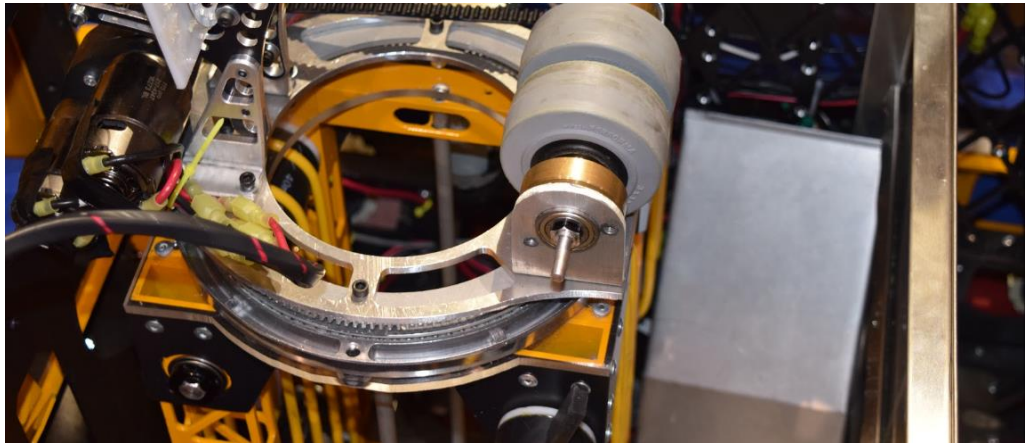
Stronghold - 2016

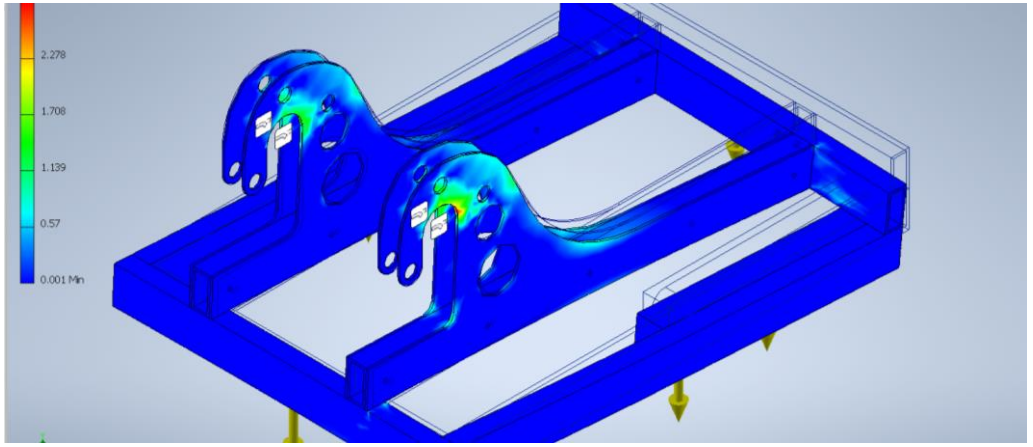
Mechanism of focus: non-electrical grappling hooks.

Core Mechanical Engineer

FIRST Robotics







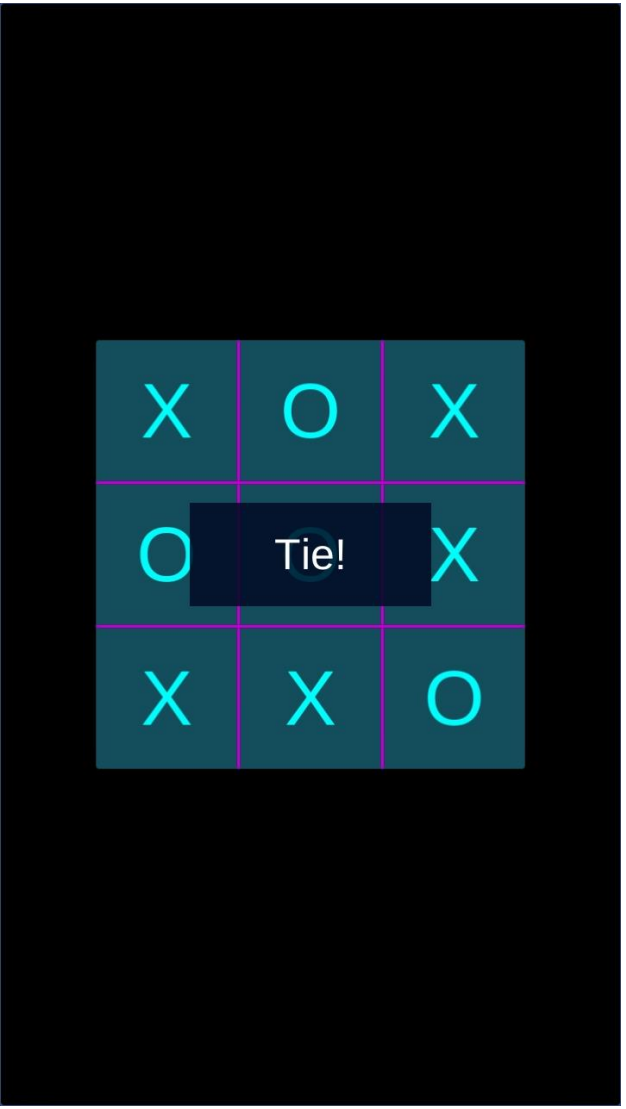
Java, C#, Unity, Git

CrowdMotions

- Smart Review Web Scraper

2019

- Created an **Android App (Unity)** that found the public's sentiment on any service by web scraping from many review sites.
- Wrote algorithms on **Java\C#** that learned sentiment values from preexisting data and used them to analyze new data.
- Used **Git** version control to collaborate with team.

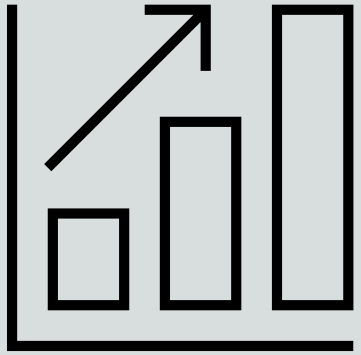


Games

Java, C#, Unity

- Created **Android Apps (Unity & C#)** from Tic Tac Toe to custom arcade games.

- Recreated the fun 2048 game as a .jar on **Java** that keeps track of high scores.



Python

Stock Analyzers

2020

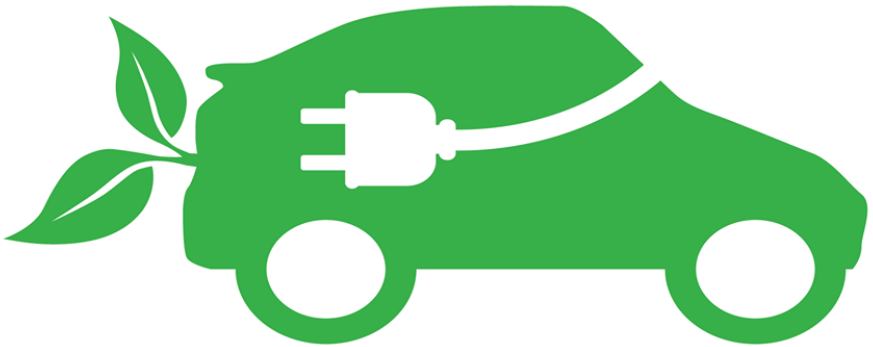
- Wrote **Python** (Numpy, Pandas) scripts that ran thousands of simulations under various algorithms to find the optimal approach to the stock market.
- Wrote another **Python** script that incorporates real time web scraped data from twitter to perform and integrate sentiment analysis.
- Could increase net worth by 250 times within 20 years.

Python, Arduino

Virtual Personal Shopping Assistant

2019

- Janet: a **voice-controlled** shopping assistant for customers that performed tasks from locating products to providing helpful suggestions.
- Carol: the other assistant that provided companies with projected customers trends that were obtained through **machine learning**.
- **Database**: connected to a database so the shopping assistants can be accessed from different devices.
- Incorporated hardware as a user guidance with **Arduino** and **3D modelling**, and **laser cutting**.



UWAFT

UNIVERSITY OF WATERLOO
ALTERNATIVE FUELS TEAM

Python

Software Developer:

Automated & Connected Systems

Oct. 2020 - Present

- Developed a dashboard to display sensor data using **Python** OOP (i.e. TKinter) and ROSpy.
- Collaborated with team using **Git** version control on bash and agile.

SolidWorks

Mechanical Engineer

Watlock

Sept. 2019 - Present

- Researched, modelled, and contributed to the airlock hatch door made to withstand Mars conditions on **SolidWorks**.
- Used **GrabCAD** to collaborate with the team.

Some Additional Projects

Thermoelectric 3-in-1

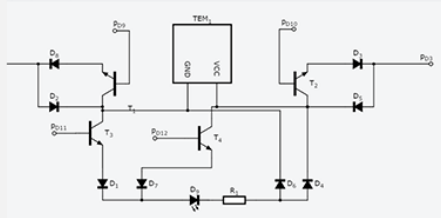
- A container that used the Peltier-Seebeck effect to act as a generator, cooler, or heater.
- Controllable over **Wi-Fi** and is **Arduino** based.

AR Navigation

- An **AR** based navigation **Android (Unity)** app that recognized key features to determine locations.
- Projected 3D navigation directions on the glasses.

Web ID

- **Arduino**, **HTML**
- Virtual wallet accessible over a web page.
- Dispenser drops items when virtual credits are spent.



Check out more of my projects and involvements:

elliexu.com