

Maple Precision – Software Developer Intern

February 2020 - Present

- Developing **3D geospatial** topography maps and models through quantized meshing of databases of **lidar point clouds**, satellite imaging, and maps, using **PostgreSQL**
- Building a mobile application version of the Maple Precision Web App, using **Objective-C** on **Swift** for IOS development and **Java** on **Android Studio** for Android OS development
- Utilizing **GraphQL**, **React**, **Git**, **Bash**, **MongoDB**, **Amazon Web Services**, **Django**, **Java**, **Python**

Reach – Internet Access Through SMS

September 2019 - January 2020

- Built an automated program using **Javascript** with **Node.js** that allows users to access internet features through text messaging, including: Directions, Weather, News, Wikipedia Articles, Unit and Currency Conversion. Used **Google Maps and News API** and **Fixer API**
- Used **Google Firebase** to host my program on **cloud servers** to process and compute user request and **Twilio** to automatically send and receive SMS

Axel - Autonomous Chess Playing Robot

September 2019 - December 2019

- Programmed **event-driven embedded software** for chess robot using RobotC along with mechanical movement, **HMI**, and integrated **Stockfish Artificial Intelligence** API using **C++**
- Designed with **AutoCAD**, **SolidWorks** and built robot using a combination of **3D printing**, **Laser cutting**, Lego EV3 and Tetrix robotics components, MDF, and aluminum extrusions

Stamp – Microphone Audio Amplifier

October 2019 – November 2019

- Designed** and built a functional audio amplifier using **KiCad**. Integrated both **inverting** and **difference opamps** in circuit design to **amplify** the audio input signal for a microphone

Inception – Mechanical Timeclock

December 2018 – March 2019

- Modelled and Constructed a mechanical timeclock using **AutoCAD**, **SolidWorks**, **3D printing**, **Maya**, and hobby materials. Achieving **top 3** out of **over 70 teams** at UBC Physics Olympics

Train μ – Machine Learning Sports Trainer

February 2020 - Present

- Building and training a **machine learning model** to analyze sports footage and help users improve athletic form, achieving **top 3** out of **over 100 teams** at Hack the Valley 4
- Using **TensorFlow** and Openpos for machine learning and dataset. Using **Python**, **Google Cloud Servers**, and **Docker** for backend, and **Javascript**, **HTML**, and **React** for frontend

**Waterloop - SpaceX Hyperloop Team**

September 2019 - Present

## Linear Induction Motor Team Lead

- Leading** a team of **over 25 students** prototyping, designing, and building a linear induction motor, creating a new method of transportation to compete in the Hyperloop Competition
- Coordinating and working with software and electrical team to **integrate electro-mechanical subsystems** and create a full-sized functioning **linear induction motor** (LIM)
- Programming, configuring, and wiring **embedded systems** with Magnetometer, Hall Effect sensor, Digital Temperature sensor, and Accelerometer to collect data through trial runs
- Creating computer **simulations** of the LIM using **ANSYS** to apply **Maxwell's equations**

**UWAF - General Motors EcoCAR Team**

September 2019 - Present

## Autonomous Vehicle Software Team Member

- Utilizing **C++** in **ROS** (Robot Operating System) to program **path finding algorithms** and to perform **sensor diagnostics** and **sensor fusion** to compete in the EcoCAR Competition
- Using **MATLAB** and **Simulink** to create **simulations** in order to test vehicle's **autonomous** capabilities and performance across possible scenarios and edge cases
- Processing **CAN bus** (Controller Area Network) data using **C++** data structures and algorithms in ROS to detect and counteract failures within **microcontrollers**, devices, and communication between control units in the vehicle system



# Hank Wu

Email: [hank.j.wu@gmail.com](mailto:hank.j.wu@gmail.com)Github: [github.com/swiftbeagle](https://github.com/swiftbeagle)Linkedin: [linkedin.com/in/hank-j-wu](https://linkedin.com/in/hank-j-wu)Website Link \$: [bit.ly/hank-website](https://bit.ly/hank-website)**1st Place**

Waterloo Engineering Competition (Senior Design 2019)

**1st Place**

Kwantlen Senior Science Challenge 2019

**1st Place**

Vancouver Math Olympiad 2018

**Top 3/70 Teams**

UBC Physics Olympics Timeclock 2019

**Top 3/100 Teams**

Hack the Valley 4 Hackathon 2020

**B1 DELF Certificate**

French Professional Working Proficiency

**Software:**

Java, Python, Javascript, C, C#, C++  
 Google Cloud Servers, TensorFlow, Git, ROS, Twilio, NodeJS, SQL, Keras, Django, Docker, Spark, PyTorch, React, Linux

**Hardware:**

CAN bus, Arduino, PLC, IGBT, KICAD  
 inverting and difference opamps, HMI, linear induction motor, electromagnetism high and low pass filters, microcontrollers

**Mechanical:**

SolidWorks, AutoCAD, Matlab, Simulink, Inventor, Maya, 3D printing and design, laser cutting and engraving, CNC mill, lathe, drill press, band saw, disk sander

**General:**

Agile and Waterfall Development Process, Microsoft Word, Excel, Publisher, and PowerPoint, Adobe Photoshop, Fireworks, and After Effects

**University of Waterloo Mechatronics Engineering, Honours.**

Sept. 2019 – Present

**Intended Minors:** Artificial Intelligence and Robotics