Hank Wu

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Experience

Maple Precision – Software Developer Intern
January 2020 - April 2020

- Built a layered **search engine** with an implementation of **PageRank**. **Migrated** key map **rendering processes** from GPU to CPU, increasing **CRI efficiency by 63%**. Built login system.
- Developed **3D geospatial** maps and models through **quantized meshing** of lidar **point clouds**, satellite imaging, and 2D maps applying **median cut octree algorithm**s on matrices
- Utilizing **MongoDB**, Potree, Chart.js, **Amazon Web Services**, React, **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 the internet features through text messaging, including: Directions, Weather, News, Wikipedia Articles, Unit and Currency Conversion. Used **Google Maps and News APIs** 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

Train μ – Machine Learning Sports Trainer
February 2020 – March 2020

- Built, trained, and ran 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
- Used **TensorFlow** and Openpos for machine learning and dataset. Used **Python** and **Google Cloud Servers**, and **Django** for backend, and **JavaScript**, HTML, and **React** for frontend

Responsum – Educational Software
December 2019 - Present

- Building an educational Web Application with live surveying, forums, and learning resources. Working with Prof Igor Ivkovic to **launch on UW Servers** for use in **class of 135 students**.
- Utilizing **PHP** and **MongoDB** for backend database and REST API. Using **React**, HTML, CSS, and **JavaScript** for frontend UI development. Porting to IOS and Android using **Flutter**.

Syrinx – Malignant Cyst Detector
March 2020 - Present

- Using **Tensorflow** and **NumPy** along with published medical MRI data sets to build an **neural network** to differentiate between a safe benign cyst and a harmful malignant cyst

Design Teams

Waterloop - SpaceX Hyperloop Team
September 2019 – April 2020

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 a variety of teams to **integrate** software and hardware **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**

UWAFT - General Motors EcoCAR Team
September 2019 – April 2020

Autonomous Vehicle Software Team Member

- Programming autonomous software using **C++** in **ROS** (Robot Operating System) on **Linux** 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 all possible scenarios
- Processing **CAN bus** (Controller Area Network) data using **C++ data structures** and **algorithms** in ROS to counteract failures within **microcontrollers** and vehicle system

Awards

1st Place
Waterloo Engineering Competition (Senior Division 2019)
1st Place
Kwantlen Senior Science Challenge 2019
1st Place
Vancouver Math Olympiad 2018
Top 3/100 Teams
Hack the Valley 4 Hackathon 2020
B1 DELF Certificate
French Professional Working Proficiency

Toolkit

Native Speaker:
Java, Python, JavaScript, C++, PHP C, Firebase, PostgreSQL, Git, Docker, MongoDB, Django, Unix, Linux, Swift, Amazon Web Services, React, NodeJS

Conversationally Fluent:
TensorFlow, TypeScript, HTML5, Bash, ROS (Robot Operating Software), Keras, Redis, Flutter, Agile, Google Cloud Servers

Curious Tourist:
Postgres, WebGL, Potree, Chart.js, PyTorch, Agile, Entwine, AJAX

Education

University of Waterloo Mechatronics Engineering, Honours. 3.86 GPA
Sept. 2019 – Present
Intended Minors: Software Engineering
(7 courses per term, fast tracking degree)

Activities: Data Science Club, Model UN, Academic Class Representative, Residence Council Volunteer, Engineering Society Member

Scholarships: Loran Scholar Finalist, Waterloo President's Scholarship, BC District scholarship