Hank Wu

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Experience

Royal Bank of Canada *Enterprise Application Software*
Software Developer *August 2020 - Present, Internship*

- Building a CI/CD **Jenkins** pipeline with auto remediation using **Java** to automate deployment to **AWS** S3 buckets
- Developing feedback-based recommendation methods in **C++** through subsets of prefetches for **over 400 users**
- Designed and scripted a database transfer from **MySQL** to **MongoDB** with **Python**, increasing **performance** by **63%**
- Creating **Scala** and **Spark** applications to perform data analysis and error detection across **hundreds of pipelines**

Maple Precision *Velocity Accelerator Startup*
Software Engineer *January 2020 - April 2020, Part Time*

- Designed and built **layered search engine** with PageRank, login system, chat, user and project profile, used by **38 companies**
- Using **MongoDB**, Express.js, **Node.js**, and **React** for development, **AWS**, **Docker**, and **Kubernetes** for hosting and deployment
- Migrated server side map rendering process from CPU to GPU, increased **CRI efficiency** by **176%**, decreased **runtime** by **59%**

Autonomous Vehicle Research and Intelligence Lab, University of Waterloo *Machine Learning Lab*
Machine Learning Engineer *April 2020 - August 2020, Research*

- Created a facial recognition **neural network** using **PyTorch** with optimized layer operations, backpropagation, genetic learning
- Built end-to-end data collection, training, inference pipeline with **network pruning** and **hyperparameter search**
- Generated **100,000 data points** by applying StackGAN on **Kaggle** datasets using **GCP** TPUs

Projects

Responsum - Educational Web Application
HTTPS://GITHUB.COM/HANK-W/RESPON_SUM *2019 - Present*

- Building a **web app** with live quizzing, **forums**, and learning resources. **Launching** in **class of 135** UWaterloo students
- Connecting students, professors, and classes with statistics and performance metrics for students, classes, and questions. Searchable, orderable, and pageable content for learning by category, difficulty, and format. Built **middleware** for backend
- Designed **REST API** with **RAML**, using **MEAN stack** for development, automated API tests with **Postman**, Figma for UI/UX

Reach - Internet Access Through SMS
HTTPS://HANK-W.GITHUB.IO/REACH.HTML *2019*

- Built an automated program using **Node.js** to enable internet features through SMS including directions, weather, news, web page text, unit and currency conversion, and Wikipedia articles. Used **APIs** from Google Maps and News, XE, Wikipedia
- Hosted program on **Firebase** cloud servers, used **Twilio** to automate sending and receiving SMS text messages

QR-CNN – Quantum Computing Mask R-CNN
HTTPS://GITHUB.COM/HANK-W/QUANTUM-MASK-R-CNN *2020*

- Created and trained MASK R-CNN model on live vehicle footage to return **instance segmentation** with object tracking
- Integrated Qiskit with **PyTorch** to speed up model training **efficiency** by **310%** and model **runtime** by **90%**
- Applied **parameter binding** and **expectation value evaluation** to optimize tensorization of video frames
- Utilized **GCP** for cloud computing power, Python for code base, and open source ML libraries with Cirq

Competitions

2020	**Winner**, Hack the Valley 4, awarded prize from Facebook, top 3/100 teams	*Hackathon*
2019	**Winner**, Hack The North, and won Deloitte coding challenge	*Hackathon*
2020	**Mentor**, StarterHacks, HobbyHacks, NWHacks, Brick Hack	*Hackathon*
2019	**1st place**, Waterloo Engineering Competition, Senior Division	*Engineering*
2019	**1st place**, KPU Senior Science Challenge, led team of nine students	*Science*

Skills

Backend Java · Python · C++ · JavaScript (ES6) · Scala · Express.js · Node.js · Django · AngularJS · REST API · Bash · GraphQL

Database and Cloud AWS · GCP · Firebase · MongoDB · PostgreSQL · MySQL · Spark · Hadoop · Git · Docker · Jenkins · Kubernetes

Frontend React · Angular · Bootstrap · HTML · CSS · Zeplin · Figma · Ajax · jQuery

Education

University of Waterloo *September 2019 - May 2023*
Mechatronics and Software Engineering | GPA: 3.9 *Overloading 7 courses/term*
Relevant Coursework: Datastructures and Algorithims, C++ Programming, Systems Design