

Mark (Yi Han) Zhang

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Software Engineering Student from UWaterloo

Tech Skills

Languages

- Java
- Python
- C/C++
- JavaScript

Backend Web Dev

- Django
- Nginx
- PostgreSQL
- Redis

Frontend Web Dev

- HTML/CSS
- Bootstrap
- Bulma

Sys. Administration

- Microsoft Azure
- AWS
- Bash
- Ubuntu
- CentOS
- Arch

App Development

- Android

Machine Learning

- OpenCV
- Keras
- TensorFlow
- Google Magenta

Achievements

Facebook Global Hackathon Finalist:

Selected from a pool of **over 2500 teams** around the world to compete at FB HQ in Menlo Park with **20** other finalists.

MHacks 9 Winner:

Won C2 technology sponsor prize for **best drone management system**. [DronesNet](https://dronesnet.com)

Projects (30+ more on GitHub)

 [MomentSync](#) | Python, Django, PostgreSQL, Nginx, Azure, Redis, JS, HTML, CSS Jan 2019

- An instant media sharing service that minimizes average photo and video syncing time between devices to **less than 2.4 seconds**.
- Implemented **permission** system that enable media sharing both privately and publicly.
- Adopted Secure Web Socket connections to deliver real-time media syncing for all authorized users on specified channels. **Serves 500+ concurrent connections**.
- Images/videos are delivered by **Microsoft Azure CDN** to **decrease latency to <9ms**.
- Deployed on Azure D4s v3 **Ubuntu** instance with **Nginx** proxy, Gunicorn as **WSGI** (HTTP) server and Uvicorn as **ASGI** (socket) server at momentsync.net.

 [Pather](#) | Java Feb 2017

- A **three-dimensional multiplayer** first-person-shooter video game.
- Made with **pure Java without the use of game engines**.
- Rendered 3D graphics using **ray-casting** computational geometry technique.
- Established server-client communications using **asynchronous multi-threaded TCP Sockets** for player actions. Serves at least **250 concurrent connections**.
- Fabricated a procedurally generative maze algorithm using **Depth-First Search** to produce unique game maps with custom terrains.

 [Poppy Robot](#) | Java, Python, OpenCV, Android, Arch, Raspberry Pi Sep 2018

- A self-balancing, programmable, remotely-controllable, Google Assistant robot.
- Implemented a **multi-threaded server in Java** with custom **TCP socket** protocols, effectively decreased control and response latency to **less than 10ms**.
- Applied Haar Cascade Classifiers with OpenCV for face tracking with **95% accuracy**.
- Deployed to a customized Arch Linux operating system running on Raspberry Pi.
- Developed Android, Windows, Linux, and MacOS clients for remote control.

Experiences

Data Analyst Intern | Decision Resources Inc. Aug 2017 – Sep 2017

- Developed polynomial regression models with **52** input parameters **using R and Python (with NumPy)** to forecast price and demand of medical devices and products.
- Created a page indexing and scraping software to automatically research, format, and compile medical device information using Python
- Effectively **increased cataloging efficiency** from ~300 product entries a day to **1000+**.
- Managed large-scale enterprise databases with over **5,000,000+** entries using T-SQL

President of Computer Science Club | Richmond Hill H.S. Jan 2017 – Jun 2018

- Created lecture slides and taught a class of 30+ students basics of Machine Learning, going through topics such as: **Linear Regression, Logistic Regression, Gradient Descent, Regularization**, and concepts of **Neural Networks**.
- Taught class to use **TensorFlow** for object recognition using **Inception-V3 model**.

EDUCATION

University of Waterloo Sep 2018 – Apr 2023
Candidate for Bachelor of Software Engineering