

# Max Gao

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## Languages Tools

Python, C++, C, Ruby, Scala, Java  
Git, Docker, Kubernetes, Redis, Spanner, MySQL

## Experience

### Software Engineering Intern - Google

Jan 2019-  
Present

C++, SQL

- ▶ Worked on **RPC** endpoint for reporting crash events for service that stores event data and auto-disables experiments highly suspect of causing crashes in production
- ▶ Designed and implemented **metric collection** and **alerting** using internal tools
- ▶ Created internal **dashboard** to display event analysis data related to the auto-disablement feature

### Backend Engineering Intern - MyFitnessPal

May 2018-  
Aug 2018

Scala, Ruby

- ▶ Created a search term based advertisement service with a **REST API** serving 3,000,000+ searches per day
- ▶ Reduced latency in API calls by automating scaling with **Kubernetes** and **Docker**, and using a shared remote **Redis** cluster for caching search terms
- ▶ Identified and resolved errors within the legacy backend affecting 8,000+ users
- ▶ Fulfilled product and timeline requirements by in an agile environment

## Projects

### Neural Networks

Python

- ▶ Created forward-pass and back-propagation for **fully-connected**, **recurrent**, and **convolutional neural networks** without use of external machine learning libraries
- ▶ Gained understanding of the calculus and linear algebra behind back-propagation with different types of neural networks
- ▶ Implemented and tested different activation functions, such as sigmoid, relu, tanh, and softmax, and cost functions, such as quadratic cost and cross-entropy to **reduce training time** and **improve performance accuracy**
- ▶ Achieved understanding of past and current challenges such as vanishing gradients, overfitting, and difficulty with training deep neural networks

### Rock Paper Scissors Robot

Python

- ▶ Created a dataset and trained a fully-connected neural network, which classified images between rock, paper, and scissors with up to 98% accuracy using **supervised learning**
- ▶ Utilized **L2 regularization** to prevent overfitting, and improve real-time performance
- ▶ Played rock-paper-scissors live by receiving a constant feed of input from a camera, passing the image through the trained neural network

## Awards

- ▶ Best Machine Learning Hack at Hack Western 4
- ▶ Top 1% in Canada for Euclid math contest (Honor Roll)
- ▶ National AP Scholar (Canada) and AP Scholar with Distinction
  - ▶ 5/5 on Physics (B1/C1/C2), Calculus (BC), Statistics, Computer Science A

## Education

University of Waterloo Candidate for Bachelor of Software Engineering

Exp. 2022

## Interests

Investing, Weight Lifting, Ping-Pong, Foosball, Ornamental Fish and Shrimp Keeping