

# William Gao

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Seeking a challenging and dynamic internship in the field of Machine Learning. I have strong industry experiences in AI, two research positions at my university in AI and Modelling, and a **research paper** on diffusion models.

## EDUCATION

### University of Waterloo

B.S. in Computer Science, Finance

2 Time Recipient of CFM Outstanding Academic Achievement Award

Expected: April 2025

**GPA: 92/100**

## EXPERIENCE

### Relay Financial

Apr. 2024 - Sept. 2024

#### ML Engineer

*Python, PyTorch, AWS, TypeScript*

- Started an initiative to build machine learning models to automate workflows, greatly reducing turnaround time to approve new customers
- Fine-tuned a Vision Transformer model to automatically classify documents and dynamically pull relevant information based on specific company policies
- Utilized AWS lambdas and Typescript to deploy and build new functionality for risk analysis workflows

### SickKids Hospital — Centre for Computational Medicine

Apr. 2023 - Sept. 2023

#### ML Engineer

*Python, TensorFlow, Keras, Slurm*

- Trained machine learning models to eliminate tedious tasks from specialized neurologists, drastically improving care for children affected by stroke
- Built and deployed image processing pipelines and neural networks (CNNs) to perform segmentation and classification tasks on 3-D MRI scans
- Proposed a universal patient ID system to tackle patient duplication when they move between healthcare facilities. After gaining support at the managerial level, presented the idea to an international executive committee representing 100+ hospitals across 30+ countries.

### PointClickCare

Sept. 2022 - Jan. 2023

#### Software Engineer

*Java, Spring, React, Docker, GCP*

- Built microservices that helped modernized the patient management systems of 27,000+ long-term care providers
- Pitched and got approval to build a generic React front-end stepper component for use across the entire organization
- Worked independently with the DevOps team to create a centralized dashboard to view security risks and overall health of services

### OMERS

Jan. 2022 - May 2022

#### Software Engineer

*Java, Spring, React, Docker, GCP*

- Worked on mission-critical backend services that processed the pensions of 600,000+ public employees
- Led a team of 8 interns to design and build a Slack application that automatically connects co-workers together for coffee chats to boost networking during the COVID pandemic. Presented our design and prototype to upper management at the senior VP level

## RESEARCH

### University of Waterloo — Computer Science

Sept. 2023 - May. 2024

#### Generative AI: Diffusion Models

*Python, PyTorch, C, Linear Algebra, Differential Equations*

- Tested a time-stepping PDE solver for the Kolmogorov/Fokker-Plank equation to improve the learning of the forward stochastic diffusion process
- Read standard diffusion model papers and implemented their algorithms for testing and comparison

**Authored research paper and submitted to BMVC conference**

### University of Waterloo — Applied Mathematics

May. 2023 - May. 2024

#### Modelling and Control Theory

*Python, C++, Scikit-Learn, Linear Programming, Statistics*

- Modelled the dynamics of the spread of COVID-19 and Influenza in schools using an Agent Based Model with emphasis placed on the impact of control measures
- Collaborated with professor from psychology faculty to study the effects of COVID pandemic on mental health using feature selection techniques such as LASSO Regression, Decision Trees, Forward-Backward Selection

## PROJECTS

### Skribbl.ai — [Play Demo](#)

Dec. 2023 - Current

#### Fun drawing and guessing game with AI

*Python, JavaScript, TensorFlow, Socket.io*

- One player draws while the others guess. However, there is a neural network guessing as well - if the network guesses before the players, they lose
- Used Google Quick, Draw! dataset to train a recurrent neural network (LSTM) as well as a CNN built in TensorFlow
- Deployed production TF-Lite model with Node.js and Socket.io backend on Heroku