William Gao

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

EDUCATION

University of Waterloo   Expected: April 2025
B.S. in Computer Science, Finance   *GPA: 92/100*
2 Time Recipient of CFM Outstanding Academic Achievement Award

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*
- Focused on Machine Learning in Neuroscience to diagnose and predict stroke in children using 3D MRI images
- Built and deployed image processing pipelines and convolutional neural networks (CNN) to perform segmentation and classification tasks
- 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*
- Used Java Spring and React to develop multiple backend API's for mission-critical microservices
- 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 with the architecture and security team to integrate a third-party email service into the backend tech stack
- 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*
- Read standard diffusion model papers and implemented their algorithms for testing
- Tested a time-stepping PDE solver for the Kolmogorov/Fokker-Plank equation to improve the learning of the forward stochastic diffusion process

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