

# Alan (Jia Lin) Yuan

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## WORK EXPERIENCE

### Unilever

April 2024 – Present

*Machine Learning Engineer - Intern*

*Toronto, Ontario*

- Train **times-series transformer** models to predict sales in various regions with **PyTorch**.
- Optimize sales and promotion weeks with genetic algorithms utilizing **NGSAIL**.
- Increased model accuracy by **15%** by modifying model architecture and finetuning hyperparameters.
- Implemented multi-thread processing to increase data pipeline speeds by **150%**.

### Amazon

Jun 2023 – Aug 2023

*Software Developer - Intern*

*Toronto, Ontario*

- Designed a **precompute** layer using **Apache Spark** to increase recommendation speed by **99%** from 150ms
- Built data pipelines to ingest updated data and retrain models in a given time frame
- Created automated data analysis tool to ensure predictions are above **75%** accuracy

### Amazon

May 2022 – Aug 2022

*Software Developer - Intern*

*Vancouver, British Columbia*

- Engineered a modular microservice in **Java** to send notifications to customer of cashback on select products
- Utilize **AWS** webservice such as **Lambda**, **SQS** and **SNS** to ensure scalability of the notification system
- Integrated service into data pipeline utilizing Amazon internal language **Datapath**

### Intel

May 2021 – May 2022

*Software Engineer - Intern*

*Toronto, Ontario*

- Developed support software to generate 4000+ of completely random test-cases for edge-case testing
- Optimized support tool's Ram templates to reduce false positives and failing cases by around **70%**

### Centivizer

Apr 2020 - Sep 2020

*Software Developer - Part-time*

*Toronto, Ontario*

- Designed backend application using **Node.JS** and **SimplePeer** to facilitate **real-time video streams**
- Integrated video system with main **React** site and **MongoDB** database

## EDUCATION

### University of Toronto

4.0 cGPA

*MSc in Applied Computing*

*Sept 2023 - Dec 2024*

### University of Toronto

3.84 cGPA

*HBSc Computer Science Specialist, Major in Mathematics*

*Sep. 2018 – May 2023*

## PROJECTS

### MultiModal AI Story teller | private repo

Jul 2023 – Jul 2024

- Built interactive **socket-based** streaming service serving up to 200+ users a day.
- Implemented **Multimodality** using **LLMs** and **Latent Diffusion Models** to build a interactive story teller.
- Utilized NLP techniques to summarize context to reduce context size, reducing inference time by up to 10%.

### PAIR Lab — multiple projects: RePlan | Orbit

Sep 2021 – Apr 2024

- Use of **MPC**, **MultiModal LLM** in completing high level robot tasks prompted by text | **arXiv:2401.04157**
- Contributed to **Orbit**, a robot learning framework built on **NVIDIA Isaacsim**. Published in *RAL* | **project-site**
- Worked on meta-controllers to assist **multi-policy** agents to plan long horizon tasks using **sparse rewards**
- Designed and built **GPU** parallelized state systems with low overhead allowing a **4x** speedup over the cpu solution

### CaNetDa: Deep Learning for GeoGuesser in Canada | Link: GitHub

Jan 2021 – Apr 2021

- Mined dataset and trained an ensemble of **Computer Vision** models: **ResNet**, **EfficientNet** and **Vision Transformer** resulting in a **47%** improvment over random agent in predicting province of image in Canada
- Scraped **Google Street View** images and used **Google Maps API** to preprocess images for training

### Tron UDP Multiplayer | Link: GitHub

Sep 2019 – Dec 2019

- Created a four player game for local networks using the **UDP network protocol** and **C++**
- Utilize **epoll** for both client and server to monitor the socket as well as the timer (server) and stdin (client)

### BF-Interpreter | Link: GitHub

Mar 2018 – Nov 2018

- Built a BF shell that runs all example BF programs found on Wikipedia in C

## TECHNICAL SKILLS

**Tech:** Deep Neural Networks, Large Language Models, Latent Diffusion Models, Python, C++, JavaScript, Java, Rust

**Tools:** Huggingface, PyTorch, Git, React, Node.js, MongoDB, SQL, Numpy, GraphQL, Robotics, Vim