

# Tim Gu

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## GRADUATE EDUCATION

### M.ASC IN COMPUTER ENGINEERING | UNIVERSITY OF TORONTO

Sep 2022-current (expected graduation Aug 2024) | GPA: 4.0/4.0

- **RESEARCH FOCUS**  
Developing High-speed inter-cloud data transportation layer for accelerating distributed machine learning (Paper under review).
- **KEY SKILLS:**  
PyTorch, Rust, JavaScript, Python, Horovod, DeepSpeed, OpenMPI, NCCL,

## EXPERIENCE

### JUNIOR ML ENGINEER INTERN/PART-TIME CONTRACTOR | HUAWEI TECHNOLOGIES

Sep 2021 - Aug 2022 | Toronto, ON

- Lead the design and implementation of an **GNN/transformer-based** regression model for approximating the solutions for NP-hard multi-commodity-flow problems. The model yields solutions within **95%** of the theoretical optimum and is between **100-10000x** faster than traditional algorithms. **Python, PyTorch, PyTorch Geometrics.**
- Engineered **distributed ML pipelines** for training and inference that accommodate **30-billion-parameter models** among up to **4 Nvidia V100 GPUs** with **PyTorch Distributed.**
- Built and deployed multiple **data pipelines** using **Numpy and Pandas.**

### SOFTWARE ENGINEERING INTERN | AMAZON WEB SERVICES

Sep 2020 - Dec 2020 | Vancouver, BC

- Designed and implemented multiple **core business metric pipelines** as part of AWS Cloud Formation, driving multi-billion dollar business decisions with cutting-edge technologies of **Kotlin, Java, AWS EC2, AWS DynamoDB, AWS Athena.**
- Hosted and led design meetings with the AWS Cloud Formation team for software architecture design and integration strategies.
- Managed and deployed software feature to **21 AWS regions** and created key maintenance pipelines with **Ruby.**

### DATA ENGINEERING INTERN | WAYFAIR LLC

Jan 2020 - Mar 2020 | Boston, MA

- Created internal automatic data model verification pipelines, accelerating data verification process by up to **400x** using the latest technologies in **Python** and **R.**
- Created and managed internal data delivery pipelines between multiple data storage solutions implemented with **MySQL, PostgreSQL, VerticaSQL, Microsoft Access, and Google Cloud Platform.**

### DATA ANALYST INTERN | FEDERAL GOVERNMENT OF CANADA

May 2018 - Aug 2018 | Ottawa, ON

- Processed and analyzed **17 years** of air quality data using **R** and **Matlab** and presented key findings at an internal conference in August 2017.

## NOTABLE PROJECTS

### WINNER @ 2019 ENG HACK | SAVE MI

- Cloud-based, ML-powered Android app that helps identify allergies with photos.

### WINNER @ 2019 HACK THE NORTH | FLOW AI

- Google Assistant App capable of generating presentations from speech live.

## SKILLS

### AREA OF FOCUS

Backend Development  
• Large-Scale SDE •  
Distributed and Cloud  
Computing • Machine  
Learning

### LANGUAGES

Python • Java • Rust •  
JavaScript • Kotlin • C++  
• C • C# • HTML • CSS  
• R • Ruby

### MACHINE LEARNING

PyTorch • Pandas • HuggingFace • Scikit-Learn  
• Spark • Horovod •  
DeepSpeed • NCCL •  
OpenMPI

### TOOLS AND FRAMEWORKS

PostgreSQL • MySQL •  
Unix • Node.js • Docker  
• AWS • GCP • Azure •  
Bootstrap • Ubuntu

## UNDER-GRADUATE EDUCATION

### UNIVERSITY OF WATERLOO

BACHELOR OF  
APPLIED SCIENCE IN  
HONOURS COMPUTER  
ENGINEERING, CO-OP  
Sep 2016-Apr 2022  
CGPA: 84/100

## AWARDS

Awarded for the  
University of Toronto  
Edward S. Rogers Sr.  
Graduate Scholarships in  
2022.