

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

- Led 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 PROJECT

DEEP PEN | CAPSTONE PROJECT @ UWATERLOO

- Full web application for automated ML adversarial algorithm benchmarking. **Python, Node.js, HTML, CSS, Ruby on Rails, MongoDB, Redis, PostgreSQL, docker.**

SKILLS

AREA OF FOCUS

Full-Stack Development
• Software Engineering
• Distributed and Cloud Computing • ML

FRONT END

Next.js • Node.js • React
• TypeScript • Html/CSS
• Framer Motion

BACK END

Rust • Python • Java •
Ruby on Rails • Post-
gresSQL • MySQL •
MangoDB • Redis

MACHINE LEARNING

PyTorch • Pandas • Hug-
gingFace • Scikit-Learn
• Spark • Horovod •
DeepSpeed • NCCL •
OpenMPI

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.
**Winner@2019 Hack the
North**
Winner@2019 EngHack