

HANSON LIU

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EDUCATION

University of Toronto

Sept. 2021 - April 2026

BASc - Engineering Science (Machine Intelligence Specialization)

Toronto, ON

Relevant Courses: Data Structures & Algorithms, Databases, Operating Systems, Software Engineering, Machine Learning, Artificial Intelligence, Neural Networks

WORK EXPERIENCE

Amazon Web Services (AWS)

May 2025 - Aug 2025

Software Engineer Intern

Toronto, ON

- Developed an AWS Site Manager to track AWS sites globally, with **React** and **DynamoDB** for scalable storage and querying.
- Integrated **AWS Location Services** for interactive mapping and visualization, and enforced secure access with **IAM** and **Cognito**.
- Implemented new features to enhance functionality beyond legacy tools, including bulk update, event calendars, and alarm response SLAs.

Independent Electricity System Operator (IESO)

May 2024 - April 2025

Power System Engineer Intern

Toronto, ON

- Published an internal data conversion tool with **Python** for IESO's monthly network model build (NMB), reducing build time by **2+** hours and benefiting **100+** employees.
- Engineered a data pipeline using **Python** to efficiently ingest **15+** years of **Tableau** and **Microsoft Access** data into a centralized **Oracle** Database, improving data accessibility for **120+** employees across multiple teams.
- Built a **Python** tool to perform SPS (.sps) to VSAT (.vsa) file format conversion.

SuperHairPieces

May 2022 - Aug 2022

Software Engineer Intern

Toronto, ON

- Developed responsive web pages for **40,000+** monthly users with **HTML**, **CSS**, and **JavaScript**.
- Implemented a **Python** program with **pandas** to parse company product data from **CSV** to **JSON**.
- Built a **PHP** app with **RingCentral** and **Google APIs** via **OAuth 2.0** to automate phone call tracking and storage.

LEADERSHIP

University of Toronto Machine Intelligence Student Team (UTMIST)

Toronto, ON

Project Manager

Sept. 2022 - April 2023

- Spearheaded the development of the Hack the MIST website with **React**, **TypeScript** and **Chakra UI**.
- Led the front-end team of **5** developers: hosted weekly meetings, delegated tasks, and assigned deadlines.
- Oversaw cross-functional efforts with the marketing and logistics teams, ensuring cohesive information and design.

PROJECTS

Weight Initialization on Semantic Segmentation



- Evaluated GradInit, Kaiming, Xavier, Zero weight initialization on semantic segmentation using FCN32s and the PASCAL VOC 2012 dataset.
- Integrated GradInit into segmentation tasks, showing competitive performance and validating its model-agnostic claims.
- Achieved highest validation accuracy with Zero Initialization, prompting novel insights into task-specific weight dynamics

Kidney Image Segmentation



- Developed a refined Feature Pyramid Network (FPN) with SE-ResNeXt-50 (32×4d) backbone for automated kidney blood vessel segmentation using HiP-CT data.
- Outperformed standard U-Net by leveraging multi-scale spatial features, squeeze-and-excitation blocks, and transfer learning from ImageNet.
- Achieved a DICE validation score of 0.7490 after early stopping; identified partial segmentation issues and proposed future improvements in loss functions, augmentation, and hyperparameter tuning.

TECHNICAL SKILLS

Languages: Python, TypeScript/JavaScript, C/C++, SQL, HTML/CSS, MATLAB

Frameworks/Libraries: React, Node, Firebase, PyTorch, NumPy/pandas

Tools: AWS, Git/GitHub, VS Code, Figma, MS Office