

Stanley Z. Hua

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EDUCATION

University of Toronto

Toronto, CA

Honours BS Computer Science Specialist, Statistics Minor (GPA: 3.86/4)

Sept. 2019 – May 2024 (Expected)

TECHNICAL SKILLS

Languages: Python, SQL, Shell Script, Git, Javascript, HTML/CSS, C/C++, Java, R, Assembly

Software Tools: Airflow, AWS, Docker, GitHub, Redis, Figma

Data Skills: Data Engineering, Data Visualization, Machine Learning, Computer Vision, NLP

Python Libraries: Pandas, NumPy, Matplotlib, Dask, Ray, psycpg2

ML Libraries: PyTorch, Tensorflow, Scikit-Learn, MLFlow

CV/NLP Libraries: Transformers, Langchain, Guardrails, nltk, OpenCV

EXPERIENCE

Data Science Intern

June 2023 – Sept. 2023

Wealthsimple

Toronto, CA

- Designed, implemented and deployed model to an API endpoint that detects if a user entered invalid account details when initiating an account transfer, potentially saving \$12M in flagged transfers annually.
- Coleading project to create a general-purpose text labeling engine using LLMs. Defined requirements, tested various prompting strategies and added output validation with guardrails.

Junior ML Specialist

May 2022 – Aug. 2023

The Hospital for Sick Children

Toronto, CA

- Showed that (MoCo) self-supervised pretraining improves in-domain **and** out-of-domain generalization for view labeling task on renal ultrasound videos.
- Implemented CNN to forecast ER patient volumes, and explored Bayesian methods for confidence interval estimation (GP, Bayesian NNs).

Software Engineer Intern

May 2022 – May 2023

Intel Corporation

Toronto, CA

- Refactored a core tool that allows users to easily access data for benchmarking experiments from the database and file system, resulting in improved code architecture, efficiency, test coverage (99%) and backwards-compatibility.
- Saved over 1.5K hours of cloud compute, by developing a tool (in Python/SQL) to estimate runtime of queued benchmarking jobs to prevent users from abusing the high priority job queue.
- Constructed a ChartJS dashboard to monitor the number of CRON jobs starting every hour, and a tool to assist in rescheduling CRONs. This led to a decrease in volume of jobs launched per minute, increasing stability of jobs.

AI Research Student

Sept. 2021 – May 2022

The Hospital for Sick Children (Goldenberg Lab)

Toronto, CA

- Adapted video-based deep learning methods (Conv.Pooling, CNN-LSTM, TSM) to predict the need for kidney surgery from medical (ultrasound) images taken over multiple hospital visits using PyTorch.
- Demonstrated positive finding that single-visit conv. models are enough to predict the need for surgery.

AI Research Student

May 2021 – Sept. 2021

University of Toronto (Moses Lab)

Toronto, CA

- Created the **CytoImageNet** dataset (890K images, 894 classes) from 20 TB of open-source microscopy images.
- Showed that CytoImageNet-pretrained features are competitive with ImageNet features on downstream datasets.
- The CytoImageNet dataset has attracted attention on Kaggle (10696 views, 526 downloads).

ML Research Student

Jul. 2020 – Jul. 2021

University of Toronto (Tyrrell Lab)

Toronto, CA

- Investigated the effect of dimensionality reduction (PCA, autoencoder) on clustering (K-Means, DBSCAN, Agglomerative) of medical images under small sample sizes using Tensorflow-Keras and scikit-learn.
- Performed data cleaning and validation of 3D brain MRI images using FSL and Python NiBabel

PUBLICATIONS

Hua SBZ, Lu AX, Moses AM. CytoImageNet: A large-scale pretraining dataset for bioimage transfer learning. NeurIPS Workshop on Learning Meaningful Representations for Life. 2021 Dec.

Hua SBZ, Rickard M, Weaver J, Xiang A, Alvarez D, Velear KN, Sheth K, Tasian GE, Lorenzo AJ, Goldenberg A, Erdman L. From Single-Visit to Multi-Visit Image-Based Models: Single-Visit Models are Enough to Predict Obstructive Hydronephrosis. 18th Symposium on Medical Information Processing and Analysis (SIPAIM). 2022 Nov.

CONFERENCE POSTERS

Supervised Contrastive Learning for Improved View Labeling in Pediatric Renal Ultrasound Videos
ISBI 2023 (Cartagena, Colombia)

***Longitudinal Image-Based Prediction of Surgical Intervention in Hydronephrosis Patients: Perhaps Earlier Decision-Making Is Possible!**

ESPU 2023 (Lisbon, Portugal)

*Not presenter

INVITED TALKS

CytoImageNet: A large-scale pretraining dataset for bioimage transfer learning

Models, Inference & Algorithms Seminar, Broad Institute

Boston, USA, October 25th, 2023

HONORS & AWARDS

2023 **Samuel Beatty Fund Travel Grant**, \$600 (Declined)

2021 **University of Toronto CSB Undergraduate Research Award**, \$4000

2020-22 **Dean's List Award**

2021 **The F. M. Hill Scholarship in Biology**, \$1100

EXTRACURRICULAR ACTIVITIES

Teaching Assistant June 2021 – Aug. 2021
University of Toronto – Independent Summer Statistics Community Toronto, CA

- Organized data science - related workshops for undergraduate statistics students.
- Presented hands-on workshop introducing the Pandas library.

Club President & Founder Sept. 2021 – Sept. 2022
University of Toronto – Offline Toronto, CA

- Led a team to build an online community of 200+ undergraduate students on Discord during the pandemic.
- Hosted multiple game nights and movie nights.

Events Coordinator May 2020 – May 2021
University of Toronto – Table Tennis Club Toronto, CA

- Led new initiatives to increase social media presence (sharing table tennis matches, player highlights, infographics)

General Council Member Sept. 2020 – May 2021
University of Toronto – Bioinformatics & Computational Biology Student Union Toronto, CA

- Assisted in planning of online social activities for bioinformatics undergraduate students.

Volunteer Chess Teacher Aug. 2020 – Aug. 2020
Kensington Health – Second Mile Club Toronto, CA

- Organized, promoted and hosted two beginner chess workshops for seniors.

Volunteer Photographer Feb. 2020 – Feb. 2020
West Neighborhood House Toronto, CA

- Helped promote the non-profit's community services through capturing photos and videos.