

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: GitHub, Perforce, AWS, Azure ML

Data Skills: Data Preprocessing, Data Visualization, Machine Learning, Computer Vision

Python Libraries: Pandas, NumPy, Scikit-Learn, PyTorch, Tensorflow, Matplotlib, Dask, psycopg2, OpenCV

EXPERIENCE

Junior ML Specialist

May 2022 – Present

The Hospital for Sick Children

Toronto, CA

- Showed that (MoCo) self-supervised pretraining improves in-domain **and** out-of-domain performance on view labeling for 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 (9244 views, 509 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.

FIRST-AUTHOR PUBLICATIONS

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

NeurIPS 2021 *LMRL* Workshop (Online)

From Single-Visit to Multi-Visit Image-Based Models: Single-Visit Models are Enough to Predict Obstructive Hydronephrosis

SIPAIM 2022 (Valparaíso, Chile)

CONFERENCE POSTERS & PRESENTATIONS

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