Stanley Z. Hua

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Education

University of Toronto — Toronto, CA
H. BSc. in Computer Science (GPA: 3.84/4) — *Sept. 2019 – Present*

Experience

Student Researcher — Sept. 2021 – Present
The Hospital for Sick Children (Goldenberg Lab) — *Toronto, CA*

- Adapting state-of-the-art DL methods for video modeling (Conv.Pooling, CNN-LSTM, TSM) using PyTorch to improve prediction of a kidney disease from medical images (ultrasound) taken over multiple hospital visits.
- Selected models based on performance on various metrics (AUROC, AUPRC).

Student Researcher — May 2021 – Sept. 2021
University of Toronto (Moses Lab) — *Toronto, CA*

- Curated a large-scale dataset **CytoImageNet** (890K images, 894 classes) from 20 TB of open-source microscopy images (and tabular metadata) using pandas, numpy and opencv.
- Pretrained convolutional deep learning models (EfficientNetB0) on CytoImageNet using Tensorflow and Keras, providing biologists a new means to extract information from microscopy images.
- Research paper accepted and poster presented at NeurIPS 2021 LMRL workshop.
- CytoImageNet attracted attention on Kaggle (2200 views, 150 downloads) within the first 3 months of publishing.

Student Researcher — Jul. 2020 – Jul. 2021
University of Toronto (Tyrrell Lab) — *Toronto, CA*

- Evaluated the robustness of clustering (K-Means) extracted image features under varying dimensionality (PCA) using scikit-learn and Keras.
- Improved a method for measuring data heterogeneity's effect on convolutional model training.

Projects

Matrix: A Math Worksheet Generator Application | *Java, Git* — Sept. 2021 – Dec. 2021

- Using Git version control, worked in a team of six to create an application that generates math worksheets.
- Designed code for local storage/retrieval of user info & history using Dependency Injection and Facade patterns.
- Refactored equation generation code to remove redundancy (following Strategy design pattern).
- Implemented automated testing using Apache Ant.

RANZCR CLiP Competition | *Tensorflow, Keras, Pandas, NumPy* — Jan. 2021 – Mar. 2021

- Trained convolutional deep learning models (EfficientNetB4, ResNet50) to predict the improper placement and/or imaging of catheters in chest x-rays. Achieved an AUROC of 0.87, scoring higher than 200 teams.

Technical Skills

Languages: Python, R, SQL, Shell Script, Java, Git, HTML/CSS, Assembly, C
Technical Skills: Version Control, Data Cleaning, Data Visualization, Dimensionality Reduction, Feature Selection, Clustering, Deep Learning
Python Libraries: pandas, dask, numpy, matplotlib, tensorflow, keras, pytorch, scikit-learn, PIL, open-cv
R Libraries: tidyverse, dplyr, ggplot2, shiny, blogdown, rvest

Honors & Awards

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

Conference Presentations

CytoImageNet: A large-scale pretraining dataset for bioimage transfer learning
NeurIPS 2021 (Learning Meaningful Representations of Life Workshop)