Tony Xu

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Education

University of British Columbia — Year 3/4, expected May 2022
BASc Electrical-Biomedical Engineering, Minor in Physics — Cumulative GPA: 3.9/4.0

Nanyang Technological University — January 2020 - May 2020
Electrical Engineering International Exchange — Cumulative GPA: 4.9/5.0

Skills

Languages: *Python, C, SQL, MATLAB, JavaScript*
Deep Learning: *PyTorch, Keras/TensorFlow, scikit-learn, Pandas*

Experiences

Machine Learning Engineering Intern — May 2020 - January 2021
Flex Artificial Intelligence Inc. — Vancouver, BC (Remote)

- Developed an end to end patented computer vision pipeline to detect fine-grained form errors in real world exercise videos, such as raising toes during deadlift, to provide insight on a user's exercise performance
- Researched and implemented cutting-edge approaches to 3D video data, including: 3D pose detection, spatio-temporal attention, self-supervised temporal alignment, 3D deformable convolutions, and triplet models for anomaly detection
- **Improved frame-level error classification accuracy by 17.3%** with fully completed pipeline

Summer Research Student — May 2019 - August 2019
Sunnybrook Research Institiute - Physical Sciences — Toronto, ON

- Used deep learning and computer vision techniques to analyse digitized breast cancer whole-slide images for cancer detection and classification with **PyTorch**
- Achieved **91% accuracy** on slide-level segmentation task by innovating cancer detection pipeline
- Improved accuracy of **overall pipeline by 5%** by implementing "tissue classifier" network to distinguish important cellular regions for slide-level preprocessing
- **3rd place** on 470-participant breast histology competition: BreastPathQ

Machine Learning Technical Lead and Electrical Designer — October 2018 - Present
UBC Biomedical Engineering Student Team (BEST) — Vancouver, BC

- Lead of the Multifaceted Innovations in NeuroTechnology (MINT) project ML sub-team
- Created data-acquisition pipeline and factored convolution model in **PyTorch** to analyse EEG inputs for a user-centric EEG controlled home automation application

Project Highlights

Neureka 2020 - EEG Seizure Detection github.com/Tonyxu74/eeg-seizure-detection — April 2020 - May 2020

- **4th place** on Neureka 2020 Epilepsy Challenge: an international competition on EEG seizure classification
- Implemented classifier with pretrained ResNet to determine seizure start and end in scalp EEG data using **PyTorch**
- Created full preprocessing pipeline using signal processing with a Short Time Fourier Transform to convert signal to a denoised heatmap of frequency versus time for model input

Famous Author Natural Language Generation github.com/Tonyxu74/famous-author-nlg — March 2020 - May 2020

- Final project for EE4497 - Pattern Recognition in Machine Learning course during exchange at NTU on investigating increasingly complex language models on generating a text in the style of a famous historical author
- Implemented Markov Chains, RNN, and LSTM in **PyTorch**, fine-tuned on pretrained GPT-2

Awards

Jim and Helen Hill Memorial Service Award in Electrical Engineering — February 2020
20th nationwide on IEEEXtreme 13.0 programming competition — October 2019
NSERC Undergraduate Student Research Award — July 2019
Trek Excellence Scholarship for top 5% standing in faculty — September 2018, 2019