Brandon Rufino

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EDUCATION

UNIVERSITY OF TORONTO
MHSc, CLINICAL ENGINEERING
Research Supervisor: Elaine Biddiss
Class of 2021 | Toronto, ON
At Holland Bloorview Kids Rehab Hospital I am developing an audio detection interface that can accurately distinguish musical inputs with real-life instruments to support active participation in arts, music, and therapy.

MCMASTER UNIVERSITY
B.E. ELECTRICAL & BIOMEDICAL ENGINEERING | GPA: 3.9/4
Class of 2019 | Hamilton, ON

AWARDS

The McMaster Honour Awards
The University (Senate) Scholarship
The Deans' Honour List

CERTIFICATIONS

Data Science by Harvard University, offered through edX
Machine Learning by Stanford University, offered through Coursera

SKILLS

PROGRAMMING
Python • Matlab • Java •C++ •Android Studio •HTML •R • C# •postgreSQL

CAD
Cadence Virtuoso • Autodesk Inventor

COURSEWORK

ELECTRICAL ENGINEERING
Data Structures, Algorithms and Discrete Mathematics
Digital Signal Processing
Image Processing
Microprocessor Systems
Communication Systems

BIOMEDICAL ENGINEERING
Machine Learning for Health
Biostatistics
Anatomy and Physiology
Modelling of Biological Systems
Biomedical Instrumentation
Medical Imaging

PROJECTS

MULTIPLE SCLEROSIS ANALYTICS | Machine Learning for Health
University of Toronto & St. Michael's Hospital
In this work, we present a pre-trained BERT model, MS-BERT, built on top of BlueBERT and a classifier, which extracts multiple sclerosis scores given consult notes. Our classifier is observed to achieve state-of-the-art performance on all metrics and prediction tasks. We also demonstrate the usefulness of our model as a scoring tool by conducting semi-supervised labelling on our unlabelled data set.
Hyperlink: Published Model Weights

INTERPRETAR | Biomedical Engineering Capstone
McMaster University | Hamilton, ON
Awarded: James Dyson National Runner-Up
Awarded: McMaster's ECE Capstone Most Innovative Design
This project uses Microsoft Cognitive Services, Blender Animations, Unity Gaming Engine, OpenCV, and Android Studio to create an application that translates speech input into American Sign Language (ASL) real time through an Augmented Reality (AR) approach. **Hyperlink: interpretAR's website**

MOVIE RECOMMENDATION SYSTEM | Data Science Capstone
HarvardX offered through edX
Using MovieLens 10M data-set, this recommendation system goes through several machine learning stages such as: data extraction/cleaning, data visualization, data preprocessing, and model tuning/performance in R. **Hyperlink: Movie Rec. System**

RESEARCH

INSTRUMENT CLASSIFIER | PEARL Lab
Summer 2019 | Holland Bloorview Kids Rehab Hospital
- Improved robustness of algorithms for detecting/classifying families of instruments through the use of Support Vector Machines
- Completed: data collection, feature extraction, and tuning hyperparameters
- Translated classifier from MATLAB & Python into C# for Unity implementation

INDUSTRY

MIXED SIGNAL CUSTOM LAYOUT | Advanced Micro Devices
May 2017 - Aug 2018 | Markham, ON
- Layout design of digital and analog circuits using analog transistor level components. Verification of layout using Cadence and Calibre tools
- Took ownership of designing a Voltage Controlled Oscillator and brought it up to specifications to toggle at required frequency with appropriate bandwidth
- Creation of black-box models for other groups in the design flow

TEACHING

SOFTWARE DESIGN | University of Toronto
ECE297 | Jan 2020 - Current | C++
CSC207 | Sept 2019 - Dec 2019 | Android Studio & Java

HEALTH SOLUTIONS DESIGN PROJECT | McMaster University
Sept 2018 - April 2019 | Python & Autodesk Inventor

DESIGN AND GRAPHICS | McMaster University
Jan 2016 - April 2017 | Autodesk Inventor