

EDUCATION AND TRAINING

University of Toronto

Graduation: June 2018
GPA: 4.0

MSc in Applied Computing (MScAC)

Relevant Coursework: Machine Learning, Knowledge Representation & Reasoning, Algorithms for Genome Analysis, Human-Computer Interaction.

Technical Skills: Python (2yrs), Git, C++(1yr), Keras, Tensorflow.

University of the Andes, Colombia

Graduation: October 2015
GPA: 4.3/5.0

BS. Biomedical Engineering

Relevant Coursework: Computer Vision, Image Processing and Analysis, Programming and Software Development, Signal Processing & Instrumentation, Circuit Design.

Technical Skills: MATLAB (3yrs), Git, C++(2yr), R.

WORK EXPERIENCE

Surgical Safety Technologies, Toronto

Deep Learning Engineer

January 2018 - Present

- Designed the machine learning database structure using **SQL** for usage of the AI team.
- Developed a convolutional LSTM that classifies 14 surgical phases with 89.03% accuracy using **Python** with **Keras**.
- Increased speed of neural network object detection model from 7fps to 28fps by identifying CPU/GPU bottlenecks through code profiling and increasing batch size in **Tensorflow**.
- Facilitate the progress of machine learning team projects by managing the development process and resolving impediments through **Agile Project Management**.
- Facilitate and lead **Google Venture's Design Sprint** workshop with corporate team leaders to align frameworks and machine learning model goals.

Computer Science Research Intern

May 2017 - December 2017

- Trained an object detection neural network using **Python** and **Tensorflow** that achieved 96.94% mAP for heads in operating rooms.
- Reduced annotation time by a factor of 6 by deploying head detection neural network into workflow using **Python**.
- Created a dataset containing 10,000 heads from different operating rooms to train, validate and test the algorithm.
- This internship was supported by Mitacs through the Mitacs Accelerate Program.

NOA Wearables, Bogotá, Colombia

Biotechnology Research Partner, Co-founder

January 2015 - May 2016

- Designed and developed circuitry and determined appropriate electrode placement according to anatomical and physiological features.

University of the Andes, Colombia

Graduate Research Assistant for the Biomedical Engineering Department

June 2015 - August 2015

- Developed a Convolutional Neural Network to detect and classify lung nodules on CT scans with 62% accuracy using **Caffe**.
- Wrote and organized a grant application for research funding through Colciencias (Government Science Department).

PUBLICATIONS

De La Vega, J. and Fauveau, V. (2015)
Determination of the malignancy of melanocytic lesions using ABCD criteria in a CAD system.
STSIVA XX, Pontifical Xavierian University, Bogotá.

HONOURS AND AWARDS

Mitacs Accelerate

May 2017 - December 2017

Grant for Applied Research Internship at Surgical Safety Technologies Inc. for the development of an object detection neural network for the operating room.

Colfuturo

June 2016

Elected as a beneficiary of the scholarship - loan program to finance graduate studies abroad. A total of 1000 students were selected from a pool of 2500 applicants.

STSIVA XX: Best Undergraduate Poster

September 2015

Poster presenting a course project created in **MATLAB** to determine the malignancy of melanocytic lesions using a Support Vector Machine.

3rd Best GPA in Biomedical Engineering Graduating Class

October 2015

Had the third best GPA out of the Biomedical Engineering Students graduating on 2015.

TECHNICAL SKILLS

Programming Languages

Python, C, C++, Matlab.

Tools

Git, Tensorflow, Numpy, SciKit, Keras.

Electronics Skills

Circuit implementation and design. Instrumentation. Signal processing

PROJECTS EXPERIENCES

[CSC2514] Human-Computer Interaction, Group Project

March 2017

Used **Android Studio** to create a nutrition app, where users could scan a food product's barcode, and obtain charts that display the 'healthiness' of a given product.

[CSC2542] Knowledge Representation and Reasoning, Project

November 2016

Used **Python** to implement a Monte-Carlo Tree Search for the computation of multiple sequence alignment using SABRE, a protein MSA benchmark.

[IBIO3780] Final Project, Dissertation

November 2014 - July 2015

Implemented computer vision algorithm to detect lung nodules with a spherical kernel and classify proposals with a Support Vector Machine, which achieved 96.75% recall using **MATLAB**.

[IBIO3470] Image Analysis and Processing, Group Project

November 2014

Used **MATLAB** to create a melanocytic nevus (birthmark) Support Vector Machine classifier, that allows users to upload a photo and obtain whether or not the nevus in the photo is malignant. The classifier achieved an accuracy of 72%.

OTHER EXPERIENCE

Professional Development

- Attended Canadian Conference for Women in Computing Can-CWIC (2017).
- Attended Google Summit for Women in Computing at Google Waterloo (2017).
- Attended Compute Ontario Summer School, Central Location, certificate awarded (2017).
- **Online Courses:** Neural Networks and Deep Learning. Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization. Introduction to Swift Programming. iOS App Development Basics. Statistical Analysis of fMRI Data. Decision Skills. Algorithms Design and Analysis. Differential Equations.

ACTIVITIES AND LEADERSHIP

[Rotaract] Member

Sept. 2017 - Present

- Volunteer in activities which help vulnerable sectors of the community.
- Clean and restore old laptop computers to be donated to the First Nation communities (June 2018).
- Help prepare and serve meals at Fort York Food Bank the last Saturday of every month.
- Assist in fundraising events.

ADDITIONAL INFORMATION

Languages

Spanish, and English