Cameron Dufault

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Education

Bachelor of Engineering, Software Engineering Co-op, 4th Year **Class of 2023**
McMaster University

- Cumulative GPA of 3.76 on 4.0 scale, or 10.8 on 12-point scale
- GPA of 3.96 on 4.0 scale, or 11.7 on 12-point scale in courses taken in last 3 years (Jan 2020 – Dec 2022)

Research Experience

Lunenfeld-Tanenbaum Research Institute, Kieran Campbell Lab
Undergraduate Research Student **May 2022 – Present**

- Built single-cell RNA sequencing data analysis pipeline and applied machine learning techniques for identifying gene expression patterns in tumour samples with R
- Investigating whether individual cells are stratified by cancer superclasses previously identified with bulk RNA seq analysis
- University of Toronto SUDS Research Program Scholar, supervised by Dr. Kieran Campbell and Dr. Rod Bremner

McMaster University, Nathan Magarvey Lab
Research Assistant, Part-Time **September 2021 – January 2022**

- Developed C# application for automatic control of lab equipment through real-time analysis of mass-spectrometry data

Undergraduate Bioinformatics Research Assistant **May 2020 – April 2021**

- Developed tool using Transformer-based natural language processing models to predict enzyme function from amino acid sequences
- Lead project to build de novo DNA sequence assembly tool combining existing bioinformatics methods with information extracted from transformer models trained on DNA sequences
- Performed deep learning tasks such as pre-training, fine-tuning, and dimensionality reduction
- Gained extensive experience with Python, Pandas, PyTorch, Weight & Biases, and Unix

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Professional Experience

Borealis AI
Machine Learning Software Engineer Co-op **January 2022 – April 2022**

- Worked with ML researchers and engineers on pricing financial products with deep learning
- Added features to pipeline for training and serving deep learning models
- Built automatic model documentation tool and wrote report on neural network optimization techniques

RBC
Data Scientist Co-op **May 2021 – August 2021**

- Member of AIOps group, working to develop ML models and tools for monitoring technical infrastructure
- Added features to, debugged, and deployed ML-oriented Python-based applications on Unix VM's
- Performed data processing and dataset creation using Python and Pandas

Enedym Inc. **May 2019 – August 2019**
Software Developer Co-op Student

- Developed, tested, and optimized application for the development of electric motors, primarily using MATLAB
- Tested and applied many optimization algorithms to determine optimal method of calculating motor parameters
- Achieved 95% total improvement in application runtime

Volunteer

McMaster Artificial Intelligence Society

Director of Projects **May 2021 – April 2022**

- Oversaw and advised all technical projects undertaken by the society's projects team of ~20 students
- Met with McMaster faculty to discuss their research and find opportunities for collaboration with the society
- Under my leadership the projects team finished multiple projects helping advance McMaster faculty research and teams presented their work at our end-of-year Project's Expo, judged by AI industry experts

Project Leader **May 2020 – April 2021**

- Lead team of students to build Python-based application using deep learning to detect and characterize tumours in 3-D brain MRI imagery
- Reviewed academic literature on computer vision, neuroradiology, and current MRI segmentation methods
- Collaborated with McMaster Radiology faculty to analyze and process real-world patient data

Selected Projects

Radiology-and-AI

- Used computer vision/deep learning to segment and characterize brain tumours in 3-D neuroimaging data
- Research project in collaboration with McMaster neuroradiology researcher

SafetyVision

- Application for automatic detection of safety hazards in industrial environments using computer vision and Raspberry Pi monitoring devices
- Software Engineering Capstone project where I served as project leader, awarded 3rd place by judges
- Developed automatic computer vision classification model training system, and our model serving API

Honours

McMaster Software Engineering Capstone Project Expo 3rd Place **2022**

McMaster Deans' Honour List **2018, 2020**

- Awarded for having GPA above 9.5 in previous academic year with over 30 course units completed

McMaster Presidents Award Entrance Scholarship **2017**

- Awarded for having entering average of 95% or above
- $2500 Value