

## EDUCATION

### University of British Columbia

*Master's in Electrical and Computer Engineering*

September 2021 – December 2022

*Bachelor's in Engineering Physics*

September 2015 – April 2021

- Coursework: Data Structures and Algorithms, Object-oriented Programming (OOP), Computer Science, Linear Algebra, Probability and Statistics, Statistical Signal Processing, Reinforcement Learning, Relational Databases, Machine Learning, Data Mining
- Awards: Trek Excellence Scholarship, Outstanding Student Award, Dean's Honour List

## EXPERIENCE

### Ubisoft

*Physics Programmer*

June 2020 – August 2021

- Reduced fluid simulation time for Ubisoft internal physics engine by up to 90% by implementing a new algorithm on GPU using C++ and Shader, leading to a co-authored publication in [ACM SIGGRAPH](#)
- Designed a novel data structure to efficiently process raw 3D mesh data and innovatively uncovered a new use case by extending proposed numerical solver from 2D grid space to 3D surface meshes, leading towards an interactive prototype in Python
- Built a framework on top of C++ and Python that enabled AI researchers to train deep neural networks on-the-fly in PyTorch

### University of British Columbia

*Graduate Research Assistant (Data Scientist)*

October 2020 – Present

- Developed a fully dockerized E2E data pipeline in Python that trained ML models from various data sources to generate a high-resolution land usage spatial map using H2O.ai, GDAL, CUDA, MLflow, ready to be used by over 2,000 agricultural researchers

*Undergraduate Research Assistant (Deep Learning)*

January 2019 – November 2019

- Increased forecasting accuracy on over 20,000 real-world seismic responses to earthquakes by ~30% by developing a new multi-scale attention RNN architecture in TensorFlow for sensor location recommendation
- Developed state-of-the-art prediction models for benchmarks, including an LSTM stack and a CNN as part of the above task, collaborating on 2 publications in [Computers & Structures](#) and [IEEE TSMC: Systems](#)
- Co-invented an information-based hierarchical path planning algorithm under a sensing network in R which achieved ~135% better performance than existing methods, publishing in [IEEE Systems Journal](#)

### Robert Bosch

*Research Intern*

June 2018 – December 2018

- Developed software packages to automate probe station control, reducing characterization time of optional MEMS by 70%
- Implemented a GUI and a motion-based computer vision algorithm (SURF) for scope camera view stitching in MATLAB
- Applied unsupervised learning techniques on a POC design in recognizing and clustering membrane homogeneity
- Led Bosch Optics Team to make data driven purchase decision by prototyping, analyzing, and stress testing reproducible metrology for light bulb spectral characterization

### BC Children's Hospital

*Data Analyst Intern*

January 2017 – April 2017

- Redesigned OR booking form using VBA with self-verification features, improving data entry accuracy and completeness to 100%
- Conducted EDA on Narcotic Audit using VBA and Microsoft Excel, presenting analytics and visualization on doses mismatch issues

## PROJECTS

### DEEPPFAKE

*Python, HTML, CSS, JavaScript, Bash, Docker, PyTorch, OpenCV, Flask, GAN, Computer Vision, Cloud*

July 2022 – Dec 2022

- Enhanced fidelity of partial deepfake images by ~60% in MOS by modifying StyleMapGAN through a novel data processing pipeline
- Built a subjective test survey web app using Flask, HTML, CSS, JavaScript and Python, tested using Locust framework
- Developed and trained a ResNet detector on distributed computing systems, achieving ~10% improvement on SOTA benchmark

### MOCAP

*Python, PyTorch, GCN, VAE*

January 2022 – April 2022

- Improved human pose in-painting accuracy by ~15% by integrating VAE into a GCN based multi-scale generation model
- Collaborated with research teams to deliver ablation studies on models investigation

### POKÉDB

*Java, JDBC, Oracle, SQL*

January 2020 – April 2020

- Built a windows relational database application using JDBC and Oracle to provide query and analytics tools for pokémon players

## TECHNICAL SKILLS

**Languages:** Python, C, C++, R, Java, JavaScript, MATLAB, HTML, CSS, SQL, YAML, Bash

**Tools:** Git, Agile, JIRA, Trello, Docker, Google Cloud Platform, Pandas, Jupyter, Scikit Learn, PyTorch, Tensorflow, GDAL, QGIS, MLflow, Airflow, Kubernetes, Tableau, CI/CD/CT