BANG CHI DUONG

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Skills

- **Languages:** Python, R, C++, Java, Javascript, SQL, HTML5, CSS3, Perl
- **Frameworks:** React, Bootstrap, Typescript, NodeJS, Express, TensorFlow
- **Machine Learning:** Generalised Linear Model, Classification/Regression, Dimension Reduction Analysis

Education

- **University of British Columbia** — Vancouver, Canada
  Bachelor of Computer Science (BCS); GPA: 82.70/100.00 — *Sep 2017 – Apr 2020*
- **University of Guelph** — Guelph, Canada
  Master of Bioinformatics; GPA: 91.00/100.00 — *Sep 2016 – Aug 2017*
- **University of Toronto** — Toronto, Canada
  Bachelor of Science (Hons) in Physics, Statistics and Chemistry; GPA: 3.73/4.00 — *Sep 2012 – Aug 2016*

Experience

- **Ubisoft - La Forge** — Montreal, Canada
  AI Programmer — *Sep 2018 – Dec 2018*
  - **Data Acquisition - Maya nCloth:** Generated and extracted a pool of cloth and soft body data (seven different setups) using Maya nCloth engine, and capture a wide range of dynamics, including self-collisions, external collisions with rigid bodies, and effects of external forces such as wind strength, noise, and directions
  - **Deep Learning - Python:** Trained neural networks within a cloth's compact linear subspace of 256 bases compressed from a 7,500-9,000 degrees of freedom full-space to learn cloth's non-linear dynamics from seven different systems including soft bodies, used the learned model to predict cloth's future motion trajectory from interactions with external objects, and efficiently predicted cloth vertex normals at runtime using a linear model
  - **Interactive Runtime Application - C++:** Integrated the learned models into a C++ runtime application where users control external objects such as ball, wind, and fully-meshed character to interact with cloth and soft-body objects in real-time, taking into account runtime and memory usage optimisations including CPU-GPU memory transfer and subspace decompression on GPU
  - **Result:** Combined data driven techniques and subspace methods to achieve a realistic and high performance interactive application simulated in real-time, with upto 5,000 times speedup compared to the ground truth offline physics simulation time in Maya, in exchange for some extra memory usage and expensive precomputations
- **Structural Genomics Consortium (SGC)** — Toronto, Canada
  Bioinformatics Analyst — *May 2017 – Aug 2017*
  - **Visualisation:** Analysed sequencing data using R, with graphical visualisations such as multidimensional scaling, principal component plot, heatmaps, and volcano plots, supported by different R packages such as ggplot2, limma, and edgeR
  - **Differential Analysis:** Constructed Generalised Linear Models and a Peptide-based Model, resulting in about 1,000 differentially expressed genes (RNA-Sequencing data) out of a pool of approximately 13,600 genes, and about 200 differentially expressed proteins (proteomic data) out of a pool of approximately 4,500 proteins

Projects

- **Movie Review Web App - JavaScript/React/Bootstrap/NodeJS:** Find movies using API of The Movie Database (TMDb); write own reviews, find and follow others' reviews; **https://cs490-project-movie.herokuapp.com/**
- **Car Detection - Python:** Detect cars in images using Linear-SVM model on features extracted from HOG method
- **Lossy Image Compression - C++:** Compress images using space partitioning trees, specifically 2-D trees
- **Convex Hull - C++:** Find a convex hull, and an intersection region (if exists) of a convex polygon with an arbitrary polygon in images, using Graham Scan and Sutherland-Hodgman algorithms
- **Classification Methods - R:** Predict cancer severity as malignant or benign, on a mammographic dataset, using k-fold cross-validation to compare multiple classifiers: logistic regression, linear and quadratic discriminant analyses, support vector machine, random forest, adaptive boosting, and k-nearest neighbours