

## EDUCATION

### University of British Columbia

M.Sc., Computer Science

Vancouver, BC  
2020-2022 (projected)

- Advisor: Dr. Nicholas Harvey

### B.Sc., Double Major: Honours Computer Science, Major Statistics

2015-2020

- 4.33/4.33 GPA (Distinction)
- Undergraduate Hons. Thesis: "Restricted-dimension subgradient descent: asymptotic bounds on error", supervised by Dr. Nicholas Harvey

## EXPERIENCE

### Google Vancouver, BC (Remote) | Software Developer Intern

Summer 2020

- Designed and implemented unsupervised learning (clustering) algorithms for geospatial data in Google BigQuery as part of the BigQuery GIS team.

Worked with: C++, Google BigQuery

### Google Mountain View, CA | Software Engineering Intern

Summer 2019

- Worked on Google Earth Engine, a data platform provided by Google for geospatial analysis at scale.
- Designed and developed a cloud application allowing users to query Earth Engine assets using the open Web Map Tile Standard.

Worked with: Python, Flask, Google App Engine, Java

### Cockroach Labs New York, NY | Backend Engineering Intern

Summer 2018

- Improved the performance of a class of delete operations by a factor of 1 billion.
- Developed a workload simulator for testing the performance of a geo-distributed CockroachDB cluster.
- Introduced programming language features in CockroachDB for compatibility with PostgreSQL semantics.

Worked with: Go, Git

### Splunk Vancouver, BC | Software Developer Intern

Summer 2017

Worked with: Scala, Python, React.js, PostgreSQL, Docker, Git

### Hootsuite Vancouver, BC | Software Developer Intern Software Developer Intern, Platform Team

Summer 2015, Summer 2016  
Vancouver, BC

Worked with: Scala, React.js, Python, Ruby, Mesos, Docker, Git

## SELECTED PROJECTS

### Twitter Clustering Project

<https://emsal.me/blog/4>

- Conducted a machine learning analysis using Python and Julia.
- Implemented the ISOMAP clustering algorithm on a social network graph structure to identify distinct groups.

### This Pokémon Does Not Exist

[https://github.com/emsal1863/pkmn\\_doesnotexist](https://github.com/emsal1863/pkmn_doesnotexist)

- Developed a machine learning project in TensorFlow that uses a variational autoencoder to generate novel Pokémon sprites. Entered into nwHacks 2020.

### Resolvplex

[https://github.com/emsal1863/resolvplex\\_alt](https://github.com/emsal1863/resolvplex_alt)

- Created a DNS proxy written in Go that allows users to configure their DNS resolution paths on a domain-by-domain basis.

### Socksify

<https://github.com/emsal1863/Socksify>

- Created a program written in C that allows users to run processes with all outgoing TCP traffic going through a SOCKS5 proxy.

## TECHNICAL SKILLS

- Areas of expertise: Algorithms, Machine Learning, Statistics, Backend development, Web development
- Programming languages: Python, C++, Go, Java, Scala, R, JavaScript, Julia
- Databases: PostgreSQL, MySQL