



Skills

& Technologies

Python C/C++ Golang Java Objective C Swift C# Scala SQL
Pytorch Tensorflow Unity3D OpenCV Postgres MongoDB Docker Unix Git

Work Experience

Uber Advanced Technologies Group (Toronto, ON) **Research Intern** **September 2019 – Present**

- Experimenting with novel approaches in the fields of self-driving and general machine learning (details under NDA)
- Working towards finalizing methods and results for submission to upcoming conferences (e.g. ECCV 2020)
- Implementing deep learning based computer vision algorithms using **Pytorch** and **CUDA C**

Side Effects Software (Toronto, ON) **3D Software Developer Co-op** **January 2019 – April 2019**

Houdini 17.5 launch: sidefx.com/tutorials/machine-learning-data-preparation/

- Designed an interactive **terrain generation algorithm**, mapping simple 2D sketches to realistic 3D height-fields
- Engineered a full **C++** and **Python** frontend/backend for training/deploying neural networks in **SideFX Houdini**
- Developed and tuned machine learning models to apply simulated erosion to high-res terrains, achieving similar qualitative and quantitative results (>**95%** SSIM) nearly **50,000x** faster than conventional methods
- Created an asynchronous, parallelized environment for efficient hyper-parameter space search

BlackBerry Messenger (Mississauga, ON) **Software Developer Intern** **May 2018 – August 2018**

- Refactored legacy MVC code to Clean architecture, using reactive programming principles in **Objective C** and **Swift**
- Redesigned user interface for BBM Channels and Official Accounts features on iOS

Projects

UW Flow

uwflow.com (Version 2.0 pending)

- UW Flow is the primary website for course related info and reviews at UWaterloo with over **25k** monthly users
- Working together with a small team to develop and deploy Version 2.0, with completely redesigned frontend/backend
- Building the new back-end infrastructure from the ground up with **Golang**, **Postgres**, and **Hasura** at the core
- Optimized performance by parallelizing auxiliary tasks (mass email dispatch) using **goroutines**
- Designed a new authentication server to support Facebook and Google Login using **OpenID** and **Oauth 2.0** protocols

Infinity Runner 3D Platformer

youtube.com/watch?v=rk8PiT0Al7s

- Designed a **Unity3D**, platformer game for both iOS and Android platforms, utilizing procedurally generated level design
- Defined behavior of player and the terrain using **C#** scripts attached to Blender 3D assets

Image Inpainting

youtube.com/watch?v=laq6mqo0r-E

- Developed a Unet based generative model to perform image inpainting, filling in irregular holes in natural images
- **PyTorch** implementation of partial/masked convolutions based on published research from Nvidia
- Currently maintaining code base on GitHub, investigating issues and improvements such as weight compression

EquiSurf: Computer Vision Research

- Collaborated with graduate students from the University of Toronto
- Experimented with current state-of-the-art in single image super-resolution using deep ResNet and GAN based models, studying the effect of added depth information and the semantics of the super-resolution task itself

Education

Computer Science (BCS) | University of Waterloo (3.95 GPA) | Expected Graduation: April 2022