Bob Wei

Email q25wei@edu.uwaterloo.ca
LinkedIn in/bobqywei
GitHub github.com/bobqywei
Website bobwei.ml

Skills & Qualifications

Python	C/C++	Java	Objective C	Matlab	Swift	C#
PyTorch	Unity3D	Git	GCP Compute	UNIX	Cuda	

Work Experience

Software Developer Intern | *BlackBerry Messenger* — May 2018 – August 2018

- Improved and maintained a messaging platform that reaches nearly 2 million daily-active users, working as one of the primary **iOS** developers on both the Channels and Partners teams
- Accelerated BBM iOS performance through efficient **reactive** programming design (Reactive Cocoa) and through code refactoring on the architectural level: moving from **MVC** and **MVVM** to the more dynamic **Clean** architecture
- Modernized the user experience with the complete redesign of the client-facing Channels & Official Accounts features, from the core level to the view-controller level
- Introduced picture-in-picture support for YouTube playback in BBM conversations and chat bot messages

Projects

Image Inpainting Model | *Convolutional Neural Network* — GitHub

- Developed and trained a model capable of filling in **irregular holes** in an image through a **single forward pass** (https://youtu.be/laq6mqo0r-E), making it fast and flexible enough for real world applications
- Constructed **PyTorch** model based on **U-Net** encoder-decoder architecture and the **partial convolutional** layers detailed in *Liu, G., Reda, F.A., Shih, K.J. (2018) "Image Inpainting for Irregular Holes Using Partial Convolutions"*
- Experimented with the use of ImageNet pre-trained **VGG**-based models (for feature extraction) in order to compute higher level **style loss** values, as well as with other loss functions used by *Liu et al., 2018*
- Leveraged Google Cloud Compute Cuda GPU's for training and fine-tuning the model
- Currently working on improvements such as compressing the weights for potential integration on mobile platforms and in-place batch-normalization for decreased GPU VRAM usage during training

Infinity Runner | *Mobile Game* — GitHub

- An infinite 3D platformer game for both iOS and Android platforms (https://youtu.be/rk8PiT0Al7s), developed in **Unity3D** (C#) with the use of models created in **Blender**
- Designed the endless gameplay mechanics using built-in gradient randomization and procedural generation

Volunteer Work

Research Assistant | *Brock University* — June 2016 – June 2017

- Worked in the material physics lab with Dr. Thad Harroun and his team
- Increased precision of experimental data involving energy propagation by **40%** through frequency optimization performed with **NumPy** fast fourier transforms
- Improved the efficiency of experiments by automating data collection through **PySerial** interface

Embedded Software Developer | *Waterloop* — October 2017 – April 2018

- Designed and implemented the data-transfer architecture for the sensor systems onboard the Hyperloop pod, specifically using CAN-BUS and I2C protocols
- Contributed to the redesign of the Hyperloop pod as part of Waterloop's new phase, documenting various failure scenarios for the embedded systems and the corresponding response

Education

Bachelor of Software Engineering | *University of Waterloo* — September 2017 – April 2022

Other Interests

Rowing (Crew) · Basketball · Weight Training · Graphic Design · Cool Hardware