Bob Wei

(647) 571-8079 | q25wei@uwaterloo.ca | bobqywei | bobqywei

Skills

Languages Python, C/C++, Golang, Java, JavaScript, Objective-C, Swift, C#, Scala, SQL, LateX
Frameworks Pytorch, TensorFlow, Docker, Unity3D, OpenCV, Postgres, Mongo, Django, Node.JS, Unix, Git, Google-Cloud

Experience

Nvidia
Santa Clara, CA (Remote)

Software Engineer Intern - Computer Vision — *June 2020 - Present*

- Ongoing work as part of autonomous vehicles research team

Uber Advanced Technologies Group
Toronto, ON

Machine Learning Research Intern — *September 2019 - May 2020*

- Experimented with novel methods in the fields of **self-driving** and general **machine learning** (details under NDA)
- Spearheaded the research and development of an efficient, end-to-end **neural network** for vehicle motion planning
- First authored a paper submission to the upcoming **ECCV 2020** conference
- Implemented deep learning based computer vision algorithms using **Pytorch** and **CUDA C**

University of Waterloo
Waterloo, ON

Research Assistant — *June 2020 - Present*

- Ongoing work with Dr. Poupart, investigating inverse reinforcement learning methods

Side Effects Software
Toronto, ON

3D Software Developer Co-op — *January. 2019 - April. 2019*

- Designed an interactive **terrain generation** tool, mapping simple 2D sketches to realistic 3D height-field assets
- Engineered a full **C++** and **Python** frontend/backend for training and deploying neural networks within **SideFX Houdini**
- Developed and tuned machine learning models (**cGAN**) to apply simulated erosion to high-res terrain assets, achieving similar qualitative and quantitative results (>**95%** structural similarity) approximately **50,000×** faster than conventional eroding tools
- Created an asynchronous deployment pipeling for efficient hyper-parameter search

BlackBerry Messenger
Mississauga, ON

Software Developer Intern — *May 2018 - August 2018*

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

Projects

Flow

uWaterloo Course Ratings + Reviews

- **uwflow.com** is the primary website for course related info and reviews at uWaterloo with over **25,000** monthly active users
- Built the backend infrastructure from the ground up with **Golang**, **Postgres**, and **Hasura** at the core
- Designed a new authentication flow supporting Facebook, Google, and Email login using **OpenID** and **Oauth 2.0** protocols

Reinforcement Learning Research Project

github.com/bobqywei/curiosity-driven-exploration

- An exploration of current state-of-the-art techniques for encouraging increased environment exploration in **reinforcement learning**
- Implemented baseline **Advantage Actor-Critic** algorithms and various **intrinsic curiosity** formulations
- Demonstated and confirmed significantly faster learning (>**3.0×**) in challenging **OpenAI Gym** environments with sparse rewards

Image Inpainting

github.com/bobqywei/inpainting-partial-conv

- Deep learning based image editing tool for **semantically-aware inpainting**, removing undesired objects from images
- Implemented **UNet** model with partial convolutions based on Nvidia research, providing open-source **Pytorch** code

Education

University of Waterloo
Waterloo, ON

Bachelor of Science in Honours Computer Science — *September 2017 - Present*

- Cumulative GPA: **3.95/4.0** or **91.73%**