# Peter Quinn

English, French, German (basic) peterquinn.ca Montréal, Québec, Canada

## Education

**Master of Science (Thesis), Electrical and Computer Engineering** 2019 – 2021 (exp.)
*McGill Graphics Lab / Mila, McGill University, Montréal, QC* **CGPA**: 4.00/4.00

- **Research Areas**: Differentiable Rendering, Computer Graphics and Machine Learning
- Implemented a novel differentiable ray tracer in Python using PyTorch, deployed on a Linux based servers
- Co-organized and co-hosted the 2020 GRAPHQUON workshop
- **Awards**: NSERC Canada Graduate Scholarship – Masters (CGS-M), McGill Engineering Undergraduate Student Masters Award, Graduate Excellence Fellowship

**Bachelor of Engineering, Honours Electrical Engineering** 2015 - 2019
*McGill University, Montréal, QC* **CGPA**: 3.91/4.00

- **Awards**: Dean's Honour List, Dr. Alfred S. Malowany Prize, Brodeur-Drummond Scholarship, Faculty of Engineering Scholarship, J. W. McConnell Scholarship, Motorola Foundation Scholarship

## Experience

**Teaching Assistant** Sept - Dec 2019
*Realistic/Advanced Image Synthesis, McGill University, Montréal, QC*

- Prepared assignments in a custom teaching rendering engine built in C++ and OpenGL
- Presented additional lecture material and helped students debug code during tutorial sessions

**Hardware Design Intern** May - Aug 2018
*Matrox Electronic Systems Ltd., Dorval, QC*

- Performed troubleshooting and documentation of PCBs and FPGAs for camera products for industrial applications

**Research Intern** May - Aug 2017
*Technical University of Kaiserslautern, Kaiserslautern, Germany*

- Optimized microwave antenna designs in CST Microwave Studio, then manufactured designed antennas
- Constructed an antenna measurement setup and automated measurements using LabVIEW

**Research Intern** May - Aug 2016
*McGill University, Montréal, QC*

- Designed with CAD a 3D printed system and circuitry for heating and conducting optical measurements of samples, controlled by C/Arduino interface

**Member of Power Sub-Team** 2015 - 2018
*Autonomous Underwater Vehicle (AUV) Project, McGill Robotics, McGill University*

- Designed and laid out custom microcontroller and power PCBs for autonomous robot in DipTrace

## Projects

**GPT-2 AI Generated D&D Items** Fall 2020

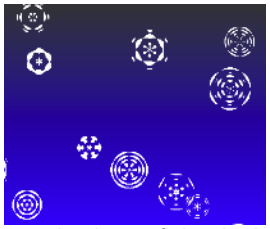
- Trained OpenAI's GPT-2 model on a dataset of D&D items to generate novel item names and descriptions

**AlphaZero Tic Tac Toe Reinforcement Learning** Winter 2020

- Implemented an AlphaZero RL agent and trained it through self play to play Tic Tac Toe

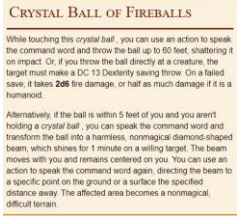
**Deep Learning for Lighting Simulations** Sept 2018 - Apr 2019

- Conducted an independent research project on improving ray tracing using machine learning
- Modified the PBRT-v3 C++ renderer to generate Monte Carlo samples with a Python/PyTorch neural network to model probability distributions, improving rendered image quality


Procedural Snowflake Shader

C++ / OpenGL Teaching Renderer


Differentiable Physically Based Path Tracer



GPT-2 D&D Items