Peter Quinn

Montréal, QC, Canada

peterquinn.ca

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Languages

- English, French

Education

Master of Engineering, Thesis, Electrical and Computer Engineering 2019 - pres.
McGill University, Montréal, QC

- Research Areas: Differentiable Rendering, Computer Graphics and Machine Learning
- Supervisor: Prof. Derek Nowrouzezahrai
- NSERC Canada Graduate Scholarship – Masters (CGSM) 2020
- McGill Engineering Undergraduate Student Masters Award (MEUSMA) 2019
- Graduate Excellence Fellowship 2019

Bachelor of Engineering, Honours Electrical Engineering 2015-2019
McGill University, Montréal, QC

- GPA: 3.91
- Dr. Alfred S. Malowany Prize 2019
- Brodeur-Drummond Scholarship 2017
- Dean's Honour List
- Faculty of Engineering Scholarship 2017
- Motorola Foundation Scholarship 2016

Research Experience

Master's Thesis 2019 – pres.
McGill University, Montreal, QC

- Conducted a research project under the supervision of Prof. Derek Nowrouzezahrai on a novel differentiable rendering system
- Implemented a custom path tracing renderer in Python that parallelized ray tracing on the GPU and was compatible with the automatic differentiation tools built into the PyTorch, an open source machine learning library

Research Internship in Science and Engineering (DAAD RISE) May-Aug 2017
Technical University of Kaiserslautern, Kaiserslautern, Germany

- Worked on the development of novel microwave antenna designs with Prof. Marco Rahm's research group for metamaterials and terahertz technology
- Simulated and optimized antenna designs in CST Microwave Studio, then manufactured designed antennas using photolithography in a clean room
- Constructed an antenna measurement setup and programmed the instrumentation using Labview to automate measurements
- https://www.peterquinn.ca/pages/projects/research/DAADRISE2017/daadRise.html

Summer Undergraduate Research in Engineering (SURE / NSERC USRA) May-Aug 2016
McGill University, Montreal, QC

- Conducted a research project under the supervision of Prof. Andrew Kirk and Dr. Philip J. Roche on a system for rapidly replicating DNA (PCR) using lasers and gold nanorods
- Designed and constructed using 3D printing a device to hold sample tubes precisely aligned with focusing optics
- Constructed circuitry and programmed microcontrollers to monitor samples using temperature sensors and control the timing of laser pulses to optimize heating cycle
- Presented a research poster to members of the university, alumni and guests at a poster presentation
- https://www.peterquinn.ca/pages/projects/research/SURE2016/pcrSystem.html

Work Experience

Teaching Assistant Sept -Dec 2019

Realistic/Advanced Image Synthesis, McGill University, Montreal, QC

- Help instructor to prepare assignments
- Present additional background information to students to be used when completing course assignments
- Respond to student's questions during tutorial sessions

Hardware Design Intern May-Aug 2018

Matrox, Dorval, QC

- Performed electrical qualification and troubleshooting of hardware designs for upcoming camera products
- Documented test results and compared with specification to ensure that the designs were working as intended

School Scheduler May-Aug 2015

Dash Computer Solutions, Montréal, QC

- Used company software to create and manage class schedules for Montreal high schools
- Optimized schedules based on constraints supplied by school

Design Team Experience

Member of Power Sub-Team Sept 2015 – May 2018

Autonomous Underwater Vehicle (AUV) Project, McGill Robotics, McGill University

- Design and layout of custom microcontroller PCB, design of a PCB to control and power a grabber arm
- Collaborated with other members/sections to ensure that all the systems/PCBs will be compatible
- Oriented and trained new recruits about the team and the software/tools used

Projects

GPT-2 D&D Items Fall 2020

- Finetuned OpenAI's GPT-2 language model on a dataset of D&D items scraped from web
- Generated several novel items with both names and detailed descriptions
- https://www.peterquinn.ca/pages/projects/personal/ai_items/ai_items.html

AlphaZero Tic Tac Toe Reinforcement Learning Winter 2020

- Project completed as part of COMP 767: Reinforcement Learning, taught by Prof. Doina Precup at McGill University
- Implemented the AlphaZero algorithm from scratch
- Trained an agent entirely through self play that could play Tic Tac Toe with a reasonable degree of competence
- https://www.peterquinn.ca/pages/projects/school/RL/RL.html

Deep Learning for Lighting Simulations Sept 2018-Apr 2019

McGill University, Montreal, Quebec

- Completed undergraduate Honours Thesis titled "Deep Learning for Lighting Simulations" under the supervision of Prof. Derek Nowrouzezahrai
- Worked on improving ray tracing using machine learning for modeling complex probability distributions
- Found that by sampling rays from a learned distribution, there was an image quality improvement
- https://www.peterquinn.ca/pages/projects/school/HonoursThesis/honoursThesis.html

Autonomous Robot Winter 2016

- Constructed a robot using a Lego Mindstorms kit running the Lejos Java library that was capable of autonomously localizing, navigating, picking up and shooting balls
- Documented all stages of development and testing in a group of six students
- https://www.peterquinn.ca/pages/projects/school/DPM/dpm.html

Scholarship Descriptions

Undergrad

Dr. Alfred S. Malowany Prize ($500) - Awarded to a graduating student by the Faculty of Engineering Scholarships Committee upon recommendation of the Department of Electrical and Computer Engineering. Preference will be given to a student in good academic standing who intends to pursue graduate studies in the Department of Electrical and Computer Engineering.

J W McConnell Scholarship ($3000) - Available to students entering any undergraduate degree program. While academic standing is of primary importance, account may also be taken of financial need and/or qualities of leadership in community and school activities.

Motorola Foundation Scholarships in Electrical and Computer Engineering ($2871) - Established in 2001 by the Motorola Foundation in conjunction with Motorola Canada Software Centre (MCSC) for outstanding students having completed at least one year of study in the area of Electrical, Computer or software Engineering. Awarded on the basis of high academic standing by the Faculty of Engineering Scholarships Committee.

Brodeur-Drummond Scholarship / Faculty of Engineering Scholarship ($3000)- For outstanding undergraduate students who have completed at least one year of a B.Eng. Program in the Faculty of Engineering. Awarded by the Faculty of Engineering on the basis of high academic standing and overall contribution to University life. / Provides awards based on academic achievement to students in the top 5% of the Faculty. Granted by the Faculty of Engineering Scholarships Committee to equalize the value of awards to students of comparable standing.

Dean's Honour List - Awarded to graduating students who are in the top 10% of the faculty's graduating class of students.

NSERC USRA / McGill SURE Program ($5625) - NSERC Undergraduate Student Research Awards (USRA) are awarded based on academic standing and professor rankings to McGill Engineering students who wish pursue a research project with a professor through the Summer Undergraduate Research Experience (SURE) program.

RISE - Globalink Research Internship ($6,000) - The RISE-Globalink Research Internship is a competitive initiative that offers undergraduate students at Canadian universities in science and engineering the opportunity to participate in a research project supervised by a doctoral student at a German university or institution.

Graduate

MEUSEMA ($17,500 for 2 years) – Awarded to students who meet following criteria: Graduated from a McGill Engineering undergraduate program with a CGPA of 3.5 or higher, completed a research project at McGill University, and be admitted to a Master's program within the Faculty of Engineering directly from a McGill Engineering Undergraduate degree.

Graduate Excellence Fellowship ($1,250) - In the Faculty of Engineering, this award is designed to assist in funding new and continuing Graduate students. The value of the GEF is at the discretion of the Department or School and is available to Research Masters students registered full-time within their first two years of study (M1-M2) and PhD students in PhD1-PhD5. Nomination for this award is at the discretion of the Department or School.

NSERC CGSM (17,500) - The CGS M program provides financial support to high-calibre scholars who are engaged in eligible master's or, in some cases, doctoral programs in Canada (refer to Eligibility). This support allows these scholars to fully concentrate on their studies in their chosen fields.