

Graeme Stroud

Toronto, ON | <https://github.com/stroudgr/>

Data Scientist

HIGHLIGHTS

- Data scientist with 1 year of experience building and deploying machine learning models for various applications
- Skilled in data analysis, modeling, and visualization using Python and SQL to develop innovative solutions for complex problems
- Developed ability to be self-motivated and work independently through research and course projects
- Collaborated with teams to design algorithms; demonstrated written and communication skills through research papers presented at conferences
- Excellent analytical skills with experience in conveying complex solutions to a less technical audience

TECHNICAL SKILLS

- Programming languages: Python, SQL, R, Java, C/C++, CUDA, Javascript
- Machine learning: supervised/unsupervised learning, deep learning, computer vision, natural language processing
- Supervised Learning: linear/logistic regression, support vector machines, k-nearest neighbors, random forests
- Unsupervised Learning: clustering (k-means, EM), dimensionality reduction (PCA)
- Data analysis and data visualization: NumPy, Matplotlib, Pandas
- Tools and frameworks: PyTorch, Scikit-learn, Jupyter Notebook, Flask, Angular

EDUCATION

Master of Mathematics in Computer Science, University of Waterloo (ON), GPA 3.98 2022

Selected Coursework: Computer Vision, Fairness and Transparency in Machine Learning, Randomized Algorithms

Thesis: Computing Realistic Terrains from Imprecise Elevations

- Analyzed problem complexity and designed algorithms to solve geometric data problems
- Performed algorithm analysis to prove approximation ratios and time complexity

Honours Bachelors of Science in Computer Science, University of Toronto (ON), GPA 3.97 2019

Selected Coursework: Machine Learning and Neural Networks, Bayesian Inference, Enriched Data Structures, Advanced Algorithms, Database System Technology

PROJECT EXPERIENCE

Distant Representatives Calculator and Visualization Tool Oct 2020, Oct 2022

- Technologies used: Python (Flask), Javascript (FabricJS)
- Collaborated on an optimization algorithm for reducing rectangles into data points.
- Created a data visualization tool with a Flask computing backend and a FabricJS frontend

Depth Estimation from a Single Image Nov 2019 – Dec 2019

- Technologies used: PyTorch, Matplotlib, Jupyter notebook
- Implemented and trained multiple neural networks (NN) to create predictive data models to estimate depth from a single image
- Applied data transformations to the NYU Depth dataset
- Tested and deployed different architectures, experimented with training loss functions and hyperparameters in order to develop accurate predictions

Semantic Image Segmentation

Nov 2019

- Created a convolutional neural network (CNN) to perform semantic image segmentation using PyTorch

Image Style Transfer for Emoji's

Mar 2019

- Created a generative adversarial network (GAN) to perform image translation between emojis with different art styles using PyTorch

Language Translation using Attention-Based Neural Machine Translation

Feb 2019

- Implemented an Attention-Based Neural Machine Translation model to perform language translation using PyTorch

Unslack – a web usage tracking tool

Feb 2018 – Apr 2018

- Worked in an Agile environment with a group of 4 to co-create an Angular web extension that helps users track their online activity and limit time on unproductive sites
- Created responsive user interface pages with informative statistics and implemented a unique scoring feature to allow friends to compare time productivity

Computer Graphics CUDA ray tracer

May 2018, Feb 2022

- Implemented a ray tracer for a computer graphics course project
- Applied parallel programming skills from another course to enhance project

WORK EXPERIENCE

Research Assistant, University of Waterloo (ON)

Sept 2019 – Jun 2022

- Collaboratively researched modern topics of computational geometry in a team of 5
- Researched topics including data visualization, imprecision, and data sensitivity
- Analyzed published works and prepared presentations for conferences

Teaching Assistant, University of Waterloo (ON)

Sept 2019 – Dec 2022

- Answered questions from students during office hours and conveyed course material on advanced topics in a simple, easy to understand manner for less experienced audiences
- Reviewed course content and concepts relevant to assignments, such as C++ fundamentals and Objected Oriented Software design

Course/Project Researcher, University of Toronto (ON)

Sept 2018 – Dec 2018

- Conducted research for Computer Science project in Discrepancy Theory
- Explored various geometric discrepancy algorithms in order to improve time complexity

Undergraduate researcher, University of Toronto (ON)

May 2018 – Aug 2018

- Received a NSERC Undergraduate Research Award to work on a project in parallel program synthesis
- Analyzed problems where current parallelization techniques did not work well
- Enhanced an algorithm to synthesize parallel programs for loops, allowing more problems with complicated code structures to work with a fast syntax-guided algorithm

PUBLICATION LIST

- [1] Anna Lubiw and **Graeme Stroud**. Computing realistic terrains from imprecise elevations. In Proceedings of the 34th Canadian Conference on Computational Geometry, pages 227–234, 2022. <https://cccg.ca/proceedings/2022/CCCG2022.pdf#page=238>.
- [2] Therese Biedl, Anna Lubiw, Anurag Murty Naredla, Peter Dominik Ralbovsky, and **Graeme Stroud**. Distant representatives for rectangles in the plane. In 29th Annual European Symposium on Algorithms (ESA 2021), volume 204, pages 17:1–17:18, 2021. <https://drops.dagstuhl.de/opus/volltexte/2021/14598/>.
- [3] Therese Biedl, Anna Lubiw, Anurag Murty Naredla, Peter Dominik Ralbovsky, and **Graeme Stroud**. Dispersion for intervals: A geometric approach. In 4th Symposium on Simplicity in Algorithms, SOSA 2021, January 11-12, 2021, pages 37–44. <https://epubs.siam.org/doi/10.1137/1.9781611976496.4>.