Nathalie Redick

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Education

McGill University (3.73 / 4.00) *Montréal, QC* | Sep. 2019 – May 2023

- B.A. in **Computer Science**, Minor in **Earth & Planetary Sciences** & Supp. Minor Conc. in Comp. Sci.
- *Relevant Courses*: Intro to Software Systems, Intro to Computer Systems, Programming Languages & Paradigms, Algorithms & Data Structures, Data Science, Linear Algebra I & II, Discrete Math, Probability, Statistics, Applied Machine Learning, Probabilistic Programming.

Skills

Programming Languages: Python, C++, C, Java, R, Bash, Julia, MATLAB, HTML/CSS, OCaml, MIPS Assembly.
Tools: Git, Linux/Unix, LaTeX, Jupyter, AWS EC2, VS Code, Numpy, Pandas, Tensorflow, PyTorch, & RESTful APIs.

Experience

Data Science Intern @ *Esri* *Remote* | May 2022 – Aug. 2022

- Implemented an automated workflow for updating national hydrography datasets using the Multi-Task Road Extractor **deep learning** model.
- Improved the baseline model by $\sim 4\%$ accuracy to **96.3% accuracy & 0.85 MIOU** by designing new input image layers & geomorphological indicators.

Undergraduate Research Assistant @ *EQP Research Group* *McGill University* | Jan. 2021 – Aug. 2021

- Individually designed & built a website using **HTML/CSS & some JS** to communicate seismological data of Québec to promote public awareness about local earthquake hazards.

Software Engineering Intern @ *Blue Spiral Interactive* *Saratoga Springs, NY* | Jun. 2019 – Aug. 2019

- Strengthened in-house marketing analysis software by working with a team to build a **RESTful API** for accessing & visualising marketing data.
- **Self-taught** Python, Git, & QGIS over the course of the internship. I used parallel computing techniques to **reduce execution time by 97%**.

Software Development Intern @ *Garnet River* *Saratoga Springs, NY* | Feb. 2019 – Jun. 2019

- Evaluated the efficacy & usability of computer vision products from Microsoft, Google, & AWS.

Research

Machine Learning For Geospatial Analysis | *McGill University* Sep. 2022 – Present

- Creating a guided machine learning workflow for geospatial analysis.
- Our objective is to create a tool that can be used by anyone, regardless of their technical background.

Using U-Net to Identify Landslides | *McGill University* May 2021 – Present

- Independently implementing an image segmentation ML model to identify landslides using geophysical indicators.
- Currently **collaborating with the California Geological Survey** to expand the project scope.
- Current interation of the model boasts **95.3% accuracy & a loss of 0.19.**

Awards

- Won both **Best Design & Most Fun & Creative Game Dev Hack** against 332 participants at McHacks9 for Pan(demic)-Man, COVID-19-themed Pac-Man webGL game built with *Unity Game Engine* & C#.
- Awarded **Best AI Hack for Art** against 111 participants at MAIS Hacks 2021 for MAISpeare, a LSTM-driven web app (*Python, HTML/CSS*) that generates a poem from any image.
- Won **Best Overall Hack** at MAIS Hacks 2020 by leading a team against 115 participants to create a XGBoost-driven web app (*Python, HTML/CSS*) that predicts MBTI Personality Type based on Twitter data.

Geotop 2021 Scholarship Competition *($1500)* *Geotop* | 2021

- Selected based on my research proposal to *Use ML to Indentify Landslides* & my academic performance.

Alma Mater Scholarship *($3000)* *McGill University* | 2019

- Entrance bursary to McGill University for academic excellence in high school.

Stat Staff Professionals Computer Science Scholarship *($1000)* *Saratoga Springs High School* | 2019

- Selected amongst ~ 40 students for academic excellence & demonstrated potential in computer science.

Extra-curriculars

Vice President Communications | *The Monteregian Society at McGill University* Sep. 2020 – Present

- Managed communications for the undergraduate student council for Earth & Planetary Sciences.
- Designed & built the council's website to host student resources, events, & other information.

Professional Development

SCIWS12 Tutorial on Machine Learning & Deep Learning | *American Geoscience Union* Dec. 2020

- Attended a technical workshop on machine learning & deep learning for the environmental & geosciences.

MAIS 202: Accelerated Introduction to ML | *McGill Artificial Intelligence Society* Jan. 2020 – Apr. 2020

- Selected through a technical interview to participate in a 12-week accelerated course of ML.
- **Webscraped data** to train a **CNN** to classify geologic sample images into 4 classes; deployed as a webapp.