

# NATHALIE REDICK

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## EDUCATION

**McGill University** (3.75 / 4.00)

Montréal, QC | Sep. 2019 – May 2023

- B.A. in **Computer Science**, Minor in **Earth & Planetary Sciences** & Supp. Minor Conc. in **Computer Science**.
- *Coursework*: Mineralogy, Petrology, Geology in the Field, Field School I, Earth Physics, Earth System Modelling, Structural Geology, Volcanology, Algorithms & Data Structures, Data Science, Linear Algebra I & II, Probability, Statistics, Applied Machine Learning, Probabilistic Programming, Machine Learning Applied to Climate Change.

## SKILLS

**Languages:** Python, Julia, C++, C, Java, DB2/SQL/MySQL, R, Bash, MATLAB, HTML/CSS, OCaml, MIPS Assembly.

**Tools:** Git, Linux/Unix,  $\LaTeX$ , Jupyter, AWS EC2, VS Code, RESTful APIs, MongoDB, Jira, Jenkins.

## EXPERIENCE

**Technology Analyst @ Morgan Stanley**

Montréal, QC | Aug. 2023 – Present

- Worked collaboratively to provide agile metrics analysis for internal dev. teams globally, user support, & documentation.
- Utilized DB2 SQL, MongoDB, & Python to process metrics and maintain project infrastructure.

**Data Science Intern @ Esri**

Remote | May 2022 – Aug. 2022

- Automated a workflow for updating national hydrography data 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.

**Software Engineer Intern @ Blue Spiral Interactive/Albany IT Group**

Saratoga Springs, NY | Jun. 2019 – Aug. 2019

- Improved in-house marketing analysis software by working with a team to build a **RESTful API** for visualising data.
- **Self-taught** Python, Git, & QGIS during the internship. Used parallel computing to **reduce execution time by 97%**.

## 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 (On Hiatus)

- Implementing an image segmentation ML model to identify landslides using geophysical indicators.
- Current iteration 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, a COVID-19-themed Pac-Man WebGL game built with *Unity Game Engine* & C#.
- 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 Identify Landslides* & academic performance.

## EXTRA-CURRICULARS

**Vice President Communications | The Montereian Society at McGill University**

Sep. 2020 – Apr. 2023

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

**Member | Machine Learning for Geoscience Reading Group at McGill University**

Jan. 2021 – May 2021

- Participated in an informal reading group to examine current papers in ML applications in the geosciences.

## 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.

## PUBLICATIONS & PRESENTATIONS

1. Redick, N. R. (2024, January 23). Code-Free Deep Learning for Geospatial Applications. AGU23, Venue 5, Science Nexus (Online Only). [agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363](https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363)
2. Redick, N. R. (2023, April 11). Building an Accessible Machine Learning Workflow for Geospatial Analysis. Open Research Symposium, McGill Library, Montréal QC. [escholarship.mcgill.ca/concern/presentations/2n49t738j](https://escholarship.mcgill.ca/concern/presentations/2n49t738j)
3. Redick, N. R. (2023). A Review of Pumice Raft Formation Environments, Saturation, and Dispersal Mechanisms. McGill Science Undergraduate Research Journal, 18(1), Article 1. [doi.org/10.26443/msurj.v18i1.187](https://doi.org/10.26443/msurj.v18i1.187)