Nathalie Redick

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Education

University of California, Davis, *Davis, CA* | MSc Geophysics — 4.00/4.00 | September 2024 – June 2026

McGill University | BA Computer Science — September 2019 – August 2023
Montreal, QC — 3.75/4.00
- Minor in **Earth & Planetary Sciences**, Supplementary Minor Concentration in Computer Science

Experience

Technology Analyst @ Morgan Stanley — *Montreal, QC* | July 2023 – August 2024
- Worked collaboratively to provide agile metrics analysis for internal dev. teams globally, user support, & documentation.
- Utilized DB2 SQL, MongoDB, & Python to process metrics & maintain project infrastructure.

Data Science Intern @ Esri Canada — *Remote* | May – August 2022
- Automated a workflow for updating national hydrography data using the Multi-Task Road Extractor **deep learning** model.
- Designed new input image layers & geomorphological indicators that improved the baseline model accuracy by ∼4%.

Software Engineering Intern @ Blue Spiral Interactive/Albany IT Group — *Saratoga Springs, NY* | June – August 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%**.

Software Development Intern @ Garnet River, LLC — *Saratoga Springs, NY* | February – June 2019
- Evaluated the efficacy & usability of computer vision products from Microsoft, Google, & AWS.

Research

Machine Learning For Geospatial Analysis @ McGill University — *Montreal, QC* | September 2022 – July 2024
Advised by Dr. James Kirkpatrick & Dr. Matthew Tarling.
- Designed a guided machine learning workflow for geospatial analysis.
- Our objective was to create a tool that can be used by anyone, regardless of their technical background.

Using U-Net to Identify Landslides @ McGill University — *Montreal, QC* | May 2021 – August 2022
Advised by Dr. James Kirkpatrick & Dr. Veronica Prush.
- Implemented an image segmentation ML model to identify landslides using geophysical & morphological indicators.
- Current iteration of the model boasts **95.3% accuracy & a loss of 0.19.**

Awards

Geotop 2021 Scholarship Competition, Geotop ($1500) — 2021
- Selected based on my research proposal to *Use ML to Identify Landslides* & academic performance.

Alma Mater Scholarship, McGill University ($3000) — 2019
- Entrance bursary to McGill University for academic excellence.

Extra-curriculars

AWG Student Mentor @ Association of Women Geoscientists (AWG) at UC Davis — *Davis, CA* | January 2024–Present
- Assist students in learning new skills, building job applications & resumes; discuss the science field & graduate school.

Datalab Affiliate @ UC Davis Datalab — *Davis, CA* | October 2024–Present
- Participate & assist in workshops related to data science & computational pedagogy.
- Help maintain the affiliated KeckCAVE Virtual Reality research lab in the Earth & Planetary Sciences department.

Vice President of Communications @ The Monteregian Society — *Montreal, QC* | September 2020 – April 2023
- Managed communications for the undergraduate student council for Earth & Planetary Sciences at McGill University.

Professional Development

SCIWS12 Tutorial on Machine Learning & Deep Learning @ American Geoscience Union — *Virtual* | December 2020
- Attended a full-day technical workshop on machine learning & deep learning for the environmental & geosciences.

Accelerated Introduction to ML @ McGill Artificial Intelligence Society — *Montreal, QC* | January – April 2020
- Selected through a technical interview to participate in a **10-week** accelerated course of ML.
- Webscraped data to train a CNN to classify rock/mineral/fossil sample images into 4 classes; deployed as a webapp.

Skills

Programming Languages: Python, Julia, C++, C, Java, DB2/SQL/MySQL, R, Bash, MATLAB, HTML/CSS, OCaml, MIPS Assembly
Tools: Git, Linux/Unix, LaTeX, Jupyter, QGIS/ArcGIS, AWS EC2, VS Code, RESTful APIs, MongoDB, Jira, Jenkins, Liquibase

Publications & Presentations

1. Redick, N. R., Tarling, M. S. & Kirkpatrick, J. D. *Code-Free Deep Learning for Geospatial Applications* in. AGU23 (AGU, Jan. 23, 2024). https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363 (2024).
2. Redick, N. R. A Review of Pumice Raft Formation Environments, Saturation, and Dispersal Mechanisms. *McGill Science Undergraduate Research Journal* **18,** B19–B25. ISSN: 1718-0783. https://msurjonline.mcgill.ca/article/view/187 (2024) (1 Mar. 20, 2023).
3. Redick, N. R. *Building an Accessible Machine Learning Workflow for Geospatial Analysis* Open Research SymposiumMcGill Library, Montreal QC. Apr. 4, 2023. https://escholarship.mcgill.ca/concern/presentations/2n49t738j?locale=en.