Nathalie Redick

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Education

University of California, Davis |
Davis, CA   3.89/4.00
Thesis: *Understanding Seismic Anisotropy Observations in the Context of 3D Slab-Induced Flow in the Cascadia Subduction Zone* (Advisor: Magali Billen)

McGill University | BA Computer Science   Sept 2019–Aug 2023
Montreal, QC   3.75/4.00
– Minor in Earth & Planetary Sciences, Supplementary Minor Concentration in Computer Science (Machine Learning)
– Research: *Accessible Machine Learning For Geospatial Analysis; Using a U-Net to Identify Landslides*

Work Experience

Graduate Student Researcher @ UC Davis Datalab   *Davis, CA* | Jul 2025–present
– Working on virtual and augmented reality development in C++ for scientific analysis and visualization.
– Rebuilding organization documentation to improve accessibility and reach.

Technology Analyst @ Morgan Stanley   *Montreal, QC* | Jul 2023–Aug 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–Aug 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%.

Publications & Presentations

Redick, N. R., Tarling, M. S., & Kirkpatrick, J. D. (2024). Code-Free Deep Learning for Geospatial Applications. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363

Redick, N. R. (2023a, April 4). Building an Accessible Machine Learning Workflow for Geospatial Analysis. https://escholarship.mcgill.ca/concern/presentations/2n49t738j?locale=en

Redick, N. R. (2023b). A Review of Pumice Raft Formation Environments, Saturation, and Dispersal Mechanisms. *McGill Science Undergraduate Research Journal*, *18*(1), B19–B25. https://doi.org/10.26443/msurj.v18i1.187

Service & Leadership

Field Trip Activity Leader @ UC Davis   *Davis, CA* | Feb 2025
– Facilitated an interactive learning activity in the rock garden for visiting 6th-grade students.
– Engaged students in discussions and hands-on experiences about characteristics of the 3 major rock types.

AWG Student Mentor @ Association of Women Geoscientists (AWG) at UC Davis   *Davis, CA* | Jan 2025–J
– Assist a student in learning new skills, building job applications & resumes; discussing the science field & graduate school.

Datalab Affiliate @ UC Davis Datalab   *Davis, CA* | Oct 2024–present
– Participate & assist in workshops related to data science & computational pedagogy.

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

Teaching Experience

GEL 1: The Earth (TA), UC Davis   Apr–Jun 2025
– Guest lectured on the formation of the Earth and space.
– Led 1 hr/week of discussion on introductory earth science concepts.

GEL 101L: Structural Geology Lab (TA), UC Davis   Jan–Mar 2025
– Led 6 hours a week of lab on upper-division undergraduate structural geology concepts & field techniques/mapping.

Instructor Training: Introduction to Computational Pedagogy @ UC Davis Datalab   *Davis, CA* | Decem
– Two-day workshop on evidence-based teaching, inclusive pedagogy, and instructional design for computational skills.

GEL 50L: Physical Geology Lab (TA), UC Davis   Sept–Dec 2024
– Led 6 hours a week of lab on introductory geologic concepts & field techniques.

Field Experience

Temporary Seismic Array Deployment @ Mt. Rainier National Park, WA   *UC Davis* | Jul 2025
– Assisted a deployment of 53 seismic nodes in temporary arrays along the Tahoma Creek drainage to support studies of debris flows.
– Joint effort organized by UC Davis, the University of Oregon, and the Cascade Volcano Observatory.

Field Assistant @ Jot Dean Cave & Pluto Cave, CA   *UC Davis* | May 2025
– Assisted in the collection of biofilm samples from lava tubes.

Graduate Volcanology Seminar @ Long Valley Caldera, CA   *McGill University* | Oct 2022
– Participated in a 1-week field seminar to study the volcanological features & history of the Long Valley caldera in California.

Field School I @ Death Valley, CA   *McGill University* | May 2021
– Produced maps of geologic units & structures in both Rainbow Basin, CA & Dublin Gulch, CA over 2.5 weeks.
– Gained experience with field mapping, using a Brunton compass, & topographic maps.

Skills & Certifications

Programming Languages: Python, Julia, C/C++, Java, DB2/SQL/MySQL, R, Bash, MATLAB, HTML/CSS, OCaml, (MIPS) Assembly
Tools: Git, Linux/Unix, LaTeX, Jupyter, HPC, Slurm, RESTful APIs, MongoDB, Jira, Jenkins, Liquibase, QGIS/ArcGIS, ASPECT, Paraview