Nathalie Redick
CURRICULUM VITAE

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EDUCATION

2024–2026	**MSc Geophysics** (3.91/4.00)	University of California, Davis

Thesis: *Understanding Seismic Anisotropy Observations in the Context of 3D Slab-Induced Flow in the Cascadia Subduction Zone* (Advisor: Magali Billen)

2019–2023	**BA Computer Science** (3.75/4.00)	McGill University

– Minor in **Earth & Planetary Sciences**, Supplementary Minor Conc. in Computer Science (Data Science, Machine Learning)
– Research: *Accessible Machine Learning For Geospatial Analysis; Using a U-Net to Identify Landslides*

WORK EXPERIENCE

Sept 2025–present	**Graduate Student Researcher** @ UC Davis Datalab	*Davis, CA*

– Working on virtual & augmented reality development in C++ for scientific analysis & visualization.
– Rebuilding organization documentation to improve accessibility & reach.

Jul 2023–Aug 2024	**Technology Analyst** @ Morgan Stanley	*Montreal, QC*

– 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.

May–Aug 2022	**Data Science Intern** @ Esri Canada	*Remote*

– 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 $\sim$4%.

PAPERS & TALKS[+]

1. [+] **Redick**, N. R. *Intro to Machine Learning Tools & Applications for Geoscience*. UC Davis—Friday Lunch Talk. 2025. https://github.com/nredick/intro-to-ml-GVP.

2. [+] **Redick**, N. R., Tarling, M. S. & Kirkpatrick, J. D. *Code-Free Deep Learning for Geospatial Applications*. AGU23. 2024. https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1366363.

3. **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 (2023).

4. [+] **Redick**, N. R. *Building an Accessible Machine Learning Workflow for Geospatial Analysis*. Open Research Symposium. 2023. https://escholarship.mcgill.ca/concern/presentations/2n49t738j.

SKILLS

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

Service & Leadership

Feb 2025	**Field Trip Activity Leader** @ UC Davis
	– Facilitated an interactive learning activity in the rock garden for visiting 6th-grade students.
	– Engaged students in discussions & hands-on experiences about characteristics of the 3 major rock types.
Jan 2025–Jun 2025	**Student Mentor** @ Association of Women Geoscientists at UC Davis
	– Assist a student in learning new skills, building job applications & resumes; discussing the science field & graduate school.
Oct 2024–present	**Datalab Affiliate** @ UC Davis Datalab
	– Participate & assist in workshops related to data science & computational pedagogy.
Sept 2020–Apr 2023	**Vice President of Communications** @ Monteregian Society
	– Managed communications for the undergraduate student council of Earth & Planetary Sciences at McGill University.

Teaching Experience

Apr–Jun 2025	**GEL 1: The Earth (TA)**	UC Davis
	– Guest lectured on the formation of the Earth & space.	
	– Led 1 hr/week of discussion on introductory earth science concepts.	
Jan–Mar 2025	**GEL 101L: Structural Geology Lab (TA)**	UC Davis
	– Led 6 hours a week of lab on upper-division undergraduate structural geology concepts & field techniques/mapping.	
December 2024	**Intro to Computational Pedagogy Workshop**	UC Davis Datalab
	– Two-day instructor training on evidence-based teaching, inclusive pedagogy, & instructional design for computational skills.	
Sept–Dec 2024	**GEL 50L: Physical Geology Lab (TA)**	UC Davis
	– Led 6 hours a week of lab on intro geologic concepts & field techniques.	

Field Experience

End of Sept 2025 *TBD*	**Seismic Node Recovery/Redeploy**	Mt. Rainier & Mt. St. Helens, WA
	UC Davis, the University of Oregon, & Cascade Volcano Observatory	
	– Will assist in the recovery of the seismic nodes deployed in Aug 2025 in temporary arrays along the Tahoma Creek drainage.	
	– Will take a helicopter to deploy nodes on Mt. St. Helens (awaiting USGS confirmation for availability).	
Aug 2025 *20 days*	**PACSAFE 2025 & EXTEND 2025**	Mt. Rainier National Park, WA
	NRCAN, University of British Columbia, University of Victoria, NFSI	
	– Partcipated as an Apply-to-Sail student aboard the CCGS John P. Tully to recover & deploy ocean bottom seismometers (OBS).	
	– PACSAFE OBS were recovered along the Explorer microplate off of Haida Gwaii & redeployed to the south of the 2024 field.	
	– EXTEND OBS were deployed along the Endeavour Ridge to complement existing cabled arrays.	
Jul 2025 *2 days*	**Temporary Seismic Array Deployment**	Mt. Rainier National Park, WA
	UC Davis, the University of Oregon, & Cascade Volcano Observatory	
	– Assisted a deployment of 53 seismic nodes in temporary arrays along the Tahoma Creek drainage to support studies of debris flows.	

May 2025	**Field Assistant**	Jot Dean Cave & Pluto Cave, CA

1 day

UC Davis

– Assisted in the collection of biofilm samples from lava tubes.

Oct 2022	**Graduate Volcanology Seminar**	Long Valley Caldera, CA

7 days

McGill University

– Participated in a field seminar to study the volcanological features & geologic history of the caldera & associated features.

May 2021	**Field School I**	Death Valley, CA

16 days

McGill University

– Produced maps of geologic units & structures in both Rainbow Basin, CA & Dublin Gulch, CA.
– Gained experience in structural field mapping, using a Brunton compass, & navigating with topographic maps.

CERTIFICATIONS

Wilderness First Aid, Sierra Rescue (Expires Nov 2027)	Nov 2024
Epinephrine Auto-Injector Administration, Sierra Rescue (Expires Nov 2026)	Nov 2024
Adult Child Infant CPR/AED & First Aid, Sierra Rescue (Expires Nov 2026)	Nov 2024

AWARDS & HONORS

Bogo Hack, MAIS Hacks 2022	2022
Best Design & Most Fun; Most Creative Game Dev Hack, McHacks9	2022
Best AI Hack for Art, MAIS Hacks 2021	2021
Geotop 2021 Scholarship Competition, Geotop ($1500)	2021
Best Overall Hack, MAIS Hacks 2020	2020
Alma Mater Scholarship, McGill University ($3000)	2019