MONTE MAHLUM

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Minneapolis, MN GitHub Repository

Driven and highly curious researcher seeking employment in automated reasoning and cryptography. Passionate about finding creative solutions to hard problems in formal verification, theorem proving, network security & scalability, and related domains.

EDUCATION

University of Minnesota M.Sc. in Mathematics *2024 – 2026*
McGill University B.S. in Mathematics, Minor in Physics, GPA: 3.45 *2020 – 2024*
Univerzita Karlova Semester Abroad, Local GPA: "Excellent" *2023*
Relevant Coursework (14+ at honours level)
Algebra, Groups & Algorithms, Category Theory, Differential Geometry, Functional Analysis, Lie Theory, Mathematical Logic, Measure Theory, Probability, Statistics, Stochastic Processes, Quantum Physics.

PROFESSIONAL EXPERIENCE

Mathematics Research Assistant, University of Minnesota, Twin Cities *July 2023 –Present*

- Working to ensure convergence and well-posedness of a novel deep learning algorithm developed by W. Lee, L. Wang, W. Li, outlined here.
- Employing functional analysis, algorithm design, probability theory, and geometry to explore high dimensional Wasserstein gradient flow.
- Development of strong research skills and ability to synthesize and present diverse data and ideas.
- Explicit results unpublished, but available upon request. For reference, please contact Professor Li Wang (liwang@umn.edu).

Calculus I, Probability, and Linear Algebra Tutor, Freelance *Nov 2023 – Present*

- Teaching abstract concepts to people who are unaccustomed to this way of thinking and enabled significant academic progress from failure to high passing. (†)

Calculus Tutor, Jewish Academic Student Support (†) *Sep 2022 – Dec 2022*
Wilderness Tripping Guide, YMCA Camp Widjiwagan *May 2021 – Aug 2022,*

- Led youth on extended backpacking and canoeing trips.
- Managed 35 kids throughout 8 trips totaling 60+ days on trail.
- Developed leadership, teamwork, communication, teaching/mentorship, and project management. For reference, please contact karen.pick@ymcamn.org.

PROJECTS

Directed Reading Program *Jan 2024 – Present*
Mentorship with Alexis Leroux-Lapierre on categorification in algebraic geometry, representation theory, and mathematical physics.
Fibrations Podcast *Sep 2022 – Dec 2023*
Creator and host. Exploring academic research at McGill University. Listen at spotify.com/fibrations.
Lecture on Lie Theory With Applications to Quantum Physics *June 2023*
Given for a Charles University physics course. Notes can be found here.
25-Hour McGill Physics Hackathon *Oct 2022*
Analysis of algorithms (one of which novel) for the Laplace Equation. Submission can be viewed here.

SKILLS AND LANGUAGES

English (Native), Spanish, Python (see Repository), Latex, Jiu Jitsu (since 2022), drums (since 2022), piano (since 2020).