

Education

- 2023–2026 **B.Sc. in Mathematics**, *University of Washington*, Seattle, 3.83 GPA
2023–2026 **Minor in Philosophy**, *University of Washington*, Seattle
2020–2022 **Associates in Science**, *Centralia College*, Centralia, WA
2018–2022 **High School Diploma**, *Centralia High School*, Centralia, WA

Research and Publications

- Spring **A Practical Genus Algorithm**, *University of Washington*, Seattle
2024–Winter With Alexander Metzger, I co-authored a paper on an algorithm that determines the orientable genus of an arbitrary graph G with n vertices in $O(n(4^m/n)^{n/t})$ steps. The paper was submitted to *Discrete Mathematics* on 11/25/2024. <https://arxiv.org/abs/2411.07347>
2025
Fall 2025 **Undergraduate Honors Thesis (Expository): Graph Genera and Minors**, *University of Washington*, Seattle
Expository thesis supervised by Dr. François Clément, surveying graph embeddings on surfaces, rotation systems, and genus algorithms (such as PAGE), and an overview of forbidden toroidal minors and related open problems. Read here.
Summer **Independent Research in Topological Graph Theory**, *University of Washington*, Seattle
2025–Present Under the supervision of Dr. François Clément, I am working on an ongoing project on forbidden minors for the torus.
Fall 2024 **Washington Experimental Math Lab (WXML)**, *University of Washington*
Under the guidance of Professor Stefan Steinerberger, I collaborated with a team of graduate and undergraduate students to study the dynamical system in <https://arxiv.org/abs/2409.08961>.
Spring 2024 **Washington Experimental Math Lab (WXML)**, *University of Washington*
Under the guidance of Dr. Hadrian Quan, I worked with a group of undergraduates and a graduate student mentor studying wave propagation on graphs. We investigated graph path homotopy, and spectral analysis of the graph Laplacian and graph products.

Outreach and Service

- Math Student Council, University of Washington** *Council Member, 2024–Present*
Supported math majors via events, resources, and student representation. Organized study halls, events, and networking. Facilitated communication between students and faculty.
Teaching Assistant, University of Washington *MATH 209 (Linear Analysis), Sep 2024–Present*
Assisted with ODEs and BVPs for classical PDEs (heat, wave, Laplace); graded assignments and provided one-on-one/small-group help.
Mathematics Tutor, University of Washington *CLUE, Sep 2024–Present*
Tutored courses from intro through abstract algebra and complex analysis; emphasized problem-solving, conceptual understanding, and exam prep.
Mathematics Tutor, Mathnasium *Jul 2025–Sep 2025*
Tutored K–12 students in algebra, geometry, and precalculus; strengthened foundational skills and supported students' confidence in math.
STEM Tutor, Centralia College *May 2020–Jun 2022*
Tutored Calculus I–III, Intermediate Statistics, and Human Biology; supported center operations and collaborated with faculty.
Solution Notes: Pearls in Graph Theory *May–Jun 2024*
Contributed a 12-page set of solution notes for problems from Hartsfield–Ringel's *Pearls in Graph Theory*.
Volunteer Tutoring *Jan 2023–Present*
Volunteer tutor with over 100,000 posts in a global online community of 200,000+ members, fostering

mathematical discussion and providing math assistance.

Summer Credit Retrieval Assistant, Centralia High School

Summers 2017 & 2018

Assisted high school students with recovering math and science credits.

Independent Mathematics Tutoring

2023-Present

Private tutor for high school and undergraduate math, online and in person.

Theta Delta Chi, University of Washington

Vice President & Recruitment Chair, 2024-Present

Elected officer for a 70+ member chapter; oversee recruitment and events, assist with chapter operations, and communicate with the University of Washington and the Interfraternity Council.

Honors and Awards

Husky 100 Nominee

2025

Math Alliance Predoctoral Scholar Nominee

2023

#1 Ranked Student, Centralia High School Class of 2022

2022

Centralia College Outstanding Student of the Year (Nominee)

2022

Phi Theta Kappa Honor Society

2021-Present

Dean's List

Fall 2023; Spring 2024; Winter 2025

Scholarships Awarded (\$12,000 total)

2022

Professional Experience

Outlier AI; DataAnnotation

Aug 2023-Jul 2024; Aug 2025-Present

Wrote/edited math prompts for LLM's and solutions; reviewed peers' work and evaluated reasoning; applied and created rubrics, noted topic/difficulty, and corrected notation/LaTeX.

Talks and Presentations

UW Undergraduate Research Symposium

Speaker, May 2025

Presented *A Practical Genus Algorithm*, a new approach to genus computation using an $O(n(4^m/n)^{n/t})$ time complexity algorithm. The talk emphasized the theoretical advancements in narrowing the genus range and how these results can impact broader mathematical and computational fields.

Husky Math Talk, University of Washington

Speaker, Feb 2025

A Practical Genus Algorithm: outlined practicality in exploring rotation systems and refining genus bounds; discussed discovery of unknown graph genera.

Undergraduate Reading Groups in Topology and Algebra

Co-Organizer & Speaker, 2024-2025

Co-organized and led reading groups in topology and algebra, preparing undergraduates for graduate-level math. Facilitated discussions, assigned problems, and guided students in advancing their understanding.

Advanced Linear Algebra Reading Group

Instructor & Organizer, Jul 2024

Led a 25+ member group on Axler's *Linear Algebra Done Right*; covered quotient/dual spaces, multilinear algebra, tensors, and inner product spaces. Organized meetings, graded homework, and directed students to additional resources.

Euler Characteristic of a Torus and the Utilities Problem

Speaker, Jun 2024

Talk for 30 advanced high-school students on surfaces of various genera, Euler's formula, and the utilities problem on a torus.

Complex Analysis Reading Group

Instructor & Organizer, Mar 2024

Facilitated a reading group of 30+ undergraduates on Stein & Shakarchi's *Complex Analysis*, covering chapters on fundamentals of complex functions and integrals. Organized meetings, graded problem sets, and directed students to additional learning materials.

Advanced Calculus Reading Group

Instructor & Organizer, Jul 2023

Led a 15-student group on Folland's *Advanced Calculus*; covered single and multivariable topics.